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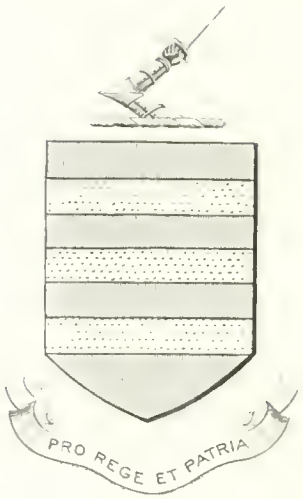

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Original Articles.

A REVIEW OF THE ADVANCES IN OUR KNOWLEDGE AND TREATMENT OF CANCER IN THE LAST THIRTY YEARS.*

By FRANCIS CARTER WOOD, M.D.,

NEW YORK.

DIRECTOR OF THE GEORGE CROCKER SPECIAL RESEARCH FUND, COLUMBIA UNIVERSITY.

But few discussions on the subject of carcinoma have been presented before this society. The subject is one which has not very greatly interested physicians, for the only treatment available has been operative removal. The recent extensive use of radium and *x*-ray, however, while unfortunately showing that these physical agents have much less therapeutic value than was originally believed, has turned the attention of physicians to the study of the nature and treatment of carcinoma, and I have, therefore, been asked by your President to give a review of the subject for the period since the foundation of the society in 1885.

It is obvious that only the main facts and but few of the workers in cancer research can even be mentioned in this address, and I shall be compelled to select those whose contributions seem to be the most important, and to disregard entirely the mere details of priority.

In the three decades which have just elapsed the real advances have been due to the introduction of the experimental method, so fruitful in other fields. No important additions have come from the clinical study of human cancer since Virchow laid the foundations and Waldeyer and Thiersch published their fundamental papers. It is true that our understanding of the morphology and classification of tumors has been amplified and the statistical study of large series of operated cases has led to an appreciation of the limits of surgery and the reasons therefor; but no new fact in tumor biology has been discovered by clinicians, though there are still many gaps which could be filled by careful observation. This review will of necessity, therefore, be confined largely to experimental results.

It has been my feeling that Jensen may be considered the Pasteur of cancer research, for it was he who by a series of painstaking observations first showed the possibility of the continuous transplantation of tumors from one animal to another through repeated generations, although, of course, others before him had published individual cases of successful inoculation. Jensen's first paper (1902) was published in Danish, so that his observations did not become generally known until some time afterward when the main points appeared in a German publication (1903). In this paper he described and illustrated the morphological appearances of tumors in mice; the transplantability of such tumors to other mice of the same race was demonstrated; and it was shown that tumors from albino mice could be transferred to the gray house mice in a small number of cases, but not to the more distantly related field mice, and not at all to animals of other species. He showed, also, that no parasites could be demonstrated, either by stains or by cultural methods, in the tissues of the transplanted tumors. He reported the effects of drying on the cells and their destruction by crushing or by ultraviolet light or by antiseptics, and showed that tumor cells could be kept alive at low temperatures [illegible] eighteen days, although they died off rapidly [illegible] C. He was the first to call attention to [illegible] the growth of the tumor depended [illegible] ization and the necessary con[illegible] tions which accompany the phe[illegible]ing upon this point as important si[illegible]ved that the disease is not an infection, b[illegible] the tissues of the host replace the connective tissue of the original tumor and thus nourish the epithelial cells, which alone are propagated in the body of the new host. All of these points have been repeatedly investigated without in the least invalidating any of Jensen's conclusions. In the same paper, however, Jensen fell into an error by claiming that by the injection of tumor tissue into rabbits he had obtained a serum which had beneficial effects on tumors of mice. Later, he acknowledged that the error was due solely to his lack of knowledge in regard to spontaneous regression of transplanted tumors in animals. Almost every year since that time this error has been repeated, both by laboratory workers using animals and by clinicians in the treatment of human beings, the most recent instance being the now generally acknowledged failure of Hodenpyl's attempts to cure carcinoma by the injection of serum from a patient with ascites following invasion of the peritoneum by a malignant growth. Even laboratory men do not seem to have learned the lesson that the biological behavior of a transplanted tumor must be accurately determined before therapeutic measures can be tested on it. The numerous reports on the power of diet, drugs, radium, and other agents to induce the disappearance of a tumor are vitiated by disregard of this elementary fact. A number of recent reports have been based upon observations on the Buffalo rat sarcoma, so-called, which has the power of spontaneous regression in various series of from five to forty per cent. Obviously such a tumor should not be used for testing therapeutic agents; only one which grows progressively in from ninety to one hundred per cent. of animals will afford reliable data.

*Read at the thirtieth annual meeting of the Association of American Physicians, in Washington, D. C., on May 11, 1915.

About the same time as Jensen, Leo Loeb and Borrel also demonstrated many interesting facts concerning the transplantability of new growths, but the next really important advance was made at the State Institute for the Study of Malignant Disease at Buffalo, under the leadership of Gaylord (1906). It was from this laboratory that the first definite proof was offered that spontaneous regression in transplanted tumors in animals is not infrequent, and that following such regression the animal may be immune to succeeding inoculations. Gaylord also introduced a very useful system of making charts for record, which was improved and extended in Bashford's laboratory, and should be more generally used by those working on this subject, as it offers an admirable means for judging at a glance of the rate of growth and regression of a long series of tumors.

Carcinosarcoma.—The genius of Ehrlich and his able assistant Apolant added (1905) the important experimental observation that certain carcinomata of mice may, during growth, produce a sarcomatous alteration in the stroma. Since that time a considerable number of these tumors, still less than a dozen, however, have been studied and the histological changes have been fairly well determined. It was shown by Haaland in Bashford's laboratory that the sarcomatous and carcinomatous portions could be picked out of sections of the tumor and each propagated separately, retaining the morphological characteristics of the original. Russell in Bashford's laboratory, also, showed that the condition developed usually after a certain period of growth in the carcinoma (some forty to fifty days in the tumors which he studied), and that there was a tendency for the sarcoma ultimately to replace the carcinoma. The importance of these observations lies in the fact that this is one of the few instances in which we are able to watch the origin of a new growth. While it is generally observed that in man the production of a tumor follows chronic irritation only over a very prolonged period, for example, *x*-ray carcinomata usually appear from eight to ten years after the primary injury of the skin, yet here in these small experimental animals the tumor is produced in fifty days. An explanation is not forthcoming. It may be, however, that in the mouse the period of fifty days corresponds to ten years in a human being. Unfortunately, these growths are very rare, and because of the scarcity of material the various interesting and important experiments which have suggested themselves in the last few years have not been possible.

Tumor Immunity.—Ehrlich (1906) as a result of his studies on the question of immunity to tumor implantation, brought forward his well-known theory of athrepsia, which may be stated briefly as follows: A tumor in order to grow continuously in an animal requires certain specific substances which permit of this growth, the nature of these substances being entirely unknown; if they are not present the tumor does not grow; when they are exhausted the tumor undergoes spontaneous regression. Like so many of Ehrlich's theories, whether right or wrong, this has led to a very large amount of important work on the nature of the resistance to tumor growth. At present, however, it is generally held that the athrepsia theory is not the best explanation of the phenomenon of resistance but that the process depends upon the vascularization of the graft by the blood-vessels of the host. If this does not occur the tumor does not develop.

This phase of the problem has been most thoroughly examined by Russell in Bashford's laboratory, and additional work has been done by Woglom and Burgess. To these workers the immunity seems to be directed against the chemotactic influences exerted by the cancer cell upon the connective tissues of the host. There must be present in the resistant animal, either in the circulating fluid or in the tissues, something which inhibits this chemotaxis, although all attempts to determine the presence of this active cell poison have been inconclusive. It is certain that this anti-substance is not very active, for the cancer cells continue to retain their proliferative power for seven to ten days in an immune animal. At the end of this time the cells begin to die, and the graft becomes surrounded by an inflammatory exudate which impairs the nutrition. The peripheral extension of the tumor cells ceases, central necrosis occurs, and ultimately the entire mass undergoes necrosis and absorption. Da Fano (1912) has called attention to the fact that in regressing carcinomata a large number of plasma cells and lymphocytes were found in the tissues about the growth, and he thought that the immunity was in some way correlated with the presence of these cells, a point which Murphy later used very effectively.

Heredity.—In 1911 Murray of the Imperial Cancer Research Fund published the results of careful studies on highly inbred strains of mice, two groups of which had been selected: one in which a recent ancestor was cancerous, that is, the mother or one or both grandmothers or all three was cancerous, and the other in which no cancer had occurred in either the mother or grandmothers. Comparing the offspring of these two groups, it was found that in those of cancerous ancestry eighteen per cent. developed tumors in later life, whereas in those with non-cancerous ancestry only eight and six-tenths per cent. bore tumors. Actuarial discussion of the statistics led Murray to the view that the disparity between the two groups was not due to chance, but, on the contrary, was significant, and that the increased liability to cancer was in all probability in the nature of a predisposition of one organ or tissue to undergo cancerous transformation under conditions as yet not understood. These observations have been extended by Tyzzer, Leo Loeb, and Maud Slye. The results obtained by Miss Slye and by Loeb confirm Murray's conclusions, but the subject still needs a great deal of study. Apparently not all groups of mice can be bred so as to show cancer heredity; this is possible only with certain strains. Miss Slye thinks that even organ liability can be transmitted; that is, that by suitable breeding a susceptibility to a tumor of a given organ may be carried down to succeeding generations, but this statement needs much further confirmation, both from the author and from some independent source.

The statistical study of human cancer has as yet given us no reason to think that heredity plays any part in the occurrence of the growth.

Conditions of Metastasis.—The variation observed in the metastatic spread of neoplasms has always excited a great deal of interest, two somewhat conflicting views being held: one, that the extent and relative liability to metastasis are dependent on purely mechanical factors only, the size of the cells and the vascular relationships; the other, that the soil in the various organs differs in its suitability.

Tyzzer has shown recently that massage of a tumor greatly increases the number of metastases, an observation strengthening the first theory; while careful comparison of the susceptibility of different organs by inoculation tends to show that there is little or no variation, provided the tumor cells are deposited in proper amount.

Explants or Tissue Cultures.—That tissue cells may grow independently of the body has been known since 1906. This property of cells was made use of by Lambert and Hanes (1913) to show, first, that tumor cells will grow in the plasma of alien species, though no growth is obtainable in the tissues of such a host; and, secondly, that tumor cells grow just as vigorously in the blood of animals immune to the tumor as in that of those free from such inhibiting powers. This demonstrates that tumor immunity is not due to antibodies present in the circulating blood.

Chicken Sarcoma.—Peyton Rous of the Rockefeller Institute in 1910 discovered in a Plymouth Rock hen a large tumor of the right pectoral muscle. Inoculations of this growth into other hens resulted in the obtaining of a single large secondary mass. Further transplantations were more easy, and the tumor is now an extremely malignant sarcoma which forms metastases all over the body with the greatest rapidity and kills the inoculated animals in from fourteen to eighteen days, growing in practically all of the animals inoculated. It is a sarcoma with small spindle or fusiform cells, and is usually extremely well vascularized. It does not now form nodular masses, but gives rise to a diffuse infiltrative growth throughout the organs which it involves. Metastasis takes place through the blood-vessels. The point of especial interest about this tumor is that when the growth is ground up and passed through a Berkefeld filter No. 5, which is impermeable to the *B. prodigiosus*, the resulting fluid is capable of giving rise to a new tumor when inoculated into a susceptible fowl. The same is true when tumor tissue, after being ground and dried, is inoculated, and even also when the tissue is suspended in 50 per cent. glycerine. After heating to 50° C. for fifteen minutes, the tumor will not grow in vitro, but such heated material when inoculated into susceptible fowls gives rise to growths. The obvious interpretation of the phenomena just mentioned is that the tumor is transmitted by an invisible and filterable virus. No parasite can be demonstrated, however, in ultramicroscopic preparations, even though the filtrate is capable of giving rise to tumors when injected. On the other hand, it is not possible to immunize against this tumor by the injection of embryo skin or whole embryos. This is, however, not an absolute proof that it is not a tumor of the ordinary type, because immunity can not be produced against all varieties of tumors. Another curious fact is that no complement fixation is found in the blood of chickens carrying this tumor when the tumor itself is used as an antigen. This points somewhat to the fact that there is no parasite present. We evidently have here a tumor of an entirely different type from anything known in human oncology.

Heterologous Transplants.—Murphy (1914) having noticed that the growth of tumors of the mouse and rat in chicken embryos was halted at the period when development of the spleen and bone marrow began, conceived the idea of attempting heterologous transplants in adult animals in which the lymphocytic reaction of the tissues had been inhibited by preliminary treatment with the *x*-ray, basing his premises also upon the work of Bashford and Da Fano and Roux, who have shown that in regressing tumors a great collection of lymphocytes and plasma cells occurs about the graft. In rats treated with the *x*-rays, he was able to grow mouse carcinoma for thirty-two days, apparently confirming many of the previous suggestions that immunity to tumors lies in the tissue rather than in the serum.

Nematodes as a Cause of Cancer.—Borrel has long believed that certain parasites are related to the occurrence of cancer; and Haaland has also stated that nematode worms are frequently present in breast tumors of mice. The scientific world was greatly interested, therefore, when Fibiger reported (1914) that he was able to produce tumors of the rat stomach by feeding certain nematodes which are parasitic in the cockroach. These tumors, as a rule, do not extend beyond the walls of the stomach and involve only the portions covered with squamous epithelium, but in several cases it was thought that there were metastases in the lungs or lymph-nodes; apparently, however, no attempt was made to transplant the tumors and the observation must remain as unconfirmed. Experiments in my own laboratory with the feeding of cockroaches which were known to contain the nematode in question have not resulted in any very marked hyperplasia of the gastric mucosa, and, in fact, far greater hyperplastic growth, with invasion of the submucosa and muscularis quite corresponding to the tumors which Fibiger reports, has been produced by the continuous irritation of the mucosa of the stomach with certain chemicals. These results cast some doubt on the specific nature of the parasitic irritant, which Fibiger assumed. Some of those who have seen Fibiger's sections doubt, also, the metastatic nature of the lung growths, believing rather that they represent heterotopic epithelium from the nearby bronchi. If, however, Fibiger's tumors prove to be actual malignant growths, this will be one of the very important examples of our ability to produce at will, by chronic irritation, a tumor corresponding to the well-known *x*-ray carcinomata, of which many examples have been seen in man and a few in animals, notably in some experiments of Clunet, after continuous irritation with the *x*-ray.

Theories of Neoplasia.—Much of the immunological investigation in cancer has been based upon the assumption that there is some close correlation with the facts of bacterial immunity. On the contrary, however, the conditions which permit bacteria to flourish are actually just the opposite to those under which tumor cells can grow in the tissues. Bacteria are active invaders of the host tissues, either fluid or solid, and act as antigens, often growing in spite of the development of a large number of antibodies which may or may not ultimately destroy the parasites. The tumor cells, on the other hand, are not parasitic in their incipiency, but rather commensals, acting parasitically on the host only when the growth exceeds a certain volume. If the tumor cell excited an immune reaction at its inception it would be destroyed, as any aberrant body cell is by lack of nutritional supply owing to the fact that vascularization does not occur. Epithelium placed in the peritoneal cavity of an animal excites a reaction which results in a prompt destruction. A group of tumor cells, on the other hand, excites no reaction, but is soon vascularized, and, hence, survives. Both types of cells grow with ease in the plasma of the

animal whose tissues have rejected one form and cared for the other; hence, the conditions of growth are not dependent upon the body fluids, but upon the tissue cells themselves, the condition being not a positive reaction against them, but rather the occurrence of vascularization which permits the cancer cells to establish themselves. The normal cells, on the other hand, incite a reaction which leads to their destruction, and it is, therefore, impossible to produce a tumor by the injection of normal epithelium, glandular structures, or connective tissue cells.

Treatment.—A few words will suffice to sum up all that we know as regards treatment of carcinoma. No simple chemical or complex organic body seems to have any permanent influence on tumor growth. Colloidal metals, autolysates, and bacterial toxins, have not the slightest curative power in carcinoma either of man or of animals. A combination of selenium and eosin, so widely vaunted by v. Wassermann, has failed to fulfill its promise. Physical agents, such as *x*-rays and radium, have some actual power, but only in the superficial or less malignant forms of tumors. That early operative excision is still the best therapeutic procedure is shown both by animal experiments and by clinical experience.

Thus, despite the most painstaking experimental study, the garnering of thirty years' work shows a surprisingly small harvest, not at all comparable with the amount learned during the same time concerning bacterial and tissue immunity. The problem seems much more difficult owing to the many variables always to be considered in working with so highly specialized and susceptible a cell as that of mammalian cancer, and because reactions following the implantation of tumor cells into the tissues are wholly different from those following the introduction of bacteria or simpler cells, such as red blood corpuscles. In fact, the striking phenomenon is that they do not produce any of the ordinary immune reactions, perhaps because they grow only in a host of the same species, for when introduced into another species, immune bodies of a non-specific nature only, exactly comparable to those induced by normal cells, are produced.

THE TRANSITION OF GASTRIC ULCER INTO CARCINOMA AND OF GASTRIC CARCINOMA INTO ULCER.

A DISCUSSION FROM THE CLINICAL AND PATHOLOGICAL ASPECTS OF THE SUBJECT.

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Clinicians of conservative critical judgment and broad experience have taken the statement by American and English surgeons that carcinoma of the stomach originates on the basis of a pre-existing gastric ulcer in from 66 to 71 per cent. of the cases with unavoidable scepticism because their experience must have taught them that usually cases of gastric ulcer under proper treatment heal perfectly, and when they can be observed 10 to 20 years afterwards no history of secondary consequences can be elicited.

In a recent communication A. Billeter,[1] who gives a report of 116 observations of the surgical clinic at Zürich, refuses to interpret a cancer that developed 10 years after the history of the healing of an ulcer as a secondary cancer. This conception should appeal as rational to every objective thinker, for 10 years is too long a time to permit the correctness of the argument that a possible development of cancer might still be due to the ulcer that had healed a decade previously or due to a scar. It is just as likely that the cancer was a primary one developed independently of the scar. The proof of an etiological connection between the two conditions can clinically be given in only a small number of cases.

This subject can be studied by four methods: (1) Statistical method (in the manner advocated by Quetelet[2] and De Candolle[3]). (2) The method of long clinical observation after operation of gastroenterostomy, the ulcer remaining *in situ*. (3) The method of many years of observation and of study of cases, after treatment by rest, diet, internal medication, and duodenal feeding. (4) Method of pathological histology.

The Question of Carcinomatous Degeneration of a Chronic Gastric Ulcer.—According to Prof. Dr. G. Hauser of Erlangen,[4] the opinion that a chronic gastric ulcer may degenerate into a carcinoma has been admitted by different pathologists and clinicians as based on the wide anatomical similarity of many carcinomatous ulcers to old typical gastric ulcers. It was partly based on a clinical observation that the carcinoma may be preceded by a more or less prolonged period of symptoms which are characteristic of a simple gastric ulcer, but the majority of cylindrical cell or adenocarcinomas of the stomach give no such anamenesis.

According to Hauser it cannot be denied that, notwithstanding the great anatomical similarity which exists, this is not sufficient ground upon which to base a probability of a secondary development of carcinoma on a primary gastric ulcer. An exception to this statement is found in the partial carcinomatous degeneration of a cicatrix. There are a number of cases in literature in which no sufficient reason existed in the clinical history to vouchsafe the secondary development of a carcinoma on the basis of a gastric ulcer. This question is of the greatest importance not only for the chronic gastric ulcer, but also for the entire theory of cancer.

It was desirable to investigate whether characteristic evidences could be found by histologic examination which were sufficient to establish with certainty the pathogenesis in such cases.

The following is mainly an abstract of the convictions of C. Hauser, with whom the author has personally conferred and who has made this special subject of pathology his life's work. This question was studied in a former paper, with the result that there exist distinctive histological signs that indicate the secondary carcinomatous degeneration of a previous ulcer, *provided that the cancer has not proceeded too far.*

The following signs seem to prove the secondary character of a carcinomatous degeneration: (1) The muscular coat at the edge of the ulcer is curled or rolled up. The outer border is separated by a well-defined line of demarcation from the remaining floor of the ulcer. (2) The carcinomatous infiltration of the floor of the ulcer is only partial.

This appearance of the muscular coat is characteristic of large and deep simple chronic ulcers which permeate the entire stomach wall. This ulcer can only form if the submucosa is still elastic and unchanged, and provided that the muscular layer has not been bound down by carcinomatous

infiltration, which transforms the entire stomach wall into a rigid inelastic mass. This view was generally endorsed later on.

Ernst Adolph Schmidt,[6] in discussing the report of Hirschfeld on the "Relation Between Gastric Cancer and Ulcer," ventured to suggest as follows: "I cannot deny that it is difficult to decide whether gastric ulcer means the primary, and cancer the secondary, process in cases where, at post-mortem examination, we find more or less extensive ulcers the size of a 25-cent piece, which are surrounded by an area of carcinomatous infiltration and which occupy the periphery of the carcinomatous growth. We know definitely that such a loss of substance can occur in a very short time, in one or two days (Schmidt admits even a shorter period). The possibility of such an extensive carcinomatous infiltration of the stomach wall arising in so short a time may be granted, but has not been positively ascertained. Schmidt thinks the carcinomatous tissues more vulnerable, that they decay more readily, and once an ulcer has been formed the healing process is far more retarded than in an area where the infiltration takes place at a later period. Schmidt and Hauser do not exclude the possibility that a proportion of ulcers, interpreted as carcinomatous, must be explained in just a contrary way as was customary until now. If such is the case the relation becomes more defined and speaks more in favor of a causal coincidence. Hauser remarks that for the development of an ulcer the period required for its formation may be shorter than two days. An artery of the stomach being occluded or cut off by any cause from the general circulation the immediate result is necrosis and hemorrhagic infarction of the area in question. Therefore, the ulcer can develop as rapidly as the digestion of the necrotic area advances, which process can hardly require more time than the digestion of an ordinary small piece of meat."

The carcinomatous infiltration requires a much longer time than one or two days. No one has ever reported such a rapid course in cancers visible to the eye, no matter how malignant. Only in ulcers running an extremely chronic course has a secondary carcinomatous degeneration been observed. This applies particularly to cases in which for mechanical reasons the healing process is rendered exceedingly slow and difficult or impossible. These ulcers are located usually at the pylorus (small, deep, crater-like with steep ascending edge, undermined borders, or large ulcers strapped down by adhesions with other organs—pancreas most often found adhering to stomach).

Both types of ulcers show marked chronic inflammatory proliferation of the adjoining submucosa and of the interstitial tissue of the muscular coat, the latter being generally hypertrophied considerably in the region of the pylorus. The clinical course in such instances is very chronic. Secondary carcinomatous degeneration of scar tissue, though admitted as a possibility, is very infrequent.

The question raised by E. A. Schmidt, whether a supposedly secondary carcinomatous degeneration of a simple chronic gastric ulcer cannot also be interpreted as originating in the reverse manner, viz., that an ulcer may result as a consequence of the autolysis of preceding gastric cancer. I have myself observed one such case for eleven months, where the chemical and microscopic findings and gastroscopic examination spoke for cancer, but the eroded area is becoming smaller and smaller (under duodenal feeding) and now looks like an ulcer under the gastroscope. Operation was refused, the patient is gaining weight.

The question of malignant degeneration of a gastric ulcer is, clinically speaking, of the greatest importance. The hyperacidity, although formerly thought of great importance for the etiology and symptomatology of gastric ulcer, is not now considered of so great importance, according to Kayser.[7] Yet complete loss of free HCl in cases of chronic gastric ulcer must occur extremely rarely.

Clinically, such cases of chronic gastric ulcers which have developed from a pre-existing carcinoma are exceedingly rare. *The combination, however, of separate and distinct cancer together with ulcer in the same stomach is possible,* and Hauser reports such a case of a woman 63 years old with no free HCl, distinct lactic acid in a fasting stomach and after a test breakfast. In that case a combination of a scirrhus carcinoma of the stomach with *two* recent peptic ulcers was found, one a carcinomatous ulcer (macroscopically and microscopically).

The continuation of a cicatrix in one place and an adenocarcinoma 5 inches from it in the same stomach was observed by me in 1898 (University Hospital), and in a second autopsy the occurrence of a cicatrix 1½ inches from the pylorus and a cylindrical cell carcinoma in the middle of the lesser curvature. These cases demonstrate that gastric cancer can occur simultaneously with scars and that the latter are not necessarily places of predilection.

Adenocarcinomata have been pictured limited to the submucosa where no break of the cylindrical epithelium nor of the glandular layer overlying them was detectable. Such carcinoma also cannot be conceived as arising from ulcers or scars, where no trace of these can be found. (See also similar conditions of sarcoma in the *Archiv für Verdauungskrankheiten*, May 1914, p. 179.)

The history of Hauser's patient was negative until a few weeks preceding death (anorexia and dyspeptic symptoms). It cannot be denied that the scirrhus cancer followed a slow development, probably lasted several months before any clinical manifestations were obvious. Both simple ulcers, one a perforating ulcer in this case, must have been formed only a short time before death and arising from hemorrhagic infarction and thrombosis of the gastric vessels. It must be striking that, notwithstanding the lack of free HCl, these two ulcers could develop so rapidly; perhaps this was due to a specific peptic ferment found in carcinomatous growths (O. Neubauer and Fischer[8]).

The questions which arise from such an observation are difficult to answer as to (1) whether the ulcer found in the area of the scirrhus and those two simple peptic ulcers were formed simultaneously, or (2) whether the first ulcer, carcinomatous in nature, had existed previous to the formation of the peptic ulcer.

The lack of any inflammatory infiltration at the border and at the bottom of the ulcer which Hauser describes is not convincing proof that the ulcer had been formed just recently. Based upon my own experience with carcinomatous ulcers of the rectum, which, according to clinical observation, existed for a long time, an inflammatory infiltration can be entirely absent, not only in the floor of the ulcer

but also on the surface. Only in the recesses of the ulcer, where no stagnation of the intestinal contents could take place, a more pronounced inflammatory irritation and infiltration could be observed. Hauser concludes that the carcinomatous ulcer existed for some time previous as a "torpid" (?) ulcer, but that in different spots in the border of the ulcer *small necrotic areas must have developed, probably simultaneously* with the other simple ulcers, and very likely all these were due to the same cause. Such a statement is corroborated by the small microscopic brown sloughs in the recesses of the ulcer; furthermore, the recent necrosis in the upper layers of the bottom of the ulcer and in the border of the adjoining mucous coat, as well as by the capillary congestion. *In this case we have not only fresh typical peptic ulcers existing with an already formed carcinomatous ulcer, but also within the area of the latter fresh necrotic defects have been formed.* On the pathological findings of this case Hauser endorses the conception of Schmidt that seemingly secondary cancer development in association with a chronic gastric ulcer is explainable in a reverse method, and he believes this explanation is justified, namely, the ulcer is the result of the cancer.

The question arises, How can a differential diagnosis be made? Cases as these described offer no diagnostic difficulties with regard to existing relations between both processes. Notwithstanding the topographical relations between the simple ulcer and the cancer, if, as in Hauser's case, the peptic ulcers show all characteristics of recent formation, then it is evident that the cancer must have existed a long time before the simple ulcer has been formed. Doubt may only arise in cases in which, after the formation of a fresh ulcer on a carcinomatous basis, the patient remains alive long enough to give time for the development of changes in the ulcer which no longer permit us to ascertain its age in relation to the carcinoma.

According to the location of this type of gastric ulcer, two possibilities have to be considered, namely: (1) The peptic ulcer has been formed in the center of an already existing carcinomatous infiltration, or (2) the peptic ulcer has been formed at the border of a pre-existing carcinomatous area.

In the first instance—namely, where the hemorrhagic sloughs have been cast off—*even though extensive cancerous infiltration of the bases of the ulcer is evident, Hauser considers a decision as to which was the primary cancer or ulcer impossible.* This is true even if the ulcer present in every particular resembles a simple gastric ulcer. So Hauser attributes the greatest importance to persistence of hemorrhagic infarct sloughs, long enough to be recognized by the pathologist. These sloughs arise from the hemorrhagic infarcts that are formed when the gastric ulcer has its origin. Once they have disappeared *no decision as to the combination and relation of ulcer and cancer is possible.*

Within the area of the stomach wall which is involved by deep carcinomatous infiltration the formation of a typical peptic ulcer never occurs, as the arrangement and distribution of the vessels supplying the stomach wall in the location also undergo changes which will bear upon the outspread of the carcinomatous infiltration and of the carcinomatous stroma. The typical form of the peptic ulcer at the beginning is dependent upon the form of the normal blood vessels and vascular distribution. Thus an ulcer of typical shape—that is, a circular ulcer with well defined borders, crater-like or funnel-shaped, situated in the center of a carcinoma, even with complete carcinomatous infiltration on the bottom of the ulcer—rather favors the theory of a secondary carcinomatous degeneration of a preceding simple ulcer than of a carcinoma complicated by an ulcer.

It must be admitted that an ulcer may secondarily arise from a deep-seated loss of substance within a flat carcinomatous area which reaches as far as the submucosa, or as far through as the internal layer of the muscularis. The floor of the ulcer may appear, for some time at least, exempt from carcinomatous infiltration, analogous to the condition where a chronic gastric ulcer degenerates by a secondary malignant process.

If we encounter only small ulcers within an extensive carcinomatous infiltration, we are forced to admit that the ulcer has been formed at a later period, for in cases with secondary carcinomatous degeneration of small ulcers the carcinomatous infiltration must have completely involved the entire bottom of the ulcer a long time before the carcinoma has spread toward the periphery. Hauser states that he has not met such cases personally.

If we have to deal with an ulcer answering the typical form of a peptic ulcer, where the bottom shows no carcinomatous tissue and in which is found only a small degree of carcinomatous infiltration that can be detected near the margin, particularly in more extensive ulcers, we can admit that an originally simple ulcer has degenerated secondarily into cancer, for the interpretation seems unnatural and forced that a typical peptic ulcer should have formed just in the center of a carcinomatous area, so that only a small marginal zone of carcinomatous infiltration would remain. This would also indicate that previously a simple ulcer existed and that the carcinomatous degeneration along its borders took place at a later period. In both instances one may incline to the opinion that a simple chronic gastric ulcer existed at first, per se, and was eventually invaded from one side by a carcinoma immediately adjoining it. In the case of deep ulcers, as have been described repeatedly, a very characteristic sign is presented, namely, the appearance of the muscularis at the bottom of the ulcer.

Considering the second possibility, that a peptic ulcer may develop independently of a neighboring carcinoma and right from the start, it might be located within the area of carcinomatous infiltration, or it may happen to be developed so close to the carcinoma that this, during its further outspread, may extend to the border of the ulcer. Three histological possibilities are now acknowledged: (1) A gastric ulcer has developed from a pre-existing carcinoma. (2) A carcinoma has developed secondarily from a pre-existing gastric ulcer. (3) Both carcinoma and gastric ulcer, or scar, may occur in the same stomach simultaneously, with no traceable pathogenic relations between the two conditions. When an ulcer is either located from the start within an area of carcinomatous infiltration or so near to a cancer that this readily can extend to the border of the ulcer, then in both cases we are dealing with a simple chronic gastric ulcer, the edges and base of which have become infiltrated with extending cancer, and there can be no doubt that the *ulcer arose secondarily from an already existing carcinoma.* If, under such anatomic conditions, we are dealing with an

extensive carcinoma, there can be no doubt that *the ulcer developed secondarily from a cancer that already existed.* For, considering the peculiarity of growth of carcinomas, it is impossible that a cancerous infiltration arising from the edge of a simple chronic gastric ulcer could etxend only to one side and leave the base free.

To Hauser's knowledge, no such cases have been discussed in literature. His case described before, however, speaks in favor of such a possibility, for if the patient had lived for a longer time after the formation of the ulcer, the further outspread of the cancer would have reached the floor of the ulcer. He admitted the possibility that the tough connective tissue of the base of an old ulcer may offer a greater resistance to the progression of cancerous infiltration than the adjoining tissue at the margin of the chronic ulcer. Cases, however, where only a *small* carcinomatous proliferation is found in the border of an old and more extensive ulcer may be interpreted as ulcers with *secondary carcinomatous degeneration.* This is even more true of such cases in which different sections of the border show a carcinomatous change of the mucosa where the degenerated glands have penetrated into the submucosa, notwithstanding the fact that the bottom of the ulcer may show no carcinomatous change whatever.

Doubtless a secondary formation of cancer must be admitted where a carcinomatous infiltrated area is found in the case of an old linear scar, as in an hour-glass stomach. It is altogether excluded that a peptic ulcer has been formed within a primary cancer, which ulcer could extend further than the cancer. Also, the possibility may be excluded that within a carcinomatous infiltrated area a scar could be formed which extended further than the malignant area. Such a formation of scar tissue never takes place within the area of a cancer of the mucous membrane. Hauser describes having seen quite a number of scars in which cancer has developed.

Therefore, in the majority of cases the anatomical condition and the microscopical examination, whenever the cancer infiltration has not proceeded too far, enable us to obtain reliable evidence for the judgment and interpretation of such conditions, i.e. whether secondary carcinomatous degeneration of a chronic gastric ulcer, or whether a secondary condition of peptic ulcer with a pre-existing carcinoma exists. This is true, provided that the carcinomatous infiltration has not gone too far, which is the case, as a rule, where the tumor mass already exists.

We have to consider that a *combination of carcinoma with ulcer is exceedingly rare*, otherwise one should find peptic ulcer more frequently associated with carcinoma. The simultaneous finding of scars cannot be considered, as these may have existed a long time before the development of a cancer. Clinical observation also points with great certainty to the possible development of a carcinoma arising from a pre-existing ulcer, although a definite diagnosis of a gastric ulcer may be quite difficult. For instance, a case observed by von Leube and described in Hauser's monograph on "Cylinder-Epithelial Carcinoma" must be interpreted in a similar way (case 37). In this case symptoms of a chronic gastric ulcer (three years previous to operation hematemesis and occult blood in the feces) existed. In the course of the operation (resection) a deep ulcer, as if punched out with a tool, was found answering the typical form of chronic ulcer, with only a small extent of carcinomatous infiltration. Also, two lymph glands with carcinomatous infiltration were encountered. Any other interpretation than that of a secondary cancerous degeneration of an ulcer is impossible in this case, for a gastric cancer, especially of the type of a simple cancer in its transition to a medullary cancer, as ascertained by histological examination, in this instance becomes fatal within two years. The case of *ulcus carcinomatosum* of the stomach described by Hemmeter and Delano Ames[10] had been under clinical observation from June, 1895, to February, 1897, when life was ended by a supervening phlegmonous gastritis with perforation.

The six macroscopic and microscopic drawings (by H. Becker) published in this article demonstrate adenocarcinoma developed on the basis of a pre-existing gastric ulcer.

Based on statistical tables concerning the frequency of ulcers and cancers in different cities, Hirshfeld concludes that no connection exists between chronic gastric ulcer and gastric cancer. Hirshfeld[11] writes: "It is evident from these tables that in three cities, Zurich, Munich, and Vienna, gastric ulcer occurs with equal frequency and about 3 per cent. of all patients entering hospitals for treatment are affected with it. In Berlin and Hamburg, in which places similar conditions prevail, this rises to 7 per cent. There are about twice as many persons in Hamburg and Berlin suffering from gastric ulcer as in Zurich, Munich, and Vienna. We could expect that gastric cancer would be found twice as often in the postmortem reports of Hamburg and Berlin as they are found in the autopsy records of Zurich, Munich, and Vienna. This, however, is not the case, for from numerous publications it is evident that gastric cancer occurs with a somewhat smaller frequency in Hamburg and Berlin than it does in Zurich, Munich, and Vienna."

Oberndorfer[12] published statistics based on a careful investigation, according to which gastric ulcer has been found not only in 3 per cent. but in 7 per cent. of all cases examined, and particularly found in the 5th to the 7th decade. Based upon these statements, Hauser is inclined to consider the statistic tabulation of Hirshfeld as weakened. But a comparison of the ages at which death occurred in Hirshfeld's and Oberndorfer's tables will explain the discrepancy.

Oberndorfer[12] published statistics coming also from the city of Munich (Krankenhaus Links der Isar), in which he endeavors to show that gastric ulcer occurs with a much greater frequency in Munich than Hirshfeld indicates. Oberndorfer gives the enormous number of seven per cent. (7 per cent.), which I am disposed to doubt, for in Oberndorfer's statistics there is no punctilious regard for age of the deceased, and if we take principally the fifth to the seventh decennium, in which Oberndorfer's cases happen to fall, there must necessarily be a larger percentage of gastric ulcer than if the deaths from the age of 30 years up to 80 are taken as Hirshfeld's "Age and Case Statistics" demonstrate.

Kayser[7], in his interesting examinations collected in the clinic from von Müller on gastric ulcer, reaches a conclusion similar to Oberndorfer's. He concludes that ulcer may pursue a latent course, that it is more frequently present than it can be recognized clinically. I fail to appreciate how a "latent" course of gastric ulcer should figure in this

scientific discussion, for cancer can also occur in a latent manner and there can be no criterion how frequently either condition may be *latent*, for the very word "latent" means that the condition is not recognized.

Kayser also insists that all previous statistical data of the pathological anatomy of gastric ulcer are subject to criticism, as sometimes ulcers and their scars together, at other times the cicatrices alone, have been considered in these statistics. He points out that a single stellate scar can be entirely overlooked at autopsy, and statistics which either consider or do not consider such a possibility must differ considerably and, therefore, must present a different value. It depends whether such statistics have been based on old postmortem reports from autopsies done by others and collected by inexperienced examiners, or whether the man who compiles the statistics has himself for years paid special attention to gastric ulcers proper and to scars arising from such conditions, and whether they have been properly emphasized in the protocol.

The question of further and great importance is what clinical significance has to be attached to the secondary carcinomatous degeneration of a chronic gastric ulcer and whether such a condition is frequent or only very seldom and exceptional, compared with the proportion or frequency of gastric ulcer. The positive interpretation as in the reported case, whether a secondary carcinoma developed as a consequence of a preceding chronic ulcer, is not easy, as it requires a minute and careful examination, and such a degree of expertness and knowledge in pathologic histology that has not been evident in all cases published in literature. Unless such broad experience in the reporter is evident his work offers an opportunity for criticism. The answer to that question according to Hauser's present knowledge (1911) cannot yet be given.

Considering the following points, the decision whether a cancer can secondarily develop (*a*) within the border of a chronic ulcer, or (*b*) from the floor of an old scar tissue of an ulcer, these conclusions are only possible in recent stages of carcinomatous development. Further, Hauser thinks that as the chronic gastric ulcer is more frequently present than can be diagnosed clinically, we can logically conclude that the carcinomatous degeneration of a chronic gastric ulcer or of a scar must in reality be more frequent than it is ever possible to ascertain by pathological, anatomical or clinical observation. The fact that peptic ulcer and gastric cancer show the same places of predilection with regard to their seat would suggest that such a topographical relation between ulcer and cancer of the stomach is by no means a rare one. This sentence was written by Hauser in 1910, but in a letter he wrote to me (Hemmeter) in 1913 he states that *it is impossible to decide from a small piece obtained at operation whether a gastric carcinoma has arison from a pre-existing peptic ulcer or not.* And as a great many opinions as to the pathogenesis of gastric cancer are based on examination of such small pieces gained at operation, they fail to carry conviction.

The statistics from the surgical clinic of Zurich published by Billeter[5] show conclusively that ulcer of the stomach rarely metamorphoses into cancer.

Opposed to the communications of American and English surgery, according to which a large percentage of gastric cancers are believed to have originated on the basis of a preceding gastric ulcer, we find the following conclusions of German authors: Billeter[5] has tested surgical material of the clinic of Professor Krönlein and subjected the postoperative history of 116 cases that were operated on for ulcer of the stomach to a most thorough critical investigation. They were cases that were operated by Krönlein from 1888 to 1910. The shortest period of time that had elapsed was four years, although some were seen 26 years after the operation. The operations were simple gastroenterostomies (not excision). Of the total number seen, 19 died, but 87 patients are still living without any sign of carcinoma. Of the 19 patients that died only 2 suffered from gastric carcinoma. Only one of these cases, however, was secondary, the other was a primary cancer. This one showed a cancer of the omentum, that had developed from a primary cancer of the stomach. In ten patients in which there was a suspicion of cancer of the stomach during operation, complete recovery resulted. *So in the total number of* 116 *cases of ulcer of stomach operated, only one reacted with a secondary carcinoma.* According to this investigation, *one is not in duty bound to establish as a therapeutic principle the resection of gastric ulcer on account of any subsequent danger from carcinoma.*

Not every scar in the mucosa of the stomach can be attributed to a previous ulcer, for there are wounds of the gastric mucosa due to trauma by shell pieces from oysters, eggs and fish bones, which never acquire the conformation and characteristic appearance of peptic ulcer. The typical gastric ulcer is in great majority a consequence of obstruction, stasis in, or spasm of one of the terminal arterioles of the gastric artery. The tissue of the territory supplied by this little artery then undergoes necrobiosis and is destroyed by the proteolytic enzyme and the HCl of the gastric juice. The improvised peristalsis referred to as *stasis* above may be due to neurogenic causes (vagotonia). Ernst Adolf Schmidt[6] has made clear to us how an abnormal, deranged and impaired peristalsis may act as a cause of gastric ulcer.

This digesting dissolution may occur just as *quickly* as that of any other small particle of protein substance placed in active gastric juice, *i.e.*, in a few hours. Carcinomata develop, as a rule, when there is a very defective gastric secretion or none at all. The disintegration of a cancer is due to an autolysis by enzymes inherent in the neoplastic cell. Physiologic and chemic tests indicate that these cancer enzymes are not near as active, nor even so continually present, as HCl and pepsin in gastric ulcer. Hence a cancer must require a much longer time to disintegrate, to resemble the form of any ulcer, than it requires for the development of a typical peptic ulcer. Only such losses of gastric substance should be termed peptic ulcers which in addition to a characteristic clinical history present also the typical funnel-shaped appearance and the terracing of the ulcer bed, which, as I stated, is due to the nature and form of distribution of the supplying artery that is in some way obliterated. To assume that disease of the supplying artery is the immediate cause does not necessarily exclude disease of the vagus (excessive vagotonus), or even the action of the toxins (for example, toxins absorbed from skin burns or the sepsin of Edwin S. Faust) of a purely chemic or bacterial origin, for all of the neurogenic or chemic causes may lead to spasm or disease of the arteries of the stomach.

If scars are blamable always as causative of cancer, I fail to understand why the scar left after excision of an ulcer should not also be considerered as an etiologic factor. I have frequently observed scars in the stomach of patients at autopsy, the authentic clinical record of whom gave the history of typical gastric ulcer for many years previously. In some of the most accurate records 18 to 30 years had, in individual cases, elapsed between the period of clinical signs and symptoms of gastric ulcer and death, due, not to any consequence of ulcer, but to intercurrent other diseases (pneumonia, accidents of puerperium, septic infection, etc.). Evidently gastric scars can exist for 20 to 30 years without giving rise to cancer.

Synopsis.—Personal cases studied from 4 to 25 years after medical treatment—614 total number.

Two hundred and thirty-two cases treated medically from 1884 to 1910 and either personally reexamined or examined by reliable physicians and reported by them. Of these 232 only three gave a history of operations for carcinoma.

The following are the questions which were submitted to each physician who was in charge of my patients at the time this investigation was made:

What was your body weight before the operation, and now?

What was the previous history?

What has been the clinical history since the operation?

What is your general condition?

What are the results of examining the functions of the stomach secretions, peristalsis, and absorption?

Have you eructation, vomiting, pains in the stomach, hematemesis?

Have you ever been under medical treatment since the operation?

By whom? What was the diagnosis? What did you complain of? Send the opinion of your physician.

In view of the arguments presented by Billeter in the preceding, and secondly based on the statistical studies from German cities, and thirdly on my own personal experience extending over twenty-five years, I am of the opinion that whilst ulcer of the stomach may be a possible cause of cancer, it is a rare cause. In Billeter's experience not over once in 116 cases of ulcer of the stomach, and in my own experience, three cases of cancer in the later history of 232 cases of gastric ulcer observed during twenty-five years.

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CARCINOMA OF THE STOMACH.*

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IN 1911 I reported in abstract a series of cases of malignancy of the stomach, with excision, since which time I have removed the greater portion of the stomach for malignancy in thirty additional patients. Pylorectomy for benign conditions was done in quite a number of patients. As this subject deals with malignancy, no note will be taken of the non-malignant excisions.

Palpable tumor is not a non-operable entity—in fact, palpable tumors are frequently more operable than those not palpable—but a palpable tumor is then a case of sufficiently advanced malignancy to modify our preoperative prognosis as to extension of life. A palpable tumor is to-day not the essential to diagnosis as formerly. To-day the *x*-ray, while not positive in all patients presenting carcinoma, is nevertheless quite an aid in diagnosis and a means, frequently, to an end in diagnosing malignancy quite early. Again, an apparently fixed tumor on palpation may be justifiably operable in the fullest sense of the word—that is, removable with a fair show of non-recurrence, due to the fact that many of these tumors are fixed by adhesions primarily due to inflammatory exudates. Again, removable from the standpoint of low mortality and definite extension of life, with freedom as to recurrences from months to years.

These statements, while possibly strong, are borne out many times in operations. Again the tumor, its fixity, and the general condition of the patient must be considered as factors to prevent at least exploring the abdomen. Furthermore, the apparent site of the gastric tumor, with relationship to the surgical zones of the abdomen, should not retard our suggesting exploration, as a tumor of the pylorus, etc., is often so free, by means of its long attachments, as to allow great excursions of the affected part to the zone usually occupied by the greater curvature, etc. Again, the tumor may occupy the central portion of the stomach, with a perfectly free or patent pylorus—simulating thereby, in its area of occupation, the greater curvature of the stomach or even its fundus.

Adhesions to the pancreas, necessitating removing a thin slice of this organ, are also within the pale of operative procedure with perfect success. In my first report, I sliced the top of the pancreas twice in fourteen patients, with recovery in both. This procedure was carried out in several of my later thirty patients.

I have removed the transverse colon four times with the stomach; three of these were for metastases or contiguous involvement, while the fourth, my first transcolectomy, was due to an injury—operative infliction, to the colica media. The last patient, from whom I removed the entire transverse colon and four-fifths of the stomach en masse, was a youth of twenty-seven years, with recovery. This case will be reported clinically in the *Annals of Surgery*, under the transactions of the New York Surgical Society, for March, 1915.

If we wait for all the diagnostic factors, signs, etc., of carcinoma of the stomach to be present, we can then operate only upon patients presenting a palpable tumor. Unfortunate as this statement is,

*Read before the Medical Association of the Greater City of New York at Forest Hills, April 5, 1915, and the Plainfield Clinical Society at Plainfield, N. J., April 20, 1915.

it carries with it the argument that our analyses of symptoms and stomach contents are yet at fault for the rendition of a perfect diagnosis. Again, this indefiniteness in many patients is the frequent reason given for not urging an exploratory operation.

This leads me to quote Graham, of Rochester: "The satisfaction that may follow an exact diagnosis does not justify us in prolonged observation. The chief factor to be considered is what we owe the sufferer." As a result of exploration we are in a position to relieve the anxiety of the patient and his family, if the result be non-malignant; and to relieve him of his vicious and undesired tenant or to modify his suffering, should the result be malignant.

Being aware then of the indefiniteness of the symptoms of this disease in a fair percentage of the patients coming to us for diagnosis and treatment, and receiving doubtful or indefinite assistance from the physiological and chemical laboratories, in the same proportion, in justice to the patient, to ourselves, and the family physician we must demand, in this percentage of applicants for relief, exploration.

There is great possibility of carcinoma being present in the patient who complains of stomach difficulty for years; who gives a history of having had ulcer of the stomach some years previously, or even an active ulcer history at the time he presents himself.

Then we must consider the food intake pains; vomiting of food one or more meals back, *i.e.* retention or cumulative vomiting; blood in the vomitus; blood in the stools; loss of weight; rapid diminution of hemoglobin; marked prostration, etc.

Rectal examination should be made in all suspected patients for Blumer's shelf. This condition, described by Blumer of Yale, consists of a sharp shelf-like process just above the prostate; felt on digital examination in the male; and a process in the female about the cervicocorporeal portion of the uterus in Douglass' cul-de-sac. This shelf is due to a secondary deposit or metastasis. When this process is present it predicates futility as to an operative result and should condemn operative procedure.

The various food tests, by which we gain a knowledge chiefly of stagnation and obstructive retention, should be sought for in the history, and frequently this information is volunteered by the patient while giving his history.

The chemical analyses, while not of the great importance assigned by many, nevertheless are important factors when considered in the general symptom complex. Thus, absence of free hydrochloric acid and presence of lactic acid are very strong factors in enabling us to arrive at a conclusion. It must be remembered that hydrochloric acid may be present even in excess in carcinoma, and particularly so in those patients in whom we find a former gastric ulcer, with carcinoma as a direct resultant. This type of carcinoma has been rated as being found in from 40 to 60 plus per cent. by various authors; hence the patient who gives a history of ulcer of the stomach extending over a period of years is a suspected, if not already, cancer subject.

The patient, whose stomach findings include the Opler-Boas bacilli, is, as a rule, one with marked carcinoma development. The very presence of Opler-Boas bacilli, although indicating as above stated, "distinct or marked carcinoma," does not, by far, preclude the patient's being in the operative class. Unfortunately, the carcinomata involving the cardia are at present most discouraging lesions to the operator, as here we have not only the difficulties of the position as to operative feasibility to overcome, but also the high mortality accompanying the various types of operation performed at the present time, necessitating prolonged anesthesia under various pressures, and also in the majority requiring a transpleural route.

With the low mortality rate attending so serious an operation as partial gastrectomy, one naturally would or should prefer the operative risk, with an outlook of from a year's relief to a cure, in preference to retaining so undesirable and vicious a tenant, with the continuous and increasing suffering and the positive outlook of death, if not removed.

Age has no bearing upon the possibility of a persistent gastric illness being carcinoma; I would state that of forty-four excisions four were under twenty-nine years of age; the youngest had just passed his twenty-sixth birthday.

In observing the patients after gastrectomies, one is impressed with the absence of shock, and also with the response that these patients make. The recovery is exceptionally speedy and may be attributed to numerous causes, as cessation of hemorrhage; removal of sloughing, ulcerating areas—thereby checking the absorption of toxins produced by these processes; the proper emptying of the stomach, etc., etc.

The after care of these patients is not more difficult than in an ordinary gastroenterostomy. Personally, I allow these patients water after twelve to twenty-four hours, in one to two ounce doses; this is followed or alternated with albumen water or strained broths; on the second or third day, broths and milk; on the fourth and fifth, selected softs or semi-solids; and on the eighth and ninth, selected or ordinary diet. This type of patient craves food from the moment his stomach is at rest, following the operation, usually at the end of the first twenty-four to thirty-six hours.

It may be necessary to wash the stomach during the first twelve to twenty-four hours for acute dilatation, etc. No hesitancy for doing so should occur. Careful introduction of the tube and four to six ounces of fluid used, has not met with a single accident in numbers of such instances, either in excision or in simple gastroenterostomies.

Operative Procedure.—Under the head of radical removal one considers any of the various types of resection of the stomach commonly performed, chief among them being the Billroth No. 2 operation, partial gastrectomy with pylorectomy—adding to it, of course, the necessary posterior gastroenterostomy.

This operation, at the present date, has been modified very much by Polya and Reichel (see *Progressive Medicine*, pages 93-94, June, 1912), who published their methods some three or four years ago. This operation was very ably described and illustrated by Dr. Will Mayo, in a recent issue of "Surgery, Gynecology and Obstetrics."

The method of procedure in the Polya operation is as follows: The duodenum is severed after the usual fashion between clamps; the distal end turned in; the stomach is excised, going well beyond the malignant process. Instead of doing the closure of the proximal end of the stomach, as in the Billroth resections, Polya made a direct anastomosis between the jejunum and the proximal end of the stomach, doing away thereby with the added pos-

terior gastroenterostomy. After the stomach has been excised, the proximal portion, or the remaining part, in other words, is anastomosed by first of all attaching to it the jejunum, which has been passed through a rent in the transverse mesocolon in the same manner as the jejunum is passed through it during the ordinary gastroenterostomy. The jejunum is sewed to the posterior wall of the proximal end of the stomach, within a quarter or half inch of the point at which the clamp used in the excision has been placed. After the peritoneal apposition suture has been completed, the clamp on the proximal end of the stomach is taken off, and the jejunum is opened in line with the stomach, extending practically the full length of the width of the stomach—having previously applied clamps to the jejunum and stomach to prevent soiling. Should the length of the stomach opening be far greater than one desires to open into the jejunum, then the sewing together of the end of the divided stomach and the opening of the jejunum is accomplished by shirring the edge of the stomach, suturing so as to take in more of the stomach wall in each suture bite than is taken in the walls of the jejunum. The subsequent rows of sutures and apposition of tissues are made the same as one does in doing a posterior gastroenterostomy. Subsequent to the anastomosis, the stomach is sewed to the rent in the transverse mesocolon. This operation obviates, as before stated, the making of an additional posterior gastroenterostomy and limits the operation considerably in duration—in addition to limiting the operation in duration it also limits the exposure of the peritoneal cavity to infection; again, it limits the possibilities of hemorrhage by one-third.

I am quite satisfied that, after this operation has been tried by the general operator, he will forego all previous types of anastomosis between the jejunum and the stomach in this and other conditions requiring excision of the stomach.

Palliative operations are those operations which are performed where the conditions found at the time of the exposure of the abdominal contents are such as to prevent one continuing the radical operation, as: excessive glandular involvement; excessive wall involvement; fixation, etc., etc. These operations consist of either a gastroenterostomy, anterior or posterior placed, or a jejunostomy.

Anterior gastroenterostomy is done in those instances in which the stomach cannot be rotated sufficiently to place a posterior gastroenterostomy in healthy tissue. I am of the belief that all cases in which a posterior gastroenterostomy can readily be performed should be subjected to an excision. Anterior gastroenterostomy is also done in those instances in which it is absolutely impossible, owing to the conditions of the stomach wall, to resect or do a posterior gastroenterostomy, and also in those patients in whom the condition as far as physical outlook is concerned would negative a resection.

This operation may be performed either by slipping the loop of the jejunum up through the entire transverse mesocolon and attaching it anteriorly, or by making a long loop, anteriorly, and placing it in direct contact with the stomach wall—adding usually an enteroenterostomy to prevent a vicious loop.

Jejunostomy is an operation which is very prone to be followed by very pronounced leakage, no matter what care is taken. These patients as a rule are very markedly emaciated and in an exceedingly poor physical condition. It is an operation that I have heretofore looked upon purely as one for euthanasia, except one considers that now and then a tumor, apparently inoperable, is likely to prove largely inflammatory or irritative, and is imposed upon a small carcinoma. By means of a jejunostomy the patient's condition may improve markedly, and a subsidence of the inflammatory or irritative material occur to such a degree that a radical removal might be possible.

I fear that many of us, as operators, have not been giving the full benefit of the radical operation to our patients, because we fear an added mortality, or because we feel that we are not sufficiently developed in our surgical technique to cope with the conditions that are found.

I am quite sure that at the present date I am accepting for radical removal more and more stomachs which, in my earlier days, I would have looked upon with a great deal of question as to whether or not I should do but a palliative operation or close the abdomen without any visceral operative procedure.

60 West Fifty-second Street

A PLEA FOR THE RATIONAL TREATMENT OF CANCER.

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Many cases of undoubted cancer, both primary and recurrent after operation, are on record which have disappeared entirely and remained absent under a complete change of diet and mode of life, with more or less of proper medical treatment. Multitudes of cases are known everywhere in whom the disease has recurred, with terrible severity and death, even after the most complete removal, by the most competent surgeons, of very early lesions diagnosed as cancer, some of which proved to be only adenoma, microscopically.

The enormous mass of laboratory studies which have been recorded has added thus far very little to our knowledge of the real nature and cause of cancer, and really nothing to treatment, except to advocate the surgeon's claim of the right to remove instantly everything suspected to be cancer or "precancerous"! Surgery has striven, more and more actively of late years, to stem the rising tide of mortality from cancer, but, alas! the Mortality Tables of the United States show the futility of this means, for the death rate from this disease has risen over 25 per cent. since 1900.

Laboratory researches have rendered, however, a valuable service in connection with cancer, by the negative results obtained, so that the ground is pretty well cleared for a proper understanding of the real nature and cause of the disease. Thus, all are pretty well agreed that cancer is *not* due to a parasite, *nor* contagious, that it is not strongly hereditary, *nor* due wholly to local irritant action, that it is *not* altogether a disease of old age, *nor* belonging to any particular occupation, and that it does *not* affect any special sex, race, or class of persons: cancer exists all over the earth, but with striking differences in frequency, according to certain peculiarities in diet and mode of living, associated with advancing civilization.

The exclusion of the various suspected causes of cancer by the prolonged study of many trained

laboratory and other workers along the lines mentioned leads the thoughtful person to inquire if there is not still some line of possible etiology which has not yet been fully explored; for assuredly there is some actual, physical cause for the aberrant action of originally normal tissue cells, which we call cancer. There is nothing mysterious about the disease, except that thus far its real cause has eluded laboratory workers, but which clinical workers have long suspected and suggested without much, if any, effect on the profession, so enamored has it become of surgery, and so insistent and loud have been the claims for a wholly local origin and nature of the disease.

But the failure of surgery to make any appreciable effect on the morbidity and mortality of cancer, as already mentioned, and the exclusion of all other possible causes, naturally leads us to look to a faulty metabolism, which has to do with such a multitude of other human ailments, and the deeper we search the laboratory and other studies which have been made regarding this, the more clear does it appear that it is along these lines we shall find the true means for the prevention and cure of cancer.

It is quite impossible in a brief article to present the evidence in which this statement is founded, which has been developed pretty fully elsewhere,* and it must suffice to concisely state the principal points.

Cancer has been found definitely to increase with the spread of modern so-called civilization along the lines of luxury and attending indolence. This has been observed especially in the over-consumption of meat, coffee, and alcohol, as proven by statistics.

Many have recorded changes in the urine which indicate imperfect metabolism, especially of nitrogenous matter. Careful daily studies of the urine, both in the very earliest stages of cancer and late in the disease, show a very marked failure of elimination by this excretion, the solids being often not one-half of that called for by the body weight of the individual. Careful observation will also detect a great failure in intestinal elimination, in both the very early stages of the disease and all through its course. So true is this that Sir Arbuthnot Lane has declared that cancer may be one of the late results of intestinal stasis. This probably operates through the poisonous action developed by the millions of microorganisms formed in the large intestine, indican being not an infrequent urinary exhibit. It has been shown that cholesterin is also an important element in connection with the genesis of cancer, and there is strong evidence that derangement of the endocrinous glands is associated with the production of this disease.

It is quite true that the exact metabolic disturbances, or the actual blood state, inducing and perpetuating cancer, have not as yet been demonstrated, and perhaps they never will be. But it has also never been shown exactly how cancer begins, or when a benign tissue becomes malignant, as Ribert has said "no one has ever seen the beginnings of mammary cancer": both aspects of the question, the constitutional and the local, rest on clinical grounds, and not a shadow of proof has ever been presented that the lump which we call cancer is purely local in character.

On the other hand the constant tendency to a recurrence of the disease in the same or other locations, even after the most complete removal of the local lesion and surroundings, and the continued depression of vitality and degeneration of the blood, all point to something more than a local disease; they all show a constitutional cause which induced the original stasis and degenerative action of tissue in some particular locality which was unduly irritated, probably the site of an "embryonic rest," that is, a heterologous tissue ready to revert to reproductive life. This latter would seem to be the starting point, inasmuch as the tissues in general of cancerous subjects heal kindly, and, after injury on various portions of the body there is little or no tendency to tumor formation.

Even the occurrence of metastases accords also with the view of a constitutional disorder. For after surgical operation the patient is invariably left uncared for, as far as any attempt to alter the dyscrasic condition which engendered the disease, and very naturally the transference of cancerous elements by the blood or lymph stream produces a local condition which the vitiated blood current develops into a fresh local lesion.

The apathy of surgeons to medical suggestions of their own distinguished members, past and present, is very surprising, but not less so than the practical disregard of cancer by physicians. One finds the strongest expressions in regard to the constitutional relations of cancer by Lambe, Abernethy, Willard Parker, Sir Astley Cooper, Sir James Paget, Esmarck, Sir Arbuthnot Lane, and others; and finally Dr. William J. Mayo, in his recent president's address before the American Surgical Association, asks, "Is it not possible, therefore, that there is something in the habits of civilized man, in the cooking or other preparation of his food, which acts to produce the pre-cancerous condition?"

And yet there has been relatively little serious attempt to investigate this line of thought or to test the principles underlying the metabolic theory of cancer, in its relation to diet and mode of life, as influenced by so-called civilization. While the microscope and laboratory work on animals have undoubtedly advanced the science of medicine prodigiously, they seem to have reached their limit in regard to cancer. Their negative conclusions, however, have paved the way for the medical man, through clinical study and physiological chemistry, to reach the real basic cause of the disease in the activities of system as a whole, as influenced by diet and mode of life.

This plea is made, therefore, with the hope that the matter may be thoroughly investigated and tested, and that it may result in a more rational treatment than the present one of attempting only to remove the *product of the disease*, the local tumor, while the cause of the formation of the malgrowth remains still active. Only by a rational treatment of the cause can we hope to restrain the steady increase of cancer, and to reduce its frightful mortality of 90 per cent. of those whom it has once attacked.

531 Madison Avenue.

*Bulkley—Cancer: its Cause and Treatment, New York, 1915.

Osteochondritis Deformans Juvenilis.—Brandes points out that this disease is not identical with arthritis deformans. It affects chiefly the hip. The pathognomonic symptom is the normal degree of flexion of the latter together with a pronounced limitation in abduction. The condition must be differentiated from coxa vara and coxitis.—*Medizinische Klinik.*

ORGANOTHERAPY IN CHRONIC DISEASE WITH SPECIAL REFERENCE TO ITS POSSIBILITIES IN CANCER.*

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THE treatment of chronic disease, at best too often a difficult and unsatisfactory matter, has been considered by so many physicians so many times that further reference to the subject may seem to be almost out of place, for already there is an overwhelming number of papers and many books concerned with the advantages of all forms of treatment of chronic disease, from the surgical removal of presumably offending organs to the Emanuel Movement, and including other more or less useful methods such as hydrotherapy, electrotherapy, psychotherapy, serotherapy, autotherapy, and, most recent of all, the intestinal short circuit as suggested by Sir Arbuthnot Lane.

The mere fact that disease has been present for more than the proverbial forty days and that a good percentage of chronic invalids perambulate from one doctor's office to another, as well as the suggestion already made that many widely differing forms of treatment are advanced more or less enthusiastically from time to time, seem to be convincing evidence that the treatment of chronic disease is still an unsolved problem and hence worthy of persistent study.

This evening it is proposed to consider another fairly well known phase of therapeutics and to urge its more frequent application to the indefinite and chronic disorders, many of which have not the dignity of a name and others of which are classed, rightly or wrongly, under the name of the principal symptoms, chief among these being neurasthenia. It does not seem advisable, at this stage of progress, to make any hard and fast statements, hence all that may be said here to-night will be purely suggestive, the prospective value of such procedures as may be mentioned being left to the judgment of those who, being convinced of the reasonable basis outlined, may be sufficiently interested to put them to the test.

There seem to be fashions in medical matters just as there are in dress or art. If I am not much mistaken it is beginning to be the fashion to study and write about the internal secretions. A number of books have appeared on this subject. I even plead guilty to having written one on the therapeutics of the internal secretions. There are, without the least exaggeration, thousands of papers on the various phases of this fascinating subject published in practically every quarter, chiefly however in French, Russian, and Italian.

All this is as it should be, for from all sides come words of commendation and evidences of profound interest, and every interested physician that I have had the pleasure of meeting in half a dozen different countries has manifested an unwonted enthusiasm in his investigation of this subject—it breeds enthusiasm, for so often we stumble across the most startlingly wonderful things which when they are first published abroad are usually greeted with the smile of scorn, just as were Roentgen's remarkable rays, or Marconi's equally amazing discovery, or Alexander Graham Bell's wonderful invention, by which all of us have profited so much. Sir William Osler told me only a short time ago when I visited him at Oxford that surgery had been having its innings for the past ten years or more and it was time for medicine to have its turn and probably the "bat" would be the internal secretions of the ductless glands. For instance, what surgical discovery excels in its scope and wonder the many-sided usefulness of pituitary extract?

In these days of advance in physiological and pathological research we have gradually accumulated a fair knowledge of the series of organs which were until recently almost entirely unknown. We have learned that the ductless glands or endocrinous organs exercise an intimate control over metabolism and the cellular activities, that this is in all probability brought about by definite chemical substances produced in these organs and conveyed from them to others by means of the blood and lymph—the "hormones," so named by Starling in 1902—and, best of all, that it is possible to secure from animal glands certain active hormone-bearing substances in a more or less pure state which are available in the treatment of disease.

We cannot stop to consider the occasional statements to the effect that organotherapy is a fad, or that it is still in its infancy and hence not worthy of more than passing consideration, and that much more work will have to be done before the subject reaches a really practical stage. Those who manifest such sentiments invariably make their statements without deliberation and due consideration of the facts. None can deny that certain of the ductless glands produce extremely active principles which have an equally active influence in the control of normal as well as morbid phenomena. We have only to recall the influence of thyroid extract in myxedema, epinephrin in local hemorrhage, or pituitary extract in labor to realize that there are sufficient inducements to delve more deeply into the study of the extracts of these organs, as well as of others known to be concerned in the maintenance of what is now termed "the hormone balance."

This factor deserves much more consideration than it is possible to give it this evening, for the delicate balance brought about by the interrelation of the internal secretions is concerned in the maintenance of essential health none the less than in the production of deviations therefrom. I am going to propound what I believe to be an axiom—it is impossible for an individual to manifest the results of chronic disease without a corresponding disturbance in some or all of these hormone-producing organs. Further than that, I believe that many of these intractable symptoms-complex, to which it is sometimes so difficult to give a suitable name, are often aggravated by a disturbance in what has been termed the "altruistic function" of the cell. I will explain: Campbell considers that cell activity is properly divided into the egoistic and the altruistic cell functions. The former consists in the maintenance of individual cell activity, while the latter concerns the supply to the organism as a whole of certain services, probably brought about by the hormones, such as are exemplified in the numerous functional relationships between organs. This altruistic function is of extreme importance, for the cell itself may seem to all intents and purposes quite healthy and yet still gravely fail in its altruistic functioning—a failure which, small though it be, may suffice to disorganize the delicate hormonic

*A paper read before the Medical Association of the Greater City of New York, February 15, 1915.

balance. Granting, then, that chronic disturbances are associated with general cellular inactivity and that in certain conditions this deprives the body of essential stimuli, it must be obvious that the effective treatment of such conditions must include a consideration of the ductless glands and of means capable of reestablishing the normal production of these essential chemical messengers.

One of the most common disorders in which so-called "pluriglandular insufficiency" is evident is neurasthenia, in which there may be no positive evidence of defective action of a gland or series of glands. It is obvious that in the majority of such cases there must be a disturbed endocrinism, for it is hardly reasonable to suppose that in an individual with prominent manifestations of half-speed function, such as constant fatigue on slight exertion, defective oxidation as evidenced by low urinary solids, nerves that are easily set "on edge," circulation that is poor, with cold, clammy extremities, and not infrequently reduced tension, ambition and mental powers much below par, and the like, the production of the essential chemical messengers is not reduced just as are all the body activities. This being the case, pluriglandular therapy not only serves to replace, in however slight degree, the missing secretions, but favors an increased production of them by the homostimulant action already referred to.

Theoretically this sounds very plausible and practically it has been found to work very nicely. Pluriglandular therapy is undoubtedly empirical, for in the class of cases under discussion at least, there is no definite proof as to which of the ductless glands is deficient and to what extent. For this reason it has been ridiculed by some who forget that nine-tenths of our present therapeutics was at one time purely empirical, while a good share of it still has no positive scientific basis. A procedure that has secured results before may do so again, hence it is worth trying. This is the present position of pluriglandular therapy, and it is believed that the successes already obtained are an earnest of what is in prospect.

Another important series of chronic conditions which must at least be mentioned in passing are the functional neuroses and psychoses, many of which are now earmarked as resulting from or being intimately associated with disorded secretory action of certain of the ductless glands. In a recent paper in the *American Journal of Insanity*, Murray Auer concludes that the glands of internal secretion mutually influence functional activity and the occurrence of insanity at puberty and adolescence, after severe physical and mental strain, and at the time of the menopause (all periods when the metabolic changes of the body are intense), and the occurrence of syndromes unquestionably the result of disease of the endocrinous organs, insanity, idiocy, debility, mania and dementia, suggest strongly that the true etiology of the affective psychoses lies in functional disturbances of the glands of internal secretion.

Many of the problems of the medical gynecologist have a purely endocrinous origin, and the metabolic disturbances of women constitute a large class of chronic diseases in which organotherapy is an extremely useful measure. Substitutive organotherapy is an every-day measure of the most progressive gynecologists and the subject is far too large to discuss here. The value of the extracts of the corpus luteum in ovarian hypofunction, as well as the homostimulant action of the same substance in less serious conditions, is becoming increasingly apparent. Pituitary extract is now used in a great many cases of this class, not merely for its obstetrical virtues but as a means of reestablishing a disturbed balance in cases like amenorrhea and certain forms of dysmenorrhea.

One of the most neglected organotherapeutic remedies in gynecological practice is the extract of the mamma, about which I cannot refrain from saying a few words. Briefly, the mamma is also an internal secretory organ and is the direct antagonist of the ovaries, hence extracts thereof may be of value in the control of conditions due to superactivity of the ovaries. The principal among these are menorrhagia, metrorrhagia, and uterine fibroids. I know the surgeons will disagree, but the fact remains that functional uterine hemorrhage (not due to foreign bodies or organic conditions) is frequently controlled better by a course of mammary extract than by any other means and there is a rational physiological reason for this benefit. A number of Russian investigators have shown that the use of mammary substance is of extreme value in many cases of fibroids and those who may be especially interested in this subject might with advantage read a paper which I have prepared for a Special Internal Secretion Issue of the *Woman's Medical Journal* for March, 1915. Suffice it to say that enough evidence is gathered together there to warrant the use of mammary extract for a period before operative procedures are taken and the aggregate results are sufficiently good eventually to bring this method of treatment into much higher esteem and frequent usage.

You will note that I have said nothing about the use of thyroid extract in the chronic and well-known conditions associated with thyroid deficiency, nor can I take time to outline the advantages of pituitary extract in those equally chronic conditions of hypopituitarism. In fact, organotherapy is principally useful in chronic disease, anyway, and to consider the matter as thoroughly as the subject deserves would keep us here for weeks.

We now come to the second and perhaps the more important part of this paper—the relation of the glands of internal secretion to cancer and the possibilities of organotherapy in this condition. This is neither the place nor the time to discuss the physiological basis of cancer or to speculate upon the how or why of this disease. We may, however, enumerate several promising and quite thoroughly substantiated theories: (1) Cancer is a chronic intoxication; (2) its incidence evidences the lack of an element in the blood which permits cell proliferation at a point of particularly lowered resistance; (3) it is essentially a disease of senescence or, as Hastings Gilford has termed it, "cell senilism."

Seven or eight years ago many hopes were raised following the publication of the results of work done by Dr. John Beard of Edinburgh, and quite an impetus was given to the study of organotherapy in cancer because of the fact that trypsin was then brought forward in medical and, unfortunately, lay magazines as "worthy of immediate trial in the behalf of the many persons to whom it offers a possible chance of escape from an otherwise inexorable fate." Seemingly the attention of the public was drawn prematurely, for there has been no remarkable reduction in the mortality statistics nor do any of us here consider that pancreatic ferments are more than an incidental measure of relief in cancer.

It must be admitted, however, that Beard's work

virtually inaugurated a more enthusiastic and searching consideration of organotherapy in cancer and while we have advanced many steps since 1905 we must not be satisfied yet. In the words of a recent writer: "We have survived too many hypotheses in regard to this elusive disease to accept further generalizations however plausible they may be at first inspection of the evidence; yet we are always glad to recognize every scintilla of a new suggestion which may furnish a welcome guide to progress."

With the foregoing in mind it may be well to collate a number of ideas which indicate a relationship between the incidence of cancer and ductless gland disorder, so that we may use them as a foundation for possible lines of treatment in this direction. They may also serve as a basis for explaining the not infrequent reports of the good results from organotherapy in cancer which are to be found in the literature.

We know that cellular activity is influenced by the hormones, or chemical messengers, that nutrition responds in a greater or lesser degree to their influence, and that it is possible to favor the reaction of the body against disease by the ingestion of certain organic extracts. The first question which naturally suggests itself is: Is not cancer more than a chronic disease such as the more benign metabolic disturbances previously referred to? Is it possible to influence by means of organotherapy an unquestionably organic condition when the action of the endocrinous principles is supposed to be upon function rather than upon structure? Undoubtedly no form of internal medication at present known will destroy or remove the fundamental organic conditions pathognomonic of cancer, but it is entirely possible that the resistance of the sufferer from cancer may be increased to such a degree that other measures in common use may be backed up by an increase in the responsiveness of the cells and a general enhancement of nutrition.

Some individuals, for reasons at present only premised, present a special receptivity to the implantation and growth of cancer cells. Why this should be so and just how the cells become implanted is not for us to consider here, although it is a very fascinating subject and will, I believe, some day be thoroughly elucidated. I think it will be found to be much more intimately concerned with the internal secretions than is at present generally believed.

Clinically, the one essential symptom of cancer is waning cellular activity. Almost invariably nutrition is poor and with few exceptions cancer is limited to individuals past the prime of life, a fact which indicates there may be a direct connection between the activity of those organs of internal secretion whose work ceases at this period and whose action is no longer needed. Experimentally it seems to be proved that there is a basis for the idea that the susceptibility to the implantation of the cancer cells is in some way related to the gonads and evidence of this is to be found in the investigations of Sweet, Corson-White, and Saxon of Philadelphia, who found that when tumors were transplanted into animals (mice) which had previously been castrated the frequency of the establishment of the cancerous implant, as well as the rapidity of its proliferation, was much more noticeable in the animals thus rendered more susceptible.

If we admit that an important factor in all cancer cases is chronic cellular intoxication, then obviously a part of the treatment consists in favoring the activity of the known detoxicating organs as well as removing all nidi of further trouble, chiefly, of course, in the alimentary canal. The thyroparathyroid apparatus is intimately concerned in the destruction of toxins and it is not remarkable to find a number of references in the literature to the fact that in cancer subjects the thyroid is usually found to be more or less atrophied. Parenthetically, it may be remarked that thyroid hypofunction is very much more common than until recently has been believed, and it is entirely possible for the thyroid cells to be seemingly normal from a pathological standpoint and yet be failing very materially in the production of those substances which are responsible for the carrying out of the "altruistic work" of this gland. Of course there has been considerable opposition to any theory which definitely connected the thyroid with this disease for thyroid therapy will be found to have practically no influence at all upon cancer.

The association of intestinal fermentation, however, has long been observed in cancerous individuals and has even formed the basis of several theories as to its etiology. One of the well known manifestations of the cancerous cachexia is achlorhydria and the resulting digestive disabilities. For this reason I recommend as a reasonable organotherapeutic procedure in all cases of cancer the attempt to reestablish the activities of the digestive glands by the administration of secretin. This alimentary hormone, secured from the duodenal walls, is a physiological means of stimulating the functionally inactive glands of the pancreas, liver, and intestines. Another sound reason for this particular adjunct measure lies in the fact that the absence of HCl from the stomach removes the normal stimulus to secretin production, since prosecretin is converted into secretin and released from the duodenal walls only by contact with the acid chyme, which is practically always absent in cancer. Further, since the action of secretin is not limited to the digestive glands themselves, but also distinctly favors the production of secretin in the duodenum itself, its value should be doubly evident, and the advantages accruing from the enhanced digestion resulting from this procedure reduce the toxemia normally present in cancer and at least must be considered one factor, even though a small one, in the treatment of this disease.

The second of the postulates previously set forth suggests the absence from the body of a certain element, or series of elements. Just what is missing from the blood of the cancerous is not yet well known, although the work of Abderhalden and those his research has stimulated indicates a definite series of substances may be concerned in this matter. Weiss has gone so far as to show that serodiagnostic tests demonstrate an opposite behavior on the part of the serum from cancer patients and normal serum, and that this definite lack permits cancer cells to proliferate, principally at parts exposed to mechanical stress or irritation. He even suggests it may be possible to isolate from normal serum the element in question, the lack of which permits malignant proliferation, and utilize this in the prophylaxis and treatment of cancer. However near this may be to the truth, it will obviously be an extremely difficult matter to make practical use of it, at least to any considerable extent, and we must look still further for encouragement. This missing element, to my mind, will likely be found to be produced by the endocrinous system, and, since the

evidence already deduced indicates that this is not an unreasonable premise, the therapeutic possibilities are materially increased, for we now know with considerable certainty that when there is a functional hypoendocrinism or reduction in activity or service to the body of certain of the internal secretory organs, not only can the missing substances be replaced, but the semi-active organs may be stimulated by certain organic extracts in accordance with Hallion's law of homostimulation: "Extracts of an organ exert on the same organs an exciting influence which lasts for a longer of shorter time. When the organ is insufficient it is conceivable that this influence augments its action and, when it is injured, that it favors its restoration." Resulting from these and similar premises quite a number of attempts have been made to use organic extracts alone and in various combinations as a part of the treatment of cancer. While we have not yet found an ideal remedy, it seems certain that organic extracts do produce beneficial results of varying degree.

The spleen and thymus offer probably greater possibilities than many of the other glands, although I think that eventually the optimum preparation will be a pluriglandular extract containing these and other synergists. The therapeutic administration of spleen extract increases nutrition, of that I am quite convinced, and those who have followed the work of Bayle of Cannes in the use of spleen emulsions and extracts in the treatment of tuberculosis cannot but be convinced that there is good reason for his success. His report to the International Congress on Tuberculosis in Rome is extremely interesting. I have personally had a number of communications from this gentleman, as we have for some years been mutually interested in each other's work, and when the war started he was engaged in translating my book into French.

Bayle's explanation of the sometimes remarkable influence of spleen extract is based upon what he calls its "colloidogenic" action. His theory is this: The blood contains the mineral elements in two forms—(1) Those in a colloid state suitable for cellular appropriation, and thus not suited for elimination by the kidneys, and (2) the mineral cellular wastes, which are dissolved in the plasma, and are destined to be eliminated. If the colloid elements lose their colloidal form they are promptly eliminated and a condition of demineralization obtains. The capacity to maintain the mineral salts in a colloidal state is evidently of considerable importance, and, according to Bayle, seems to belong to the spleen. Bayle states that he has always found that splenic opotherapy quickly reduces an excessive elimination of phosphates in the urine. All of this deserves to be tested experimentally and clinically.

Now, there is undoubtedly a condition of mineral starvation in all cachectic states, including that of cancer. This has been frequently mentioned in the literature, and is referred to in an editorial in the *Journal of the American Medical Association* in the following words: "This is, however, little less than the metabolic story of partial inanition which attends the cachectic states which accompany so many chronic diseases. The demineralization, that is, the gradual and undue loss of all inorganic elements from the organism, is likewise not to be regarded as characteristic of cancer alone." This is admitted, for one of the principal manifestations of tuberculosis is this very condition, which explains Bayle's suggestions and his successful application of splenic-opotherapy in the treatment of tuberculosis. There is no reason, however, why the same fundamentals should not be applicable in the therapy of cancer as of tuberculosis, and this may be an explanation of the good results occasionally reported from the use of spleen extract.

Another gland frequently classed with the spleen, or at least with the lymphatic glands, is the thymus and more clinical work seems to have been done with thymus extract in cancer than with any other single extract. In 1907 Dwyer reported a number of cases that were benefited by this form of treatment and the more recent experimental researches of Rodenburg, Bullock, and Johnson, of this city, seem to prove that the products of the ductless glands are destined to play a certain rôle in our fight against cancer, and their recommendations include the use of thyroid, thymus, and other extracts as part of the treatment.

Some very interesting work in the study of cancer has been done by Dr. Seelye W. Little of Rochester, N. Y., and as a result of this he outlines certain facts which he has inferred from quite a number of clinical experiences. In the main his contention is that the reproduction of the reverted cell types in cancer is caused by the relative hypofunction of certain of the ductless glands and that to produce a cancerous growth such hypofunction must be primarily in an internal secretory organ derived from the same blastodermic layer as are the cells from which the cancer originates. As a result of this he suggests that mammary carcinoma implies hypofunction of some endocrinous organ derived from the ectoderm, since the breast is ectodermic in origin. He has also shown that the metabolism of sugar and calcium are intimately connected with the disordered nutrition of cancer and connects this in a very convincing manner with those glands which exert a vital relation to the metabolism of sugar or calcium or both.

Little's experiences are fascinatingly outlined in his papers published in the *Boston Medical and Surgical Journal* last year, to which the careful attention of every student of this subject should be drawn. His clinical findings warrant the use of several organic extracts, principally from the pituitary, parathyroid, adrenal cortex and the islands of Langerhans. In his most recent paper, in addition to emphasizing the value of sugar feeding in many cases of cancer, he has settled down to three ductless gland extracts as essential, one each for ectodermic, mesodermic, and endodermic cancer. For the first he uses total pituitary extract; for the second an extract of the adrenal cortex; and for the third an extract of the pancreas rich in the islands of Langerhans. All through his communications there is an underlying element of judicial research. He is not ultra enthusiastic and does not claim to have discovered a panacea for cancer. One cannot but believe from the clinical results of his work that he is on the right track and that the conclusions which may be drawn from some of the facts gathered together here this evening warrant the continued investigation by a much larger number of students of the subject, not only of the relations of the ductless glands to the incidence of cancer, but the use of various preparations of this nature in both prophylactic and direct remedial treatment thereof.

The third essential concerns the relation of the incidence of cancer to senility. We cannot deny that senility is the result of changes in certain of

the internal secretory organs and that by far the greatest cancer incidence will be found in individuals well past the apex of vital activities. Just as fungus growths are usually found on decaying trees, so the similar cancerous manifestations are evidences of senile decay. Dr. Hastings Gilford of Reading, England, writes occasionally on the various subjects connected with senility and the ductless glands, and while at times he delves deeper than I am able to fathom, he is undoubtedly correct in his theories regarding cancer, that it is essentially a form of cell senility. He says that "certain somatic cells become dead while the tissue around them is still in a state of comparative youth. They express their senility by returning to a more embryonic form and as they do so they increase in number, the faculty of proliferation being one of the manifestations of regression." We cannot go into the complex subject which this opens up. Suffice it to say that these senile changes may be presumed to be connected with disturbances in the hormone balance.

This brings us to the consideration of another important phase of this subject—whether it is possible to use these organic extracts as prophylactic agents. I think it may be, but it is very difficult to know how and when to begin, for usually patients suffering with cancer do not give us the opportunity of investigating their trouble until the disease is well established.

Dr. Robert Bell of London has written telling "How to Destroy the Cancer Scourge," and aims to do this by restoring the vital energies of the whole cellular structure by what he considers to be a suitable diet. Unfortunately, however, recourse to this diet does not seem to have become the fashion yet, and the scourge is not being destroyed. The cancerous individuals are always run down; they are in a state of receptivity to disease and are obviously sufferers from pluriglandular insufficiency. If this subject is more carefully studied—it is remarkable how extended are its ramifications and how practical are the resulting clinical deductions—the reasonableness of the pluriglandular therapy will be imminent. In the Special Internal Secretion Number of *The Practitioner* (London), published in January, I had the pleasure of contributing an article on "The Incidence and Treatment of Pluriglandular Insufficiency," and will quote from it a paragraph which has a bearing upon this subject:

"The advantages of pluriglandular therapy are essentially the advantages to be derived from the individual substances which are combined. Obviously such combinations are made with their synergistic action in mind. I have personally used small doses of antagonizing extracts with good results, because it seems that each of the substances stimulates the corresponding organs, thus increasing the hormone content of the blood as a whole and strengthening the chemical messages which are of such vital importance. A point worth emphasis concerns the capacity of the individual organ to respond to the stimulus of the corresponding extract. It seems established that 'the degree of stimulation exerted by the administration of the hormone-bearing substances is in direct ratio to the need for such stimulation, *i.e.* an extract is more efficient when a corresponding active principle is deficient in the body than when present in normal amounts. Hence in a combination of several extracts the principal action is the one which is deficient; that is to say, the more it is needed, the more useful it is.' "

In other words, suitable combinations of glandular substances may be given empirically where a more or less obvious deficiency is presumed. In such cases pluriglandular therapy is helpful whether they may be in the cancerous or even precancerous stage, and such procedures eventually will attain a much more extended usefulness. The whole subject is of fascinating interest and of undoubted practical value and therefore deserves to be studied with renewed vigor now that the subject of the internal secretions and hormones is beginning to receive the attention that its importance deserves.

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THE *X*-RAY IN CARCINOMA OF THE BREAST.*

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A PAPER on the subject of the Roentgen treatment of carcinoma of the mammary gland in this day should be rightly prefaced by an apology. For the presentation of anything that is new by this method is not the province of this paper; in fact, but little has been advanced in recent years on the subject that is not a rehash of the older procedures. As to the treatment itself, its place as a therapeutic measure after extirpation of the gland is too well known and its employment followed as a routine method to justify a defensive attitude as to the undoubted value of the *x*-rays.

I have endeavored to include in this paper only personal experiences in using the *x*-rays as a routine postoperative measure in mammary cancer, reporting only such cases as have been under my observation at a period previous to three years. In other words, in seeking material and making compilations for this series, I have only included such cases as were operated on previous to December 1, 1911, and in whom a radical operation was performed, followed by routine *x*-ray treatment. Perhaps three years is too conservative a period of time (although some of my cases extend back eight years) in which to record end results in this condition, inasmuch as five years, and more lately Dr. Maurice Richardson places seven years as the limit of safety as to possible recurrence. The pessimistic attitude of some surgeons that "once cancerous always cancerous," is not borne out by our more modern statistics.

My hospital and private practices record an experience of 92 cases of cancer of the breast, in which *x*-ray exposures followed operation. Of this number, I am unable to obtain the subsequent histories with the report of end results in 22 patients. This leaves 70 cases which can be reported after the elapse of the three-year limit, with the following results:

Dead	16
Living with recurrences	14
Dead of other causes than cancer	2
Living and apparently well	38

Of those reported living with recurrences five patients are still pursuing treatment with the rays; one patient who had kept up her treatments until a few weeks ago is practically moribund. Of those who are still living and apparently entirely well, two still keep up an occasional treatment. Patients having once undergone an operation for cancer are

*Paper read at a meeting of the Philadelphia Clinical Society, January 18, 1915.

probably rightly the most "scary" individuals in the world. The slightest thing will hasten them back to the surgeon or radiologist for an examination or treatment, and they are the most susceptible and gullible of any class of patients to the influence of the various cults and fads of medicine and surgery. The prosperity of the cancer quack and the so-called "plaster specialist" is confirmative proof of this.

These statistics may well bear further analysis, although all in all, the cases presented every variety of breast cancer, from the fairly benign adenocarcinoma to a fulminating medullary neoplasm. One case of so-called acute cancer occurred in the youngest patient of my series, a woman of 27, who from the time she noticed the primary growth, about the size of a small walnut, until her death with generalized metastatic growths of the abdominal viscera, only a period of four months elapsed. Two cases were in males, both advanced in life, one being 75, the other 66. One of these patients, the younger, died of a strangulated hernia; the other man is apparently well, although suffering from the infirmities of old age, as he is now near eighty.

In a review of all the cases operated upon at the St. Mary's Hospital, Rochester, Minn., up to 1913, E. S. Judd reports that of the 427 cases traced, 191 patients were living after three years, 19 were dead from other causes, 234 died from cancer, and in 27 cases there were recurrences at the present time. Forty-four per cent. of cases therefore have passed the three-year limit. Butlin in an analysis of 57 cases gives a ratio of over 50 per cent. of cures surviving without recurrences the three-year limit; Halsted's older statistics report over 50 per cent. of cures. In my series of 70 cases 53 per cent. have passed the three-year limit of safety. Even conceding the usually accepted dictum, that 20 per cent. of patients having safely passed the three-year period later have recurrences, the percentage of permanent cures of those treated at the present day is considerably larger than the statistics of the older surgeons—Banks, Estlander, König, Gress, and Bull—whose average of permanent cures is a trifle over 20 per cent. Probably the more favorable results secured in these later days is due to the fact that more radical operations are performed, and physicians by bitter experience have learned their lesson and are referring their patients to the surgeon earlier and before metastasis has occurred.

Conceding without question the universally adopted surgical axiom that all cases of breast cancer must be operated upon immediately, on even a presumptive diagnosis—even to discuss this is supererogatory—what is the rôle that the *x*-rays may be expected to play in the future therapeusis of the disease?

First, I believe the plan of a preliminary *x*-raying of the field previous to operation is now practically discarded, and yet the following abstract from an article on the subject by Hernon Johnson, appearing in the *Lancet* only last year, shows that our British confreres have not wholly abandoned the preoperative röntgenization of the field: "The commonly accepted dogma that operation should always take place immediately on the diagnosis of cancer ought to be subjected to fresh examination in the light of present knowledge. Surgical interference always involves risk of disseminating malignant cells. If all the cells of a cancerous growth are in a depressed state at the time of operation, there will always be less chance of establishing themselves at a distance in the face of normal opposition of invaded tissues. A very moderate amount of radiation is capable of producing a temporary depression in cancerous elements, three weeks' preoperative treatment being sufficient for the purpose. When pain and ulceration are present preoperation raying should be insisted on. The patient can in a few weeks be placed in a much better state to withstand operation."

The universal teaching, at least on this side of the Atlantic, is so opposed to these views—and probably rightly—that it is difficult to incline our views to delaying an urgent operation, in which procrastination means just so much further inroads of the disease, until, as Johnson puts it, temporary depression of the cancerous elements is produced.

Following operation how soon is it justifiable to place the patient under routine *x*-ray treatment? On the hypothesis—and it has not been disproved—that at operation some of the surrounding tissues have by traumatism been invaded by cancer cells, it would seem highly important to use the rays early and in large doses. If, as Leaf says in his admirable monograph on diseases of the breast, "recurrences always arise from cancer cells left behind at the time of operation," then to avoid further trouble it is essential to annihilate these cells of low vitality before they become potent for future mischief.

Patients recover usually sufficiently early from the shock of operation to permit *x*-ray treatment within a week. It is not the province of this paper to discuss the technical questions involved in the treatment. Sufficient to say that the breast is treated by the cross-fire method from four or five different angles; the axilla, the back, the supraclavicular area, and the opposite breast all being roentgenized. And on the basis of Handley's permeation theory in dissemination of cancer cells, I always routinely expose the epigastric angle to the full effects of the rays, hoping—very frequently, I admit, vainly—that abdominal visceral metastasis may be averted. A fairly hard tube is used, the rays are filtered through aluminum or leather and pushed to the limit of dermic toleration. This, the enthusiasts of *x*-ray dosology, to the contrary, can not always be accurately gauged, personal idiosyncrasy to the *x*-rays being somewhat of a factor, but careful supervision and watching will usually avert any serious consequence arising from a complicating dermatitis. Pfahler points out the danger of exposing the thyroid to the rays, producing thereby an artificial myxedema. He uses thyroid extract as a routine drug while the patient is under *x*-ray treatment. I have never encountered any thyroid complication of this nature in my cases, although it is well to bear the condition in mind. The theory that the loss of weight may be due to an athyrea is most probably erroneous, being due, in my judgment, to the inroads of the disease itself.

It is extremely difficult when to advise patients that treatments should be discontinued, as we never know when they are safely "out of the woods." In confirmation of this, Mayo's case of recurrence twelve years, Ransohoff's case of recurrence twenty years, and Matas' case twenty-five years after operation, may be cited. In a case uncomplicated by recurrences in which radical operation has been performed, I give routine treatments, using the cross-fire method up to the erythema dose for the first year, gradually diminishing the frequency of treatments in the second year to one every four or six weeks, and in the third year giving a prophy-

lactic raying of the breast and all contiguous structures once every two months. There is not much difficulty in persuading a patient who realizes the danger of her condition—and she should not be deceived or the seriousness of the disease minimized, as so frequently it is—such a patient is usually conscientious and persistent in following out her treatments.

When we come to a consideration of recurrences, we are dealing with a different and vastly more difficult problem. A nodula or lump appearing anywhere or at any time after the extirpation of the breast for cancer is a cause for alarm and calls for immediate and drastic action. Here surgery offers but little hope, the *x*-ray hardly much more. Either may for a time avert the fatal outcome, but at best the prospects are forebodyingly gloomy. True, occasionally—and this is indeed rare—we seem to be the victors over the cancerous onslaught, but at best it is but a temporary lull; the cancer army repulsed at one point finds a foothold somewhere else and treacherously invading numerous lymphatic paths—and to continue the military simile (it is the fashion these days)—lives on the country as it advances, and ultimately the invaded territory is entirely in the hands of the enemy.

Actual curing of a recurrent carcinoma is one of the anomalies of medicine, yet Pierce Gould reports such a case. in which despite repeated metastasis, the patient lived on for many years and finally died of some other disease. Autopsy disclosed that in the secondary nodules natural repair by fibrosis had occurred.

However, in a certain percentage of cases—alas, entirely too small—it may be possible for a time at least to avert the inevitable. Under the *x*-rays it is surprising how frequently these secondary nodules will melt down and to all appearances disappear; ulcerations granulate and apparently further carcinomatous inroads checked. A case exemplifying this is herewith reported:

Mrs. H. S.; æt. 45; widow; operated upon in the early part of 1908 by Dr. Louis Steinbach for a scirrhous carcinoma of the left breast; in August of the same year and without any visible or subjective evidence of the disease, she was referred for *x*-ray treatment and continued treatments faithfully until January, 1909; in May 1909, she came back for treatment of a lump about the size of a marble under the left axilla; in three weeks, during which time seven treatments were given, this had entirely disappeared. Three months later a lump which rapidly grew to the size of a small pigeon's egg appeared in the left axilla, somewhat posterior to the first nodule; this fairly melted down after three exposures to the *x*-rays; in June of the following year a series of eight or nine reddened bead-like nodules made their appearance along the line of the operative incision, at the lowermost point of which was an ulcerated area as large as a silver half dollar. This recurrence was extremely stubborn and required three months of persistent raying to cause effectual disappearance. Until this time, two years after the operation and notwithstanding her recurrences, she had actually gained eighteen pounds in weight. From this time on until her death in February, 1914. six years after her operation, she was treated for and had disappearance of nodules, twice in the left axilla, once in the right axilla, and again at the posterior angle of the left scapula where a growth nearly as large as a hen's egg disappeared after vigorous raying. Ultimately supraclavicular nodules appeared and despite the fact that treatment was pushed even to the extent of producing a decided skin reaction, no effect was apparent in the growths. And this has been my experience in every other case where secondary enlargement of the cervical lymph glands was present. These have invariably proved extremely resistant to treatment and I cannot recall any case in my series where supraclavicular involvement was present previous to operation where the patient has survived past the three year limit.

The patient died as a result of metastatic growths of the liver, although for a period of six months previous to her death, she was bedridden as a result of a spontaneous fracture of the femur, due no doubt to osseous involvement, and in which union had never occurred.

Another complication which it is seemingly impossible to mitigate by the Roentgen rays—and for that matter by any other method at present known—is the secondary edema of the arm. This is without doubt one of the most distressing complications of the disease, the arm in some cases swelling to three or four times its natural size, the weight and ensuing pain of the affected limb being unusually severe and distressing. For the relief of this condition, shoulder amputation has been advised, Rodman reporting a case in which temporary amelioration was secured by an interscapulothoracic amputation. Leaf has suggested resection of some of the branches of the brachial plexus for the relief of this so-called brawny arm, but I am unaware of any case in which it has been attempted.

I have had experience in but one case of sarcoma of the breast, and here metastatic involvment was so far advanced that *x*-ray treatment was abandoned after a few weeks, the patient living only eight weeks after operation. Rodman in his book on Diseases of the Breast (1908), writes of the encouraging results he has secured in the treatment of sarcoma by means of the *x*-ray, although he is pessimistic as to the value of the rays in mammary carcinoma, claiming that in certain cases the *x*-rays instead of checking seem to hasten the spread of the disease. I am unacquainted with Dr. Rodman's present attitude as to the status of the Roentgen rays.*

One striking result, I think, has been the experience of nearly all radiologists in the treatment of this condition, viz., the marked relief of pain which has so often resulted from *x*-ray treatment. This is undeniably true, the analgesia being more than psychic, as repeated reports of other observers attest. Handley in Choyce's "System of Surgery" speaks of this effect of the *x*-rays and cites a case in his own practice, where most pronounced relief was afforded by *x*-ray exposures, although previously the patient was most skeptical of its value.

Occasionally patients are referred for *x*-ray treatment in whom on account of advanced age or widespread disease operation is deemed inadvisable. Here we can hope for but little, except possibly alleviation of pain, or probably for a short time to delay the inevitable. And yet, I recall one case referred me by Dr. Jesse Arnold in a woman of 83 with an ulcerating scirrhus carcinoma of the breast in whom most striking improvement was induced by *x*-ray treatment. The ulceration closed over with scar tissue, the neoplasm diminished in size, and the patient lived in a fair degree of comfort for nearly three years, finally succumbing to pulmonary metastasis.

In his "Clinics" for October, 1914, Dr. John B. Murphy states the following in regard to the em-

*In an article by Dr. Rodman appearing in the issue of the *Journal of the American Medical Association* of February 27, 1915, there is a complete reversal of his earlier teachings as to the use of the *x*-ray in breast cancer. Since 1909 he has used it as a routine measure in all postoperative cases with marked success, and occasionally has achieved a surprisingly brilliant result in an apparently advanced case.

ployment of the *x*-ray in carcinoma of the breast: "We advise it, we order it, and we believe it does some good. Its retarding action in the development of a carcinoma is due we believe to the fact that it is capable of producing cicatrization or connective tissue formation around the malignant cells to the extent of strangulating them and on the malignant cells which have escaped from the primary focus into the neighboring tissues we believe it has some effect."

In the absence of any specific remedy at the present time for the cure of cancer, the status of present day treatment for carcinoma of the breast resolves itself, first and foremost, into early and wide removal of the diseased organ and all secondarily involved tissues, followed by thorough, persistent and continuous *x*-ray exposures over the site of operation and all contiguous areas.

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Medicolegal Notes.

Malpractice—Choice of Alternative Methods—Proof of Negligence. — In an action for malpractice in the treatment of a simple fracture of the tibia, it appeared that, when the accident occurred, on January 4, 1910, there was no outward evidence that the tibia was in fact broken; the skin and flesh being unbroken and the leg apparently in normal alignment. The defendant was called shortly thereafter to treat the injury and upon examination discovered that the tibia was broken about four inches above the ankle. He set the broken bone and placed the leg in splints, it being necessary to place the plaintiff under an anesthetic in so doing. He then discussed with the plaintiff and his wife the various methods of treating fractures of this nature, particularly as to reuniting and holding the broken ends of the bone in place while healing. The plaintiff advised that the broken bone be re-united by the Lane method, consisting of opening the flesh and inserting and attaching to the broken portions of the bone a plate so as to hold them rigidly in apposition and alignment. The defendant advised this method of treatment in preference to other methods by which the bone is held in place by outward appliances without cutting the flesh, expressing the opinion that quicker and better results would follow. This method of treatment being consented to by the plaintiff and his wife, they relying upon the defendant's advice, upon the following day the plaintiff was taken to the hospital, where the operation and the insertion of the plate securing the broken portions of the bone in place was performed and the leg placed in a cast. The plaintiff remained at the hospital six days. The evidence did not furnish any information as to what occurred at the hospital other than that the operation was performed. No details were shown throwing any light upon the manner of performance of the operation, nor as to the care or want of care there exercised relative to possible infection of the injured parts. The plaintiff was then taken home, where the defendant cut a hole in the cast so as to render the flesh wound acessible for treatment, and it was then first discovered that the injured parts had become seriously infected. The broken parts of the bone thereafter grew together without resetting, so that, at the time of the trial, they were in good alignment and there was no shortening of the leg. In May, 1910, the plate was removed by the plaintiff, and because of the infection, which still persisted, and with a view of overcoming it, the plaintiff operated upon the leg again in August, 1910, and in January, 1911, otherwise treating it at intervals since the injury was received. The defendant, then being dissatisfied with the plaintiff's treatment, placed himself in the hands of another surgeon. Dr. Gardner, who in treating the leg with the view of overcoming the infection operated upon it in June and October, 1911. None of these operations by the defendant and Dr. Gardner involved the resetting of the broken bone; the first setting of it being followed by practically perfect results so far as alignment and maintaining the normal length of the limb were concerned. At the time of the trial the leg had practically regained its normal condition, except that it was not fully recovered as to its strength. The plaintiff was able to resume his usual work during only a portion of the time during the two years while being treated by the defendant and Dr. Gardner. The evidence showed that the only serious result to the plaintiff, aside from the suffering and loss which would necessarily, in any event, flow from such an accident, was the infection.

The defendant's theory was that the plaintiff was negligent in making use of the Lane method, which required the opening of the flesh to the bone in order to attach the plate thereto, and that he was thereafter negligent in using unsterilized water to cleanse the injured parts. The only evidence in support of the contention that the defendant was negligent in using the Lane method was furnished by Dr. Gardner, and of that, in the court's opinion, the most that could be said was that this method did not have, at that time, the unanimous approval of the medical professor. However, according to the only evidence presented in the plaintiff's behalf, that method did have the approval of a respectable minority of the medical profession, who recognized it as a proper method of treatment. This, the court thought, was enough to absolve the defendant from negligence so far as his mere use of that method was concerned; there being no showing that he exercised other than his best judgment in choosing that method. In Sawdey v. Spokane Falls & N. Ry. Co., 30 Wash. 349, the Washington court recognized the rule that if there be more than one recognized method applicable to a particular case, the attending physician is not liable for an honest mistake of judgment in his selection of the method of treatment.

There was no evidence but that every precaution known to medical science was exercised at the hospital looking to the prevention of infection. The only evidence of negligence was the bad result; the mere fact that the infection occurred. In Peterson v. Wells, 41 Wash., 693, 696, the court recognized the rule that a mere bad result is not of itself ordinarily sufficient to render an attending physician liable for negligence; that is, it is not ordinarily proof of the physician's negligence. Judgment for the defendant on a directed verdict was affirmed.—Lorenz v. Booth, Washington Supreme Court, 147 Pac. 31.

Malpractice—Excessive Damages—Care Required.— In an action against a surgeon for malpractice in treating the plaintiff for a broken and dislocated wrist, the jury were instructed that in estimating the plaintiff's damage, if any, they should consider the character and extent of her injury, whether it was permanent, the pain of body and anguish of mind she had suffered, if any, and would suffer in the future on account of the injury, and the impairment of her earning capacity, if any, etc., and assess her damages at such sum as would reasonably compensate her therefor, not to exceed the sums prayed for in the petition. It was held that this instruction was erroneous, as charging the physician with liability for all the results of the original accident in which the wrist was injured, as well as the necessary results of unskillful treatment. A broken arm is itself a serious injury, regardless of the way in which it is treated by the attending surgeon, and the attending surgeon cannot be held liable for all the damages growing out of the injury. He is not responsible for the original injury and its usual and natural consequences with proper treatment.

It was also held error to instruct that the care and skill a surgeon should use in his practice should be proportionate to the character of the injury he treats. It could not be said that his skill should increase in proportion to the severity of the injury. One's skill is a matter of slow growth and cannot be increased on short notice.—Fowler v. Burris, (Mo.) 171 S. W. 620.

Disease from Unsterilized Instruments — Liability.— In an action for negligence against a dentist the evidence tended to show that a gold crown was fitted for the plaintiff by an employee of the defendant; that in fitting the crown an instrument was used which cut the plaintiff's gum so that it bled, and about three weeks afterwards sores appeared in her mouth, one of them being at the point where the gum was cut. There was also evidence that she was then suffering from syphilis, from which she had hitherto been free. The jury found that the plaintiff was infected with syphilis through the negligence of some person employed by the defendant, whose duty it was to clean and sterilize the instruments used, and this was confirmed on appeal.—Drakes v. Tulloch, Massachusetts Supreme Court, 107 N. E. 916.

MEDICAL RECORD.

A Weekly Journal of Medicine and Surgery.

THOMAS L. STEDMAN, A.M., M.D., EDITOR

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New York, July 3, 1915.

THE MENACE OF CANCER.

IN the current issue of the MEDICAL RECORD all of the original communications deal with cancer in one or more of its various aspects. This is in answer to the request of Dr. Wainwright of the Commission on Cancer of the Medical Society of the State of Pennsylvania, who has asked each of the medical journals of the country to devote its July issue, or, if a weekly, its first issue in July, to this subject, with the view of bringing to the general practitioner a full realization of the menace of cancer to mankind. We comply with this request gladly for, though we doubt very much whether cancer is increasing as rapidly as some alarmists would have us believe, it is nevertheless far too prevalent and every physician should realize that upon him rests the duty of doing what he can to stay the progress of the scourge. How this can best be done is a matter for study and deliberation, for the way is not clear and the guides themselves are far from agreed as to the proper course.

The profession is almost unanimous in the belief that, with few exceptions, once the malignant nature of a neoplasm is established it is the duty of the surgeon to remove it at the earliest possible moment and to extirpate it root and branch. But what then? Some enthusiastic surgeons believe that if the tumor is removed early enough the disease will be cured, but to make sure of this desirable result they insist upon operation at such an early period that the growth is really in the "precancerous" stage; that is to say, it is not yet malignant, and we may add no one can be sure that it ever will become malignant. When the tumor is a declared cancer no one dare affirm that it will not return, either *in situ* or in some more or less remote part, no matter how radical the operation for its removal may have been. For the extremist, therefore, who is often the most logical, the campaign against cancer is really one against all neoplasms—indeed, this is acknowledged by many, and only a few years ago a distinguished surgeon advised the extirpation of every pigmented mole and wart on the body, lest at some future time it might undergo malignant transformation. This would be as impractical—and as logical—as the excision of the appendix in the infant—a mutilation that has more than once been seriously advocated. The surgical treatment of cancer is therefore a failure—and we say this advisedly, knowing well that it is as yet the best treatment we have and that in a fair and possibly increasing proportion of cases the patient after operation rounds out his or her term of life without a return of any of the visible marks of the disease.

Surgical treatment nevertheless does not afford an absolute cure, and herein lies the weakness of the contention that cancer in its early stages, or at any stage, is a purely local disease. The argument for early operation is based upon this theory, but the result of early operation in many cases seems to disprove it. On the other hand, the theory of an infectious origin and the one which looks upon a malignant neoplasm as the local expression of a vice of metabolism are equally uncertain—at least the arguments in support of them are no more convincing. In fact, cancer is still, what it has always been, a mystery. It is impossible, however, to believe that it will always remain so. Many of the best minds in the profession are occupied solely with this problem and it is inconceivable that none of them will ever discover the secret of malignancy and the cause and pathogenesis of malignant disease. Until that is done, however, all attempts at a cure will be but groping in the dark. Such being the case the condemnation of every therapeutic effort other than surgical is itself to be condemned. Cures as absolute as any secured by operative removal have repeatedly followed other modes of treatment — chemotherapeutic, orrhotherapeutic, radiotherapeutic, and dietetic. It is no argument against the validity of such cures to say that they were merely examples of spontaneous recession of the disease, such as undoubtedly occurs. If a spontaneous cure of cancer occurs so frequently, as we must admit it does if we designate as such all non-operative recoveries, then surely there is hope of finding the reason for such a favorable change and making it the basis for successful therapy. We have intimated that no absolute cure for cancer will be found until the nature and origin of the disease are known, but it is very possible that the true cause may be revealed as a consequence of a stumbling upon a successful method of treatment. For this reason we believe it is wrong to oppose every therapeutic suggestion that does not fit in with the theories of the moment. Many theories, both therapeutic and pathogenic, in regard to cancer are of course wildly improbable, yet there is none so fantastic that it may not contain a suggestion which some other clearer visioned and more logical mind may seize upon and develop into a tenable and fruitful hypothesis.

VON PROWAZEK AND TYPHUS FEVER.

A TRUE spirit of internationalism characterizes the unselfish devotion of medical men in the present war. No sacrifices recently recorded have been more heroic than those of Donnelly and Cooke of New York, who succumbed to typhus in the overcrowded lazarettos of Serbia. Their death and the death of others who fought the invisible foe represent one of the most pathetic incidents of the great world tragedy.

A peculiar element of sadness pervades the obituary of Stanislaus von Prowazek, the director of the Protozoa Laboratory of the Institute for Marine and Tropical Diseases at Hamburg. His work upon the pathogenic rôle of the chlamydozoa had already placed him in the front rank of protozoologists, when two years ago he turned his attention to the study of typhus fever in the infected camps of the Balkan peninsula. In December, 1914, he was fighting this disease among the Russian prisoners in Cottbus, and on Feb. 17 he became a victim. Just three months later his studies in the etiology of typhus appear in the *Beiträge zur Klinik der Infektionskrankheiten und zur Immunitätsforschung*, Vol. IV, No. 1. A brief review of his observations, although they have recorded nothing that is absolutely new, may not be amiss.

Careful examination of the blood of typhus patients revealed the presence neither of protozoa nor of bacteria that could be regarded as bearing an etiological relationship to the disease. In one case in Hamburg small bacilli were observed in the polynuclear leucocytes, and in a few of the cases in Belgrade the so-called "Ricketts-Wilder bodies," the significance of which is still obscure. Stained blood smears showed the presence of round or whetstone shaped granules in the polynuclear leucocytes. The results of cultural experiments were negative, possibly owing to certain difficulties that surrounded the prosecution of this work.

Careful studies on the pathological anatomy of the disease were carried out in Serbia. Particularly characteristic were regarded the capillary changes in the skin, consisting chiefly in a hyaline degeneration and necrosis of the inner coats; inflammatory foci in the brain; the changes in the polynuclear leucocytes, and necrosis and caryorrhexis of the myelocytes and polynuclears of the bone marrow.

CONCERNING RHEUMATISM AND GOUT.

Of course, it is a fact that the term rheumatism is ambiguous, and to a large extent misleading. It is not really known exactly what rheumatism is. In the *Medical Press and Circular* of June 2, 1915, the subject is dealt with editorially in an interesting manner. It is pointed out that to define rheumatism correctly is about as difficult as to define truth. The definition of rheumatism must take a negative form, or is an uninforming negative. The realization of what rheumatism is not is beginning to impress itself upon the medical profession, and we can only hope to arrive at an accurate comprehension of the matter by a process of gradual exclusion, that is, if we ever do arrive at this goal.

According to this writer rheumatism has nothing to do with acute rheumatism or rheumatic fever. It has nothing to do with what the French call "arthritisme," a term which by a topsy-turvy process is used to describe all or any of the manifestations of rheumatism save only the arthritic, which are specifically excluded. Rheumatism has nothing to do whatever with uric acid, a senseless bogy, our contemporary says, badly designed by sad and silly herbivora to frighten the active and careless carnivora. Rheumatism has nothing to do with chorea, tonsillitis, subcutanous nodules, or erythema nodosum, all of which are said to have a real but hitherto unexplained relationship to acute rheumatism. It may be that the only connection between them is the sinister power common to them all, of giving rise to endocarditis, a relationship which is not real, but apparent only.

The entire editorial is a trenchant criticism of the hopeless muddle into which the true meaning and the terminology of the condition or conditions known as rheumatism has been brought. Sydenham is quoted as almost the sole authority on gout, and the writer of the editorial avers that the real kernel of Sydenham's classical and immortal description has been missed. Sydenham says that "great eaters are liable to gout, and of these the costive more especially," while in a previous part of his treatise he had declared that gout was due to "a vice of metabolism." The "costive" points unmistakably to the seat of the vice of metabolism, which is rather a vice of excretion than of metabolism. Intestinal stasis, bringing about alimentary toxemia and absorption of chemical poisons and bacteria into the circulation, may be the cause of gout and rheumatism both, taking these terms in their generally accepted meaning. The author concludes that after Sydenham, the only other authoritative writer on gout is Arbuthnot Lane. That the latter did not realize that he was more than half solving the problem detracts nothing from the value of his contribution. Some day there will arise a third writer who will still further clarify this jelly, and this he will do by means of an internal secretion.

There is a good deal of valuable suggestion in this prophecy. If intestinal stasis be long continued it is reasonable to suppose that alimentary toxemia will supervene; toxins may then be absorbed into the blood stream from the colon, and this may be the predominant factor in the causation of gout and of some phases of that condition denominated rheumatism. The day may dawn when the advocates of the intestinal stasis theory will be regarded in the light of true prophets—or their views may be forgotten or remembered only as one of the curiosities or absurdities of a past age.

CANCER EXTRACTS IN THE TREATMENT OF CANCER.

The use of cancer autolysates in the treatment of cancer was suggested simultaneously in 1902 by von Leyden and Blumenthal and by Jensen. The method has been employed with numerous variations by many other investigators, apparently with little success. Blumenthal, who still clings to this conception as one that promises definite therapeutic results, believes that cancer extracts contain antibodies or antiferments. Lewin, Erhard, Bertrand, and others who have applied Blumenthal's theory have succeeded in eradicating rat sarcomata and mouse carcinomata, but in the case of cancerous growths in human beings they have succeeded only in improving the general condition and in checking the growth of the tumor.

In 1913 Stammler, however, reported that with the intravenous injection of cancer extracts he had

succeeded in completely eradicating a secondary vaginal growth that had developed after the extirpation of a uterine carcinoma. Another line of investigation has consisted in effort to produce active immunization against cancer. The most fruitful results of this mode of treatment have been those reported by Fichera of Rome, who used autolysates of embryonal tissues, and Loeb and Fleisher of St. Louis, who injected intravenously such substances as casein and nucleoprotein.

Lunckenbein (*Beiträge zur Klinik der Infektionskrankheiten und zur Immunitätzforschung*, Vol. III, No. 3), in reviewing this entire field, finds that both with the use of specific tumor extracts and with the use of definite but non-specific protein substances, striking results have been obtained in arresting the development of malignant growths. He has evolved a method of treatment which he bases upon the following hypothesis: The substances that arouse the body to produce protective ferments reside in the nucleus of the cancer cells. As long as the nucleus is surrounded by the cell cytoplasm, the reactive power of the body is not stimulated. By injecting nuclear proteins into the circulation one may excite the production of the suitable protective ferments. These proteins are obtained from either sarcomata or carcinomata; in either instance they are said to be effective against both types of neoplasm. The mode of preparation is not explained. The therapeutic results so far obtained are said to be more favorable in sarcoma than in carcinoma.

Clean Dermatology

Skin affections generally are not easy to treat successfully. The difficulty in dermatology is to obtain asepsis, and thus the crux of the problem is clean dermatology, for in skin complaints antiseptic measures cannot be applied with the same hope of success as in surgery. Dr. Alfred Eddowes in the *Medical Press and Circular* of June 2, points out the obstacles in the way of curing such skin diseases as for instance ringworm, red eczema, and sycosis, for mild or strong remedies may fail unless handled with skill. In corroboration of this statement a case of impetigo spread all over the face to which had been applied a too weak lotion for the initial lesion. The application of a lotion not sufficiently strong allows the disease to spread, but, on the other hand, if the applications are too strong the skin becomes inflamed. The good results obtained from cleanliness in the treatment of skin affections was known, in a measure, to dermatologists long before Lister's time, but it remained for Lister to explain and give them their guiding principle. Eddowes proves his contention by some illustrative cases. He saw several cases of red eczema on scalps of children in a skin clinic and was asked if he could suggest any treatment. He recommended that they be cleaned once with spirits and then covered up with paste for a whole week. This treatment acted like magic, and it was the cleaning that did it. Other cases are referred to, and the axiom is laid down that the secret of success was the principle: Clean antiseptically, then soothe with dressings mild but antiseptic enough to hold on to the ground gained.

News of the Week.

New York City Death Rate.—During the week ending June 19 there was a marked increase in deaths from children's diseases in this city as compared with the corresponding week in 1914. Measles, scarlet fever, diphtheria, and whooping cough claimed eighty-two during the week, as against forty-eight in the corresponding week last year. This was part of a general mortality increase of 170 deaths, the total being 1392, an increase of 1.09 points per 1000 of population. Children under five years showed a death increase of eighty-five and old people over sixty-five an increase of forty-three. The death rate for the first twenty-five weeks of 1915 was 14.32 per 1000 of the population as against the rate of 14.91 in the corresponding period of 1914, a decrease of 0.59 of a point.

Infant Death Rate in New York State.—The death rate of infants less than one year old, in New York State, outside of New York City, for May was sixteen points less than a year ago, according to a statement recently issued by the State Health Department. The rate in May, 1914, was 102 a 1000, while this year it was eighty-six. In New York City the rate last month over the same month a year ago increased nine points to 107 a 1000. In the State, outside of New York City, there were 300 more births in May, 1915, than in the same month last year.

Columbia Students to Aid Serbia.—Twenty-four Columbia University medical students who sailed for Serbia last Saturday for relief work were the guests of honor at a reception given one evening last week at the Hotel Majestic by the Daughters of Oneida. They sailed on the Greek steamer *Themistocles*, taking with them twenty-five motor ambulances and a full equipment for each.

The Second Harvard Hospital Unit, under the command of Dr. E. H. Nichols, assistant professor of surgery at Harvard, sailed on the Holland-America liner *Noordam* last Saturday. The unit will be attached to the Royal Army Medical Corps.

Janeway Lectureship at Mt. Sinai Hospital.—Through the generosity of an anonymous donor, a lectureship has been established at the Mount Sinai Hospital named after the late Dr. Edward G. Janeway, who was for many years associated with the medical staff. The foundation has been created for the purpose of inviting important investigators to present the results of their work to the staff of the hospital.

Medical Inspection of Schools in Florida.—The Florida Legislature has just passed an act which provides for thorough examination of all school children of the State, including the rural schools, under the direction of the State Board of Health. The bill also provides for the sanitary survey of all school buildings and their surroundings. This bill was drawn up by Dr. Oliver J. Miller, city health officer of Sanford, and was introduced in the House of Representatives by Hon. Forest Lake of the same city.

New Research Laboratory.—Plans are being prepared for the construction of a seven-story fireproof laboratory on the site of the present power house on the grounds of the Rockefeller Institute for Medical Research. The building will be 150 by 60 ft. and will be equipped for research work. Adjoining the laboratory a house for keeping animals for vivisection and observation purposes will be built.

Pan-American Medical Congress.—At the seventh congress, held in San Francisco on June 17-21, 1915, the following were elected to the National Executive Committee. *President*, Dr. C. A. L. Reed of Cincinnati; *Vice-President*, Dr. Henry L. E. Johnston of Washington; *Secretary General*, Dr. Ramon Guiteras of New York. After the adjournment of the American Medical Association the official delegates to the United States went as guests of the United States Government on a sight-seeing trip to Santa Barbara, Los Angeles, San Diego (Panama-California Exposition), the Grand Cañon of the Colorado, and the Yosemite Valley. The trip started on June 26 and returned to San Francisco on July 4. It was under the direction and management of Dr. H. L. E. Johnson of Washington, D. C., representing the United States Department of State and the President of the International Executive Commission of the Congress.

The Federal Board of Medical Examiners.—At the meeting on Thursday, June 24, of the House of Delegates of the American Medical Association, Dr. Rodman presented the scheme of federal examination and licensure, which he had outlined in his presidential address, and asked the House to give its sanction to the plan. After a discussion the delegates refused their approval, but voted to refer the whole matter to the Council in Medical Education for investigation and report.

The "School Health News."—In his annual report to the Mayor, Health Commissioner Goldwater of New York announces that, in collaboration with the Department of Education, a publication entitled *School Health News*, designed in part for the instruction of school teachers in matters of hygiene, and in part to stimulate co-operation between the school doctors and nurses on the one hand, and school principles and teachers on the other, has been placed in the field under the editorship of the Bureau of Public Health Education.

Vitality Tests for Teachers.—Dr. C. Ward Crampton, director of physical training in the Board of Education, has undertaken an investigation to determine whether the New York public school teachers are overworked. He is applying the blood-pressure vitality test to about 200 teachers in the elementary and high schools of the city and at the close of the summer vacation will apply the tests again and note whether the difference is such as to indicate that the working year has been a severe strain.

Consumptives Advised to Stay at Home.—The National Association for the Study and Prevention of Tuberculosis has issued a bulletin advising that only those consumptives who have at least $1,000 to spend should attempt to make a new home in the West. The bulletin says that tuberculosis can be cured anywhere, and it is far better for a patient of moderate means, such as the average workingman, to go to a sanatorium near home, than to go West and live in perhaps a more favorable climate, but without proper food or medical care. Furthermore, although there may be plenty to do in the West and Southwest for ablebodied men, the consumptive will find the greatest difficulty in getting work, and no one should go West therefore in the hope of getting a job.

Dr. Donald Campbell of Butte, Mont.—In our announcement of the election of officers of the American Medical Association last week, the telegraph made us give the residence of Dr. Donald Campbell, Third Vice-President, as Montreal; it should have been Montana.

Dr. Henry M. Pollock, superintendent of the Norwich, Conn., Hospital for the Insane at Brewster's Neck, has accepted the invitation of the trustees of the Massachusetts Homeopathic Hospital of Boston to become the superintendent of that institution. He will not assume his new duties until February next as he wishes first to see the new inebriates farm in connection with the Norwich Hospital well established.

Dr. William B. Buck, superintendent of the Seibert Institute for Children, Philadelphia, has been appointed superintendent of the New York City Children's Hospital and Schools on Randall's Island. He succeeds Joseph D. Flick, head of the Staten Island Farm Colony of the Department of Charities, who was made temporary superintendent when Mrs. Mary C. Dunphy was dismissed after a service of more than twenty years.

Dr. Dora W. Faxon has been appointed second assistant physician at the Foxboro, Mass., State Hospital for the Insane to succeed Dr. George E. McPherson who has resigned to become connected with the psychopathic department of the Boston State Hospital. Dr. Faxon was formerly assistant physician at the Wrentham State School for the Feebleminded.

Dr. Richard H. Creel of the U. S. Public Health Service has accepted the appointment as chief health officer of Boston. The former three-headed health board has been abolished and Dr. Creel will be the sole responsible head of the department.

Dr. William J. MacNeal has been appointed director of the laboratories of the New York Post-Graduate School and Hospital to succeed Dr. Jonathan Wright, resigned.

Report of the Treasurer of the Committee of American Physicians for the Aid of the Belgian Profession.—Dr. F. F. Simpson, 7048 Jenkins Arcade Building, Pittsburgh, reports the following contributions received during the week ending June 26, 1915:

Dr. Emery R. Hayhurst, Columbus, Ohio	$5.00
Benton County Medical Society, Rogers, Ark	5.00
Receipts for the week ending June 26	$10.00
Previously reported receipts	7,447.00
Total receipts	$7,457.00

Medical Society Elections.—THE AMERICAN SOCIETY OF TROPICAL MEDICINE, at its annual meeting in San Francisco on June 15, elected the following officers: *President*, Dr. Milton J. Rosenau, Boston; *First Vice-president*, Dr. Bailey K. Ashford, San Juan; *Second Vice-President*, Dr. C. C. Bass, New Orleans; *Secretary*, Dr. John M. Swan, Rochester, N. Y.

THE CHICAGO MEDICAL SOCIETY at its annual meeting on June 15 elected the following officers: *President*, Dr. A. Augustus O'Neill; *Secretary*, Dr. Charles E. Humiston; *Councillors*, Drs. Charles H. Miller, C. C. O'Byrne, Douglas A. Payne, Fred. L. Glenn, and J. C. Krafft.

THE WASHINGTON ASSOCIATION FOR THE PREVENTION AND RELIEF OF TUBERCULOSIS, at its annual meeting in Seattle on June 14, elected the following officers: *President*, Dr. Christen Querli of Tacoma; *Vice-Presidents*, Drs. Wilson Johnston of Spokane and C. A. Smith of Seattle; *Secretary*, Prof. John Weinzirl of Seattle; *Treasurer*, Mr. J. V. A. Smith of Seattle.

THE WORCESTER DISTRICT (MASS.) MEDICAL SOCIETY, at its annual meeting held May 12, elected

the following officers: *President*, Dr. Ray W. Green; *Vice-President and Treasurer*, Dr. George O. Ward; *Secretary*, Dr. Ernest L. Hunt; *Orator*, Dr. John T. McGillicuddy; *Librarian*, Dr. George O. Lincoln.

THE WEST VIRGINIA MEDICAL ASSOCIATION, at its annual meeting in May, elected the following officers: *President*, Dr. A. P. Butt of Davis; *First Vice-President*, Dr. A. S. Bosworth of Elkins; *Second Vice-President*, Dr. G. C. Schoolfield of Charleston; *Third Vice-President*, Dr. S. P. Lawson of Logan; *Secretary*, Dr. J. Howard Anderson of Marytown; *Treasurer*, Dr. H. G. Nicholson of Charleston; *Editor*, Dr. S. L. Jepson of Wheeling. Wheeling was chosen as the 1916 meeting place.

Obituary Notes.—Dr. WILLIAM H. GREGG, for many years a prominent scientist in this State, died Monday at St. Cloud, Fla., where he went several months ago for his health. He was born in Elmira, N. Y., eighty-five years ago. He had been a practising physician in New York City and in Port Chester, N. Y., but several years ago he retired from active practice. Dr. Gregg was graduated from the College of Physicians and Surgeons of New York in 1857. He served as interne in Charity Hospital, Blackwell's Island, and then practised for a time in New York City. At the outbreak of the Civil War he became surgeon of the Sixty-ninth New York Regiment and subsequently hospital surgeon of the Eighth Brigade and senior inspecting surgeon. Dr. Gregg's scientific work was principally in chemistry, mineralogy, and ornithology.

Dr. MAURICE J. O'CONNOR of Williams, Ia., a graduate of the Northwestern University Medical School, Chicago, in 1903, and a member of the Maine Medical Association, died at St. Joseph's Hospital, Webster City, as the result of injuries sustained in an automobile accident on June 7, aged 38 years.

Dr. HENRY OSBORN HANAWALT of Kansas City, Mo., a graduate of the Medical College of Ohio, Cincinnati, in 1873, and until recently professor of neurology in the University of Kansas, School of Medicine, died at his home on June 5, aged 70 years.

Dr. HENRY JANES of Waterbury, Vt., a graduate of the College of Physicians and Surgeons, New York, in 1855, a surgeon in the United States Army during the Civil War, and a member of the American Medical Association and the Vermont State Medical Society, died at his home on June 11, aged 83 years.

Dr. FANUEIL DUNKIN WEISSE of this city died June 22 in his seventy-third year. He was born in Watertown, Mass., and was graduated from the Medical College of New York University in 1864, and a year later become Lecturer in Dermatology at the university. Dr. Weisse was a former Professor of Surgical Pathology at the New York College of Veterinary Surgeons and for many years was Professor of Anatomy, Surgical Pathology, and Oral Surgery at the New York College of Dentistry. In 1886 he published "Practical Human Anatomy," and was also the author of numerous contributions to medical literature.

Dr. W. C. COSLY of Slaughterville, Ky., died of apoplexy on June 15. He was a graduate of the Medical Department of the University of Tennessee in 1893.

Dr. JOHN FRAYNE, interne at the State Hospital at Scranton, Pa., died suddenly on June 17 at the age of 29 years.

Correspondence.

OUR LONDON LETTER

(From Our Regular Correspondent.)

GENERAL MEDICAL COUNCIL—SESSION FOR THE YEAR, JUNE 1 TO 4—ROYAL SOCIETY OF MEDICINE ON THE WAR—INSURANCE AND COST OF PRESCRIPTIONS—INFECTIOUS DISEASES, FATALITY AND PREVALENCE.

LONDON, June 11, 1915.

THE General Medical Council has held its annual session. A good deal of formal business was transacted, and various professional problems discussed, the whole proceedings having been laid down in the usual introduction, address of the president, Sir Donald MacAlister. The reports of the several committees were received and approved. The elections for the coming year were proceeded with, and the council being thus in order for work considered some cases of misdemeanor in a professional respect and pronounced judgment upon them, having heard evidence in public and deliberated *in camera*. Sentences of removal from the Dentists' Register and from the General Medical Register in cases in which the council found that the accused had been guilty of "infamous conduct in a professional respect" (the words of the act).

Reports from the several committees that had definite subjects submitted to them were received, and for the most part approved. Nominations of the Branch Councils for these committees were also received and acted upon.

The educational committee's report consisted of two distinct parts. As to one a communication had been received from National Board of Education dealing with proposals in regard to secondary schools. This was ordered to be appended to the report and the whole to be entered on the minutes as received and approved. In like manner the other part was treated in connection with a letter from the Pharmaceutical Society in reference to the alleged shortage of medical practitioners. This part of the report with the letter appended was approved to be entered.

For the public health committee the chairman made an oral report in regard to having requested the registrar to prepare certain statistics. This was approved.

For the examination committee the chairman submitted an account of the analysis of the annual tables compiled for the council, which was also ordered to be entered on the minutes.

Mr. James Rae attended for the National Insurance Commissioners to explain the mode of transfer of panel patients from one practitioner to another. He replied to questions put to him through the chair and received the thanks of the council for his assistance, as also did the commissioners.

Recommendations of examination committee respecting the Indian department, the certificates of Indian students and their registration when qualified, were also brought forward, adopted and forwarded to the India office.

The license of the Dublin Apothecaries' Hall gave rise to some discussion, but a motion was carried by twenty-nine to two that it was not such as to secure the requisite knowledge and skill for practising the profession.

A committee of the Royal Society of Medicine appointed to consider matters connected with the war, provided the police authorities with a list of hos-

pitals and other institutions which could receive patients, with a map showing the position of each. It also engaged to send surgeons with anesthetics on the request of the police to any point where they were needed. Sir Rickman Godlee is the chairman of this committee and Mr. J. Y. M. MacAlister, honorary secretary.

The committee has also been in communication with the war office concerning what surgical measures should be arranged for in anticipation that the threats of Zeppelin attacks on the east coast may possibly culminate in some attempts to fulfill them.

There has been a good deal of talk about the expense of carrying out the Insurance Act in different places. The cost of prescriptions has varied so much, accusations of extravagance in some cases have been so freely made, that it has been proposed for the High Courts to surcharge practitioners who may be reported by the panel committees of disregard of reasonable economy. The Medical Defence Union will challenge the right of the courts to interpose, but this step will perhaps lack support enough from the general body of members to justify legal proceedings. There seems no doubt that in some cases there has been extremely heavy cost and that perhaps more in London than in country areas.

It has been repeated in different directions that some men have deliberately set themselves to prescribe the most expensive articles in the hope of defeating the panel system. Their colleagues are their accusers. It is said even advertised proprietary preparations have been ordered for which no other purpose can be assumed. If this should be substantiated it would deserve the condemnation of the profession as much as, or more than, of the public. I hope investigation will prove that no medical man has been guilty of such conduct.

Enteric fever, according to the report of the Registrar-General, had the lowest recorded mortality in the two years, 1912 and 1913. In the latter it was at the rate of forty-one per million living. In 1912 it was forty-four. The loss of life, like the prevalence, was as irregularly distributed as usual, and the excessive mortality associated with urban conditions. Certain counties and boroughs experienced a mortality of 110 per million in the last three years and these localities are, for the most part, backward in sanitation. In contrast with them London was specially favored as to both prevalence and mortality. There has been a great increase of hospital treatment of late years and this must, without doubt, lessen the chances of infection on which so much depends. The isolation here, as everywhere, must limit the prevalence. In 1912 the deaths from typhoid were 48 per cent of the total; in the previous year the ratio was 50 per cent.

In the same report we find the mortality from scarlet fever was at the rate of fifty-seven per million living, at all ages, but 171 per million under the age of 15. The decline of the mortality from this disease for the last half century is remarkable. About 65 per cent of the deaths occurred in hospitals; in London the proportion was 94 per cent, but in rural districts only 40 per cent.

About half the deaths from croup and diphtheria are registered in public institutions. Of those in London about 80 per cent occur in the hospitals of the Metropolitan Asylums Board. It is therefore possible to compare the mortality with that of years before antitoxin came into use. Since 1890-3 the case fatality has fallen from 304 per 1000 admissions to sixty-five per 1000 in 1913. Not less than 97 per cent of the deaths were under the age of 15. Although the fatality from diphtheria was higher in northern districts the prevalence of the disease seems to have been at its lowest as indicated by notification. Cases of a milder type probably account for this, but bacterial investigation is necessary to clear up the question.

Progress of Medical Science.

Boston Medical and Surgical Journal

June 17, 1915.

1. An Anatomical and Mechanistic Conception of Disease, J. E. Goldthwait.
2. Syphilis and Lung Disease. A. F. Downing.
3. Rabies in China. A. C. Reed.
4. Tuberculous Infection as a Disease Entity. G. T. Palmer.
5. Program and Directions for the Mental Examination of Asocial, Psychopathic, and Doubtful Subjects. R. S. Hardwick.

1. An Anatomical and Mechanistic Conception of Disease.—J. E. Goldthwait distinguishes the two well-marked variations from the normal type of body structure as follows: In the splanchnoptotic or carnivorous type the figure is slender, the skin soft and delicate, the hair is abundant, the head is proportionately large, and the face and jaw are narrow. The palatal arch is high. The adenoid and tonsillar tissues are apt to be excessive. The torso is longer than the so-called normal and is also narrower. The increased length is chiefly in the lumbar region. The ribs are usually longer than is normal. The downward inclination of the lower ribs is very marked. The spine is smaller than normal and the lumbar vertebræ are more like the so-called normal dorsal vertebræ in shape. The stomach is long and tubular. Its attachments are less firm. The small intestine as a whole is much shorter than normal. In marked contrast to this type is the herbivorous type represented by the heavily built, broad-backed individual. From the purely medical point of view the recognition of these different types is important since the types apparently carry their own potential of disease. The tuberculous infection and the infections in general, the nervous diseases and acute mental disorders, the hyperglandular disturbances, the progressive anemias, the atrophic arthritis, many of the intestinal disorders, etc., naturally are associated with the slender type. The arteriosclerosis, hypertrophic arthritis, gout, diabetes (not the insipidus), chronic disease of the kidney, gallstones, the prostatic hypertrophy, the degenerative mental disorders, etc., are common to the heavy type. The suggestiveness of this in treatment must be obvious. The author presents a series of deductions of which the following are some of the more important: Symptoms should be interpreted in relation to that which is normal for the special type of anatomy of the patient. Abdominal conditions should be given proper anatomical and mechanistic consideration. With the presence of sugar in the urine it is not impossible that as well as improper food the pressure of the mobile, heavy organs upon the pancreas, or its blood vessels, may be distinctly causative of the symptom. In considering the blood diseases, especially the profound anemias, which cannot be explained in other ways, the position of the spleen or the effect which other organs may have upon its function should be considered. Many individuals belonging to the slender type which because of its low resistance has added so much to the mortality of infancy and childhood, are now being saved. With this type growth without proper guidance inevitably produces a still weaker physique, with drooped figure, narrow chest, etc. These acquired characteristics added to the congenital form accentuate

the congenital elements to such an extent that they are much more sure of being present in the following generation.

2. Syphilis and Lung Disease.—A. F. Downing states that in acquired syphilis there is a second or interstitial form as distinguished from the one with multiple gummata. In the former type, met with post mortem in old syphilitic subjects, the fibrous tissue is seen most commonly and abundantly at the hilus of the lung, whence it may extend as dense bands into the interior along the air tubes and blood vessels. It may be quite general and lead to extensive pulmonary fibrosis and shrinkage, or it may occur in scattered areas. The disease is usually unilateral and there are commonly also dense, firm adhesions in the pleural cavity. This interstitial hyperplasia displays no characteristics that serve to distinguish it from fibrosis due to tuberculosis, unless it be its tendency to be confined to but one lung, and to occupy the middle parts of the organ. It is this difficulty probably in distinguishing between the two that makes the autopsy records show so few cases of specific lung disease.

New York Medical Journal

June 19, 1915.

1. Alexia. S. P. Goodhart and H. Climenko.
2. An Improved Method of Applying the Bone Wedge Graft in the Treatment of Clubfoot. R. E. Soule.
3. Atrophy of the Skin Associated with Cutaneous Syphilis. F. Wise.
4. The Treatment of Diarrhea. E. M. Sill.
5. School Hygiene. J. B. Todd.
6. Diseases of the Esophagus. W. Lerche.
7. Mastoiditis. C. H. Smith.
8. Lange's Colloidal Gold Test as an Adjunct to the Diagnosis of Cerebrospinal Affections. A. I. Rubenstine and M. Schwartz.
9. Hemorrhagic Disease in the Newly Born Treated with Horse Serum. A. Hymanson.
10. Hysteria as a Constitutional Disorder. R. C. B. Alexander.

3. Atrophy and Syphilis of the Skin.—F. Wise reports a case which is said to constitute the second recorded instance of the coexistence of diffuse cutaneous atrophy and syphilis of the skin, that of Fordyce being the first. Aside from the fact that both disease processes existed at the same time and in the same integument in both patients, no parallelisms can be adduced from a comparison between the two cases. In Fordyce's patient the syphilis antedated the diffuse atrophy and may very well have been the cause of it. In the author's case the conditions were reversed, so that the question of a syphilitic etiology cannot be taken into consideration. In the author's case the advent of a syphilitic infection seemed to exert no appreciable changes upon the preexisting atrophic skin, nor did vigorous antiluetic medication affect the latter in any way. It has been pretty definitely established that atrophy of the skin, of the macular type, may follow as the result of a preexisting cutaneous syphilide. It is also probable that macular atrophy may appear in syphilitics without being preceded by syphilitic cutaneous lesions, as in Mibelli's case. The occurrence of diffuse cutaneous atrophy of syphilitic etiology and pathogenesis is recorded in but one instance. Much further study would be required to determine the question of cause and effect between the two conditions.

6. Diseases of the Esophagus.—W. Lerche concludes that all affections of the gullet have one main symptom in common, *i.e.* the disturbance of deglutition, hence the impossibility of making positive diagnosis without the aid of the esophagoscope. A local neurosis is present in every case of anatomical lesion of the gullet—at some time. The local neurosis is the "signal of distress of the gullet" and is a call for esophagoscopic examination. Where a disturbance of deglutition is present it is just as important to demonstrate the absence of a lesion as to demonstrate its presence.

8. Colloidal Gold Test.—A. I. Rubenstine and M. Schwartz find that Lange's colloidal gold test gives specific reactions in cerebrospinal syphilis, tabes, and paresis, as well as in infectious meningitis, while normal spinal fluids show negative reactions. There is no difference in reaction observed between the various forms of syphilitic infections. Lange's test should, whenever possible, be used as an adjunct in the diagnosis of cerebrospinal affections in conjunction with the Wassermann test, cytological examination, and protein estimation.

9. Horse Serum in Hemorrhagic Disease of the Newborn.—A. Hymanson notes that in this disease the coagulation time of the blood is somewhat delayed. As there is always a difficulty in obtaining human blood or fresh human blood serum, fresh horse serum, or rabbit serum serves the purpose almost as well. In the newly born infant, when the bleeding is not spurious, the horse serum should be administered early and repeatedly until bleeding ceases. The report of the injurious effect occasionally caused by the use of foreign serum is greatly exaggerated.

Journal of the American Medical Association

June 19, 1915.

1. Stomach Carcinoma. Its Medical Aspects. J. C. Bloodgood.
2. Chronic Duodenal Ulcer. W. J. Mayo.
3. Vesicular Albuminuria. W. T. Belfield.
4. The Excretion of Mercury by the Gastric Mucous Membrane. C. C. Lieb and G. M. Goodwin
5. The Isolation in Crystalline Form of the Compound Containing Iodine Which Occurs in the Thyroid. Its Chemical Nature and Physiological Activity. E. C. Kendall.
6. The Aims of the Association of American Physicians. S. J. Meltzer.
7. Pathology of War Surgery. B. Jablons.
8. Infant Mortality Due to Labor. C. S. Bacon.
9. The Later History of the Typhoid Carrier. W. A. Sawyer.
10. Recovery in Two Cases of Streptococcus Meningitis Following Lumbar Laminectomy and Drainage. W. E. Leighton and J. A. Pringle.
11. Visible Acute Dilatation of the Stomach During Laparotomy. Report of Two Cases with Observations. W. H. Luckett.
12. The Prognosis of Auricular Fibrillation. H. E. B. Pardee.
13. Trombidiosis. G. M. Olson.
14. The Determination of Pulsus Alternans by the Sphygmomanometer. C. McGill.
15. Congenital Absence of Patellæ and Other Patellar Anomalies in Three Members of Same Family. G. Rubin.

2. Chronic Duodenal Ulcer.—By W. J. Mayo. (See MEDICAL RECORD, June 12, 1915, page 1004.)

4. Excretion of Mercury by the Gastric Mucous Membrane.—C. C. Lieb and G. M. Goodwin conclude from their experiments that it seems probable that mercury is excreted by the gastric mucous membrane, and that gastric lavage is an essential part of the treatment of mercurial poisoning.

6. Association of American Physicians.—By S. J. Meltzer. (See MEDICAL RECORD, Vol. 87, page 1003.)

9. History of a Typhoid Carrier.—W. A. Sawyer details the later history of a typhoid carrier who, although frequent examinations of his feces gave negative results for four months after he had been treated with autogenous typhoid vaccine, nevertheless infected three persons when subsequently released from quarantine on parole. The total number of persons infected by this carrier is thirty, including five who died. In a further attempt to cure this carrier, the gallbladder and its duct were removed surgically, but the typhoid bacillus was found in the feces several times after the operation. Examination of the gallbladder showed that it was normal and that its contents were free from typhoid bacilli. After forty-one successive examinations of feces during a period of fourteen months, all with negative results, the typhoid bacillus was isolated from stomach contents containing bile. Certain typhoid carriers are unusually dangerous and must be controlled by quarantine or other adequate supervision.

12. **Prognosis of Auricular Fibrillation.**—H. E. B. Pardee states that the continuous irregularity of auricular fibrillation has been looked on as causing a poor prognosis. This is due to stopping treatment as soon as the patient recovers from an attack of acute cardiac failure. By continuing the digitalis in sufficient quantity to keep the heart slowed to about seventy beats per minute, there will not be a recurrence of the cardiac failure. Seven such cases are cited in which the patients have remained under treatment without cardiac symptoms for periods of from seven months to three years. Since these cases are all complicated by conditions of considerable gravity, and since they have performed such considerable physical exertion so long as their heart was maintained at a slow rate, it is concluded that the irregularity *per se* adds little or nothing to the gravity of the prognosis of the individual.

The Lancet.

June 12, 1915.

1. Some Congenital Lesions of the Small Intestine. Their Origin and Clinical Bearings. J. H. Evans.
2. On the Bacterial Flora of Wounds Produced During the Present War. L. S. Dudgeon, A. D. Gardner, and F. Bawtree.
3. The Naval Medical Committee and Wounds in War: A Criticism. J. G. Saner.
4. The Diversity of Opinion Concerning the Diagnosis of Tuberculosis, with Special Reference to the Examination of Contacts. G. H. Dart.
5. Some Principles of Dietetics. J. S. Wallace.
6. The Sterilization of Albuminous Culture Media by Ether. P. Fildes and L. W. Rajchman.

1. **Congenital Lesions of the Small Intestine.**—J. H. Evans states that several hypotheses have been put forward in explanation of atresiæ and stenoses of the small intestine: (1) Intrauterine peritonitis; (2) ulceration, ulcerative contraction; (3) pressure from tumors; (4) pressure from amniotic bands; (5) embolism or thrombosis of the superior mesenteric vessels; (6) inguinal hernia, volvulus, intussusception; (7) traction of the omphalomesenteric duct; (8) enlarged valvulæ conniventes, and (9) non-liquefaction and non-disappearance of the epithelium-occlusion and ingrowth of the mesenchyme. During the nineteenth century another hypothesis, in which fetal volvulus is considered to be the common etiological cause, appeared extensively in the literature of the subject. Of all the conditions which arise from the persistence of the omphalomesenteric duct or vascular bundle the most frequent is undoubtedly intestinal obstruction. This complication, which is one of the gravest, has long been known. Internal strangulation associated with a diverticular fistula has for its causation bands or loops. Intussusception of Meckel's diverticulum, when the diverticulum is fixed and patent at the umbilicus, is very rare. Nevertheless, even an instance of a retrograde diverticular intussusception—*i.e.* in which the distal end of the intestine became invaginated—has been placed on record. Also the diverticulum when free becomes inverted and, acting as a polypus, causes an intussusception, or the invagination of the intestine is produced in the proximity of a diverticulum without its walls being turned in. Volvulus of the diverticulum of Meckel belongs to the category of curious pathological and rare occurrences. There are only four cases in literature. Hernia of the diverticulum of Meckel may be found at birth; firstly, as the only content of the hernial sac—in this exceptional occurrence its interest is in connection with the enteroumbilical fistula which may arise therefrom; or, secondly, associated with other portions of the intestine, when there is an omphalocele, only observed after death or where life is impossible, and accordingly of no practical importance. Cysts which are of vitelline origin may be classified according to their situation: (1) Intramesenteric or retroperitoneal; (2) diverticular, (a) enterocyst of Gfeller, (b) enterocyst of Roth, and (c) enterocyst of free diverticulum: (3) umbilical, (a) retroparietal or properitoneal, (b) intraparietal or intramuscular, and (c) properietal or subcutaneous; (4) funicular, and (5) terminal.

British Medical Journal.

June 12, 1915.

1. Ureteral Stone; with Special Reference to Those in the Pelvic Ureter. J. H. Watson.
2. The Mortality of Appendicitis. G. G. Turner.
3. A Case of Cerebrospinal Fever Simulating Acute Nephritis with Uremic Convulsions. E. H. Roberts and A. P. Ford.
4. Acute Gonorrhea Treated by Electrolysis. C. Russ.
5. Surgical Work at the Military Hospital, Cairo. J. C. Jefferson and O. H. Blacklay.
6. Notes on the Temperature in a Case of Advanced Pulmonary Tuberculosis. J. C. Voight.

1. **Ureteral Stone.**—J. H. Watson states that stone in the ureter is more prevalent than generally supposed. Stones may arise in the ureter but as a rule they form in the renal pelvis and then pass into the ureter. They are usually single, occasionally multiple and partly bilateral. The general effects of ureteral calculi may be set down as: (1) Those due to mechanical obstruction, (a) retention of urine behind the calculus, (b) interference with the function of the kidney of the same side, for example, hydronephrosis and pressure atrophy of the gland, (c) reflex effect on the other kidney may give rise to anuria; (2) effects due to infection: pyelitis, pyelonephritis, pyonephrosis; (3) secondary effects on the nervous system resulting from constant pain and irritation; (4) local effects on the ureter: mechanical—dilatation with or without hypertrophy and inflammatory—leading to changes in the wall, for example, ulceration, fibrosis, and, rarely abscess.

4. **Acute Gonorrhea Treated by Electrolysis.**—C. Russ describes this method as follows: The patient is made to retain urine for a few hours and the rate of discharge is visible on a disc of cotton retained within the prepuce. A Gram-stained smear is made of the discharge at the outset of the treatment. The patient is directed to pass about half of the urine he is retaining and keep the rest back. This preliminary urination washes the urethra from behind and is the only lavage employed. He then reclines on the couch and a platinized catheter is lubricated and passed gently down to the compressor urethræ. This catheter is quite smooth, has numerous perforations, and it is furnished with a stylet of platinum wire and a rubber collar which just enters the meatus. The author also uses rubber perforated catheters. A lint-covered pad lined by a flexible metallic core is wrung out in warm saline and applied to the perineum, scrotum, and root of the penis. A 2 per cent. solution of sodium iodide is then gently injected into the catheter. The rubber collar prevents its flowing away between the instrument and the urethra. The pad is connected to the negative, and the stylet (within the catheter) to the positive pole of the battery. A current of one to two milliamperes is passed for twenty-five minutes and the catheter is kept full of the solution from time to time by means of a syringe. The current being turned off, the catheter is withdrawn and placed in a glass of water. After the first few treatments the perforations in the catheter will be seen choked with masses of yellowish mucopus which are laden with gonococci, and these have been drawn from the urethra. On shaking the catheter in the water most of these masses become detached from the instrument and soon settle at the bottom of the vessel. The patient now passes the rest of the urine, and similar masses of mucopus will be seen in it. As the patient progresses this harvest diminishes, and when the discharge has ceased there is nothing visible in the perforations at the

end of such treatment. The author has applied this treatment every day to these cases of acute gonorrhea, and the signs of progress are: (1) The abolition of the scalding during urination; (2) the reduction and disappearance of the discharge. The amount of the discharge can be visibly measured by comparison of the patient's disc of wool from day to day, provided the number of hours' abstinence from urination is the same. When the discharge has ceased the battery is applied every other day, and after three to six more applications the urine is free from purulent threads. The treatment is painless and apparently produces no bad effects.

Berliner klinische Wochenschrift.

May 10, 1915.

War and Sexual Diseases.—Touton delivered an address on this subject to a mixed audience. It was, of course, foreseen that in the present war venereal diseases would play a prominent rôle, and at an early period preparations were made for special central hospitals and transportation facilities. At Wiesbaden an old garrison hospital was made over into a central station for patients with skin and venereal diseases. There were thirty beds for soldiers with these affections. This service was a very small one compared with the large hospital at Mainz with its 500 beds for the same classes of affections. The latter was favorably situated for receiving overflow patients from the Wiesbaden station, which chiefly served as a model for small local hospitals. The author quotes an estimate that the equivalent of an entire army corps has thus far suffered from venereal disease alone, *i.e.* has been incapacitated thereby from service. These figures serve to shatter rudely the beliefs expressed by some optimists that the patriotic and idealistic emotions let loose by the war would lead to an unprecedented mortification of the flesh. The war, however, will not make German angels out of the German people. The author, alluding to the inevitable association of Mars and Venus, mentions the alleged appearance of epidemic syphilis at the siege of Naples in 1495. Whether or not such an epidemic really occurred no man knows. It is a somewhat academic question. What we do know is that many soldiers in this campaign became incapacitated from duty as a result of venereal disease, so that the latter was spread throughout Europe. Since that period siege and occupation have been the chief occasions for the contraction of syphilis by troops. Prolonged repression of the sex impulse such as results from life on the march and in the trenches appears to be satisfied at last only in association with cruelty. The author does not refer here to attacks on the respectable women of the conquered races. Even the prostitutes are assailed with fury and in total disregard of their physical condition. Preaching, enlightenment, the author does not recognize. It does no good to tell soldiers that continence is best for them. The author would ignore this teaching, however much he may believe in its truth. He would improve certain particular opportunities. The soldier invalided home is a source of danger to the civilian population, because being in forced idleness he is thrown in among women of all kinds. The young ladies idolize him, look upon him as half divine. Some among them who are neurasthenics and hystericals meet him in connection with voluntary convalescent nursing. Recently, as a result of a painful experience resulting from these associations, the young women personnel in a "convalescent home for the slightly wounded" had to be replaced by men. The women were called disturbers of recovery. Aside from conditions imposed by siege and occupation the German soldier is normally more free from venereal diseases than those of other nations.

When Should We Examine the Spinal Fluid of Syphilitics?—Neisser terms the examination of lumbal punctates the third of the great recent diagnostic discoveries in the domain of syphilis, the others being the recognition of the spirochete and serodiagnosis (Wassermann). Examination of the spinal fluid is now regarded as indispensable; but when ought we to use it? The author believes that with clinical evidences of syphilis, or a positive Wassermann reaction, or when the patient is doing well under treatment with no reason for its discontinuance, a test of the spinal fluid would be superfluous. But should the author deem it propitious to suspend the use of the remedy he would then as a precautionary measure make the test. Should the latter prove negative the author would feel that the patient is not menaced by the much-dreaded syphilis of the central-nervous system, and need not be submitted to further treatment. If the test is positive this usually means that nests of spirochetes are present in some of the viscera, and these may be reached by intensive treatment. These tests cannot be made at one's pleasure because the patient objects to them very strongly.

Münchener medizinische Wochenschrift.

May 11, 1915.

Treatment of War Dermatoses.—Bruck states that scabies was the chief dermatosis in the war up to December, when it yielded in frequency to pediculosis vestimentorum. Pityriasis rosea, rare at first, has since become common and is certainly connected with the use of new woolen underwear. It is certain that eczema, psoriasis, and lichen show no cumulation as a result of the war. The reverse is true of the pyodermias, which are second in frequency only to the diseases due to animal parasites. The pyodermias are caused almost entirely by the staphylococcus and include furunculosis, folliculitis, impetigo of Bockhart, impetiginous eczema, and ecthyma. Impetigo contagiosa is relatively rare, this being due to a streptococcus. The staphylococcus pyodermias yield to a vaccine preparation devised by Wassermann, consisting of a sterile extract of pathogenic staphylococci in the form of an ointment. This substance has been on trial for a year and a half, and many favorable reports have been received from well-known dermatologists who are using it. It is, of course, marketed as a proprietary with trademarked name. It not only cures but apparently confers local immunity against spreading and relapse. It is gently rubbed into the affected skin once or twice daily.

Air Embolism from the Use of Oxygen Injections in Gas Gangrene.—Since oxygen injections are indicated in lesions due to anaerobic bacteria, such as gas gangrene, it need not surprise us to find occasional deaths from air embolism. Simmons states that the resource has become popular with military surgeons during the past few months. He has had, however, a death from an embolism from its use, as follows: The soldier was shot in the leg, and it was necessary to ligate the popliteal artery on account of the profuse hemorrhage. Gangrene of the foot followed, necessitating a Gritti thigh amputation. The operation wound suppurated and gas gangrene developed. The patient was etherized and oxygen injected into the stump with sudden fatal collapse. Autopsy showed that patient had not been generally infected with gas gangrene bacilli and that the air bubbles in the right heart and pulmonary vessels had been injected from without. Simmons knows of two similar cases. Frankenthal also relates in great detail a case of the same sort. The resource will not be discontinued on account of these sporadic fatalities, but great care will have to be used. When the needle enters there should be no insufflation if blood flows.

Action of Light on the Living Cell.—Schanz states the admitted fact that light accelerates chemical processes. It transforms hemoglobin to methemoglobin, and according to its wave lengths can both change ozone to oxygen and oxygen to ozone. It assists in the production of cleavages and syntheses. Important is the subject of the influence of light on albumin, the most significant of the cell ingredients. Tests are made by placing various proteins in quartz vessels at a constant temperature of 15 deg. or 16 deg. C. An ultra-violet-ray lamp is the source of the light-rays. Rays of short wave lengths coagulate soluble albumins and render them insoluble. The question of the sensitiveness of the eye to actinic rays has long been in dispute. These are believed to cause electric ophthalmia. The lens is held to absorb a large portion of these rays as they pass unchanged through the cornea. The albumin in the center of the lens is highly insoluble. The invisible rays may therefore figure in both the physiology and pathology of the lens.

Deutsche medizinische Wochenschrift.

May 13, 1915.

Tetanus Infection and Its Abortive Treatment.—Teutschlaender relates the following case: A reservist was struck with fragments of shell on Dec. 17 and received first-aid dressings from a comrade. He slept on the battlefield, and on the following day was taken to the dressing pavilion and thence by stages to Heidelberg, which he reached on the 25th. In all he had passed through the hands of three surgeons in transit. At Heidelberg an *x*-ray was taken and a shrapnel bullet was found near the wound in the right clavicular region. He was also wounded twice in the left lower extremity, one lesion being in the knee hollow and the other somewhat above. It was necessary to cut down upon the latter to extract a shell fragment. The wound was ragged and infected and the wound tract 4 cm. long. Search was at once instituted for the presence of the tetanus bacillus, which morphologically was present, but the author omitted the mouse-inoculation test. A prophylactic injection of serum was given. The fact that tetanus did not develop is naturally indecisive. The next case to come along in which the bacteriological finds in the wound were positive was tested thoroughly with mouse control. To these animals the germs were highly virulent. The wound in this case was in the sole of the foot, and was ideal for tetanus development. Nine days after the wound local spasms developed in the foot. The wound discharge still contained abundant tetanus bacilli. Not until then was serum given. The next few days saw no change, although once the temperature started to go up. The patient escaped infection. The bacteria in the late stages of the wound were also cultivated and tested on mice, and while the latter promptly succumbed tetanus did not develop. This fact could be placed in association with failure of general tetanus to develop in the wound. Several cases on record show that wounds may be infected locally with virulent tetanus bacilli yet no general infection follows. There can be little doubt that this has even occurred in untreated wounds which have healed of themselves. Yet such cases must be rare and exemplify natural immunity. The local cramps, or so-called "traumatic spasms," may be regarded as abortive symptoms. They are also prodromes in cases which go on to infection. The danger of the latter is evidently bound up in the great resistance of the germs of tetanus. The treatment of suspicious wounds should be of the surgical-antiseptic type. Of antiseptics hydrogen peroxide and iodine tincture are mentioned.

Ecthyma, War Dermatosis.—Kromayer states that in peace times the staphylococcus is responsible for a stately array of dermatoses—impetigo contagiosa, impetigo vulgaris, folliculitides, furunculosis, sycosis, panaris, subcutaneous abscesses, phlegmons, lymphangitides, etc. To the preceding, in time of war, we can add ecthyma, which in peace is seldom encountered save in the case of decrepit children. Ecthyma constitutes 30 per cent of war dermatoses. Small pustules, scratched open and soiled with dirt, form scabs which do not end in healing. Instead pus forms beneath them and the scabs grow larger and thicker. When removed they show the presence of ill-colored granulations—veritable ulcers, which have a discolored secretion, drying into crusts composed of pus, blood, and dirt. These sores may occur in great numbers and one soldier showed no less than 172 of them, all large, nearly every part of the surface being studded with them. These seldom occur alone—furuncles and abscesses often coexist along with ordinary impetigenous pustules. Ecthyma may be regarded primarily as a filth disease. The ulcers have little tendency to heal spontaneously. The author recommends that various antiseptics be applied after thorough cleansing—potassium permanganate solution 1:4000, silver nitrate 5 per cent solution, tincture iodine, etc. The regular dressing should be boric acid ointment or dermatol. If the ulcers prove at all refractory the fine Paquelin burner should be applied.

"Plexalgia," a Disease of War.—M. Manheimer applies this term to a condition observed among French soldiers and characterized by the presence of multiple pains, sensations of numbness, general fatigue, insomnia, and excitability. This complex of symptoms is the result of the action upon the nervous system of prolonged exposure to cold and excessive humidity.—*Bulletins et Mémoires de la Société de Médecine de Paris.*

Subcutaneous Injury to the Median Nerve at the Elbow.—S. Boyd reports the case of a patient, aged eight years, who, in May, 1913, fell off his bicycle and sustained a fracture of the lower end of the right humerus, which united in good position. When he began to use the arm again it was found that he was unable to flex the thumb and index finger. He came under the author's observation in October, 1913, and was found to have paralysis of the following muscles: flexor carpi radialis, palmaris longus, flexor longus pollicis, flexor sublimis and flexor profundus to the index finger, and the superficial muscles of the thenar eminence. There was loss of excitability to faradism in the affected muscles, but no polar reversal. There was no anesthesia. The arm was put up on a metal splint with the affected muscles relaxed and regular massage was instituted. Considerable improvement ensued, and the patient can now fully flex the thumb and index finger. There is still weakness of the palmaris longus and flexor carpi radialis and some flattening of the thenar eminence.—*Proceedings of the Royal Society of Medicine.*

Purpura.—W. K. Sibley reports the case of a healthy woman, aged 27, a widow, who had never had rheumatism or any other serious illness. Thirteen weeks before, what she described as blotches appeared first on her right arm in crops which faded and left a bruise, and a moderate sized boil was present on the left breast which was painful. She had considerable pyorrhea alveolaris. Scattered over various parts of the body, especially marked over the posterior axillary folds, where they appeared in more or less parallel lines, looking like scratch marks, were numerous small subcutaneous hemorrhages of a purpuric nature; smaller ones were also present on the thighs. On the mucous membrane of the lower lip were remains of recent hemorrhages, which were also present on the palate. The patient stated that her gums bled considerably during her menstruation and often also her nose at these times. Her catamenia, which commenced at the age of 13, were usually regular and normal, but the last three periods had been severe, the last one continuing for a week.—*Proceedings of the Royal Society of Medicine.*

Insurance Medicine.

Examination in the Life Extension Institute.—In an address delivered before the Insurance Institute of Toronto, Dr. Eugene L. Fisk described the methods followed in the health conservation plan of examining the insured. The first step is for the company to inclose with its premium notices an announcement of the privilege, and a blank form for making application. On receipt of the application for examination the company forwards to the Institute a statistical card containing certain information — age, occupation, residence, etc. The Institute then forwards to the policyholder a personal history blank, calling for information regarding living habits, diet, exercise, etc.; also family history and information regarding past illnesses, disabilities, etc. This blank the policyholder fills out and presents to the examining physician, who forwards it to the Institute with his own report, a blank for which is furnished him by the Institute. The urine is forwarded direct to the Institute by the policyholder, and is examined at the central laboratory.

The total information received from these sources is then reviewed by men trained in the science of interpreting such data. The clinical findings, with the reviewer's comments, are then reported to the Director of Hygiene, who finally determines what message shall go to the individual.

A report is made to the insurance company on the statistical card by means of codes covering the various impairments. This information is held as confidential by the company, and is not interchanged with other companies. If no impairment is found the individual is so informed, or if there is a slight impairment he is told of its nature, and the report usually conveys a suggestion for its correction. If the impairment requires medical attention the report is sent to the family physician, with the individual's permission, and the latter is advised to place himself or herself under medical treatment. If he insists upon having the report direct it is given to him, but he is urged to seek medical aid.

It will be noted that the method covers more than a mere examination by the local examiner. It is a system which includes a close study and valuation of the individual as a going concern. It is essentially a health survey of every region of the body and of the life of the subject. Faulty living habits may be given more weight than an actual physical impairment. As the urine, blood, sputum, gastric contents, and feces are examined at the home office, in such cases as require it, and the personal history is given by the applicant, the system is valuable and effective, even in remote localities where trained clinicians are not available.

In the group or commercial service, an examining room is equipped in the establishment where the employees are to be examined and the work is carried on in the same manner as at the home office. Physicians are detailed to work on half-day service, alternately, until the examining is completed. All laboratory work is done at the home office, and practically the same routine is followed as in the insurance service. The following figures regarding these examinations make an interesting showing.

Results of the examination of life insurance policyholders by the Life Extension Institute: Normal, 2.40 per cent; imperfect (advice needed regarding physical condition or living habits), 97.60 per cent; not aware of impairment, 93.04 per cent; referred to physician for treatment, 65.75 per cent.

That this work is worth while and that it is consistent with sound ideals of human progress and development is shown by the following example. The head of a family is receiving an income of $5,000 per year, upon which he maintains his family comfortably. He carries, say, $10,000 life insurance, perhaps only $5,000. If he is taken away before his children reach maturity and self support the family fortune is reduced from $5,000 to $500 a year, or perhaps only $250. The life insurance covered the breach, but this man was worth to his family $100,000 valued in earning capacity alone. Add to this the priceless assets of family affection and guardianship, and one cannot doubt that the greater function is to keep this man alive, rather than to pay his debts and funeral expenses.

Accident Insurance—Evidence of Cause of Death.—In an action on an accident insurance policy issued to a railway mail clerk, the evidence showed that the insured, on leaving his car at the end of a run, gave indications of a severe pain in his abdomen. A few days later he became incapacitated, was taken to a hospital and operated upon, but died of general peritonitis. Subsequent to his first feeling ill, a yellowish spot was seen on his abdomen about the size of a half dollar and the autopsy showed that there were adhesions beneath this spot which, in the opinion of some of the medical witnesses, indicated that the spot had been caused by some external violent means, such as a blow.

The deceased was a young man and had previously been in good health. There was medical testimony that the appendix was split, and not perforated, indicating that the injury was caused by violent external means, causing appendicitis, naturally followed by the peritonitis. The deceased was alone in his car during the run. While the evidence conflicted as to some of these propositions, it was held that if the jury accepted the statements enumerated above they were warranted in drawing the conclusion that the deceased's bodily injuries were received "through external, violent, and accidental means."

The court distinguished the case of National Association of Railway Clerks v. Scott, C. C. A., 155 Fed. 92, which was an action on a similar policy, where a verdict for the plaintiff was set aside. There the deceased had been for years in ill health, suffering from albuminaria, congestion of the liver, palpitation of heart, and nephritis. The death certificate gave as the chief cause of death nephritis, and as contributing cause valvular heart trouble. The only evidence of a blow was a bruise on the shin. There was no causal connection suggested between the blow and the causes of death as in the present case. In the Scott case the theory was that because of the bruise on the shin it might be inferred that at the time it was received he had had a heavy fall, causing general shock, from which again, it might be inferred that the other ailments ensued.—Railway Mail Association v. Harrington, C. C. A., 220 Fed. 622.

Book Reviews.

Medical Ethnology. By Chas. E. Woodruff, A.M., M.D., author of "The Effects of Tropical Light on White Men"; Associate Editor of "American Medicine"; Lieutenant-Colonel, U. S. Army, Retired; Member of American Therapeutic Association; Fellow of Medical Association of the Greater City of New York; Member of the American Association for the Advancement of Science. Price $2.00. New York: Rebman Company, 1915.

The author says this book was begun as a revision of his former work on "The Effects of Tropical Light on White Men," but his title was changed because so many other factors besides pigmentation have entered into the discussion of the reasons for the differences between the present races and subraces of men.

Dr. Woodruff has made a special study of his subject, and owing to his long stay in tropical countries has been able to investigate the matter thoroughly. His experience therefore entitles him to an attentive hearing, and although some of his views are not altogether in accordance with the opinions of many tropical students, yet they are so clearly and forcibly set forth that with many they must carry conviction. It is pointed out in the chapter on racial physical characteristics that the hotter the climate in America the higher is the morbidity and mortality of the bulky man. The chapter on the effects of the infrared rays contains very instructive deductions; for example, it is pointed out that the effects of indoor heat and moisture on infants have been greatly underestimated, as they are probably more disastrous than dirty or stale milk. Dr. Woodruff's well-known views on acteriotherapy and on the relative adaptability to climate and conditions of life are discussed at some length.

The chapters on the influence of environment on infants are of particular interest. It is stated that it is now an accepted axiom that all the laws which govern the evolution of adaptation of lower animals to the environment by slaughter of the least fit and selection of the fittest, apply with equal force to man. It therefore fully explains the high death rate and their eventual extinction or change of type. The author has fortified this assertion by numerous examples drawn from many parts of the world. In the last chapter, dealing with applications of medical ethnology, it is shown how to combat successfully the maleficent influences of a change of climate and how to conserve health fairly well in an alien environment. The work is marked throughout with evidences of careful research and a considerable amount of original thought. The author not only has ideas of his own, but is able to express them in such a way that, if they do not always convince, they give one to think deeply.

Differential Diagnosis. Volume II. Presented Through an Analysis of 317 Cases. By Richard C. Cabot, M.D., Assistant Professor of Clinical Medicine, Harvard University Medical School, Boston; Chief of the West Medical Service at the Massachusetts General Hospital. Profusely illustrated. Price $5.50 cloth. Philadelphia and London: W. B. Saunders Company, 1914.

The unique character of this work, so well demonstrated in its first volume, in the discussion of differential diagnosis by the reports of typical cases and grouping these according to the preventing symptom, is again amply exemplified in the second volume. This deals with nineteen other conditions or preventing symptoms, as follows: abdominal and other tumors; vertigo; diarrhea; dyspepsia; hematemesis, glands, blood in the stools, swelling of the face, hemoptysis, edema of the legs, frequent micturition and polyuria, fainting, hoarseness, pallor, swelling of the arm, delirium, palpitation and arrhythmia, tremor, and ascites and abdominal enlargement. As in the previous volume, at the beginning of each chapter dealing with one of the above conditions or symptoms, there is a general discussion or introduction, and by means of graphic charts one can see at a glance the relative frequency of the pathological conditions which have this condition or symptom in common. These graphic charts constitute a valuable feature of the work. The case reports are concise and real; they bring one almost into the presence of the patient. Particularly valuable are the discussions under the heading of differential diagnosis; to the student of medicine and chiefly to the experienced practitioner these discussions are helpful and stimulating. The illustrations, diagrams, and charts are numerous and adequately supplement the text.

Physiological Principles in Treatment. By W. Langdon Brown, M.A., M.D. Cantab., F. R. C. P. Assistant Physician to St. Bartholomew's Hospital, and Physician to the Metropolitan Hospital, etc. Third edition. Price $2.50. New York: William Wood & Company, 1914.

In this volume will be found a summary of such of the modern advances in physiology as have a bearing on the practice of medicine. The author has been engaged in teaching physiology as well as practice, and his book contains many observations which the practitioner will find useful. Many of the gaps existing between physiology and practice are here bridged over; and whether viewed as a work on physiology or as one on practice the volume is one of unusual value. The subjects discussed are: the principles of organotherapy; the rational treatment of gastric disorders; mechanical factors in indigestion; the work of the pancreas; uric acid and the purin bodies; oxaluria, phosphaturia, and urinary calculi; albuminuria and the treatment of nephritis; glycosuria and diabetes; acidosis and intoxications; intestinal intoxications; irregular action of the heart; the vasomotor system in disease; on cyanosis; and vitamines and calcium salts. The book is provided with a good index and a useful bibliography; this latter would be of more service were it placed at the end of each chapter instead of being grouped at the end of the volume.

Diseases of the Skin. By James H. Sequeira, M.D. Lond., F.R.C.P. Lond., F.R.C.S. Eng. Physician to the Skin Department and Lecturer on Dermatology at the London Hospital; in charge of Queen Alexandra's Department for Light Treatment; Consulting Dermatologist to the Radium Institute, etc., etc. Second edition, with 48 plates in color and 238 text figures. Price $8.00 net. Philadelphia: P. Blakiston's Son & Co., 1915.

This work, as shown by its cost price, is very largely an atlas. The first edition appeared in 1911 and the increase in bulk is due in part to the addition of 60 text figures. The colored plates now include a series of microphotographs. The author states that it has been a difficult task to incorporate all the dermatological advances of the past three years, and we see at the same time notable evidences of condensation here and there. The classification shows but little change, and the number of chapters is practically the same. One of the more noticeable departures is to be found in the chapter on Diseases of the Appendages of the Skin. In the first edition forty-seven affections were described under this head, while in the present edition this number has been reduced to nineteen. A similar condensation is seen under Diseases of Microbic Origin. There are twelve additional pages on the subject of syphilis, seven on neurodermatoses, etc. To sum up, the book is an almost unique combination of text book and atlas in one volume. The illustrations, of whatever kind, are of uniform merit, and as good as the best contemporary productions of their kind.

The Modern Factory, Safety, Sanitation, and Welfare. By George M. Price, M.D., Director, Joint Board of Sanitary Control in the Cloak, Suit and Skirt and the Dress and Waist Industries, New York City; formerly Director of Investigation, New York State Factory Commission; author of Handbook on Sanitation. 8vo, 574 pages and 257 illustrations. Price $4.00 net. New York: John Wiley & Sons. London: Chapman & Hall, 1914.

This book gives a comprehensive survey of industrial conditions in factories in the United States, and an exhaustive treatment of the sanitation, safety, efficiency, and welfare work in industrial establishments in this country and abroad. The author reviews the rise and growth of the modern factory system, the various types of factory buildings, the dangers and protections from fires, the extent and causes of accidents and their prevention, conditions for lighting factories, and all the details of the sanitation of workshops. He describes the various welfare movements and practical attempts to ameliorate the conditions of working people and to improve sanitary conditions in the factory. There are chapters on the dangerous trades and industrial poisons, and on factory legislation and factory inspection. The book is a valuable compendium of information on a subject of constantly increasing importance to the social fabric as at present constituted. The numerous illustrations add much to the interest of the work.

Special Article.

THE ORGANIZATION OF NATIONAL AND LOCAL FORCES IN THE CAMPAIGN AGAINST CANCER.

By CURTIS E. LAKEMAN, Executive Secretary.

The American Society for the Control of Cancer has recently urged that every State medical society take an active part in arranging meetings and in spreading among all members of the profession the latest knowledge of malignant disease. At the suggestion of the Cancer Committee of the Pennsylvania State Medical Society, many journals will devote their July issues to this subject. It has been pointed out that the American Society for the Control of Cancer might take this timely opportunity to state its view of the relations between the various bodies which are concerned in this campaign. The suggestion is welcome. If indeed a clear understanding can be reached as to the most effective division of functions and duties among the various organizations, national, State and local, interested in this subject, a long step will have been taken toward the conquest of malignant disease, in so far as that ideal can be approached by the practical application of present knowledge.

The National Society.—The American Society for the Control of Cancer sets up no claim of priority or originality in preaching to the public the necessity of early recognition and treatment of this disease. The organization was effected under the inspiration of numerous similar movements in this country and in Europe. From the first it has been inspired only by a sincere ambition to coordinate all existing forces into a single irresistible nation-wide effort to reduce the cancer death rate by imparting the necessary knowledge and inspiring the will to believe and act upon it. Those who direct the policy of the Society have no illusions that they are "called" above others to this task. They firmly believe that all sincere workers should unite in a single well considered national movement. If the present Society fails to meet the requirements of such a movement it must give place to some agency that will do so, leading the campaign against malignant disease with as conspicuous ability and success as the National Association for the Study and Prevention of Tuberculosis has directed the war on consumption.

Relation to the Professional Societies.—While the Cancer Society found its first impulse in the work of a committee of the American Gynecological Society, the movement was broadened at its very inception by the appointment of organizing delegates from the American Surgical Association, the American Dermatological Association, the Association of Pathologists and Bacteriologists, and practically all the similar special organizations which met in Washington in May, 1913, as the Congress of American Physicians and Surgeons. Definitely launched in New York on May 22, 1913, the movement received within a few months the official endorsement of the American Medical Association, the Clinical Congress of Surgeons, the Western and the Southern Surgical and Gynecological Societies, and a number of sectional and state organizations. All these professional bodies have endorsed the design of the National Cancer Society as expressed in its Constitution:

> "To disseminate knowledge concerning the symptoms, diagnosis, treatment, and prevention of cancer, to investigate the conditions under which cancer is found and to compile statistics in regard thereto."

Relation to Cancer Research.—It will be seen that this purpose comprises not only the conduct of an educational campaign but the gathering of information in regard to this disease. In what relation, then, does the Society stand to the various American Cancer research institutions and workers? The answer is that the Society does not contemplate the prosecution or support of biological research, already so ably pursued under the auspices of our leading universities. With these workers in the field of pure science mutually helpful relations have developed. Indeed a notable collective expression of their attitude is regarded as a very cornerstone of the educational movement. A few years ago the eminent laboratory students placed on record in the transactions of their official organization, the American Association for Cancer Research, their conviction that pending the discovery of the ultimate nature and cause of cancer, a far more effective dissemination and utilization of the vast store of present knowledge of the disease is urgently called for. Formed to carry out this very object the "Control" Society depends upon the constant support and co-operation of the institutions represented in the "Research" Society. Many of the foremost American students of cancer are prominent in the membership of both organizations. Machinery is thus provided for the wider dissemination among the profession and the people of the essence of the newest knowledge of malignant disease, fresh from its laboratory sources.

Relation to Statistical Investigations.—The Society does, however, contemplate original work in the collection and collation of statistical data, and will expand this feature of its program as fast as its resources permit. The statistics of cancer mortality need to be improved both as regards their collection and their publication. The merest suggestion by the Society to the U. S. Census Bureau has been sufficient to initiate a notable advance in this respect. With the greatest possible interest and zeal, Mr. Harris, the late Director of the Census, and his successor, Mr. Rogers, have undertaken the preparation of a special report on the cancer mortality of the U. S. Registration Area in 1914. The number of deaths will be stated in full detail under some thirty titles of organs and parts of the body affected, instead of, as hitherto, merely under the six general groups of the International List. The Imperial Cancer Research Fund has long urged that it is only on the basis of such detailed data for the various organs that a true conclusion can be reached as to whether or not cancer is increasing. For the first time in the United States the data will now be at hand, as they are in England and Wales through the reports of the Registrar-General for the prosecution of such inquiries.

The Census Bureau will also for the first time in this study make a distinction between returns based on certain and on doubtful diagnosis. To secure the additional information needed for this distinction the Bureau is sending tens of thousands of letters to physicians who have certified deaths from cancer asking whether the diagnosis was based on clinical findings alone or was established by surgical intervention, microscopical examination, or autopsy.

All this, it will be realized is a large amount of work for even a government bureau to undertake. Much of it should be done in the first place by the registration offices and the boards of health of the several States, where the original certificates of death are filed. It will be the duty of the American Society for the Control of Cancer to urge upon the various State officials the need of undertaking this work in order to insure the permanence of the advance in the statistical study of cancer which has been inaugurated by the Census Bureau.

But the Society is also interested in special statistical studies of the geographical, racial, and occupational distribution of cancer, and above all in collating, upon a uniform plan, the records of surgical treatment of the disease in the leading hospitals. It is important that an authoritative answer be available for all who ask just what percentage of success is to be expected in the treatment of each phase and each stage of this multiform disease. All such studies the Society regards as fulfilling its fundamental purpose and in pursuing them it is everywhere receiving the most cordial encouragement and assistance from statistical offices and from the best hospitals and institutions.

Relation to Educational Agencies.—The important and clearly established lessons derived from such studies of the sources of information must be given to the public. The society has undertaken to do this directly, through its publications, its regular articles for the newspapers, and its lectures. But in the large view it can best secure this object by enlisting the cooperation of all appropriate existing agencies which conduct educational work. Foremost among these are the State and local departments of health, especially those which are devoting an increasing share of their energies to the spreading of the gospel of health by bulletins, exhibits, and lectures. In the same category must be included the committees on public instruction which in many States are conducting admirable campaigns of health education under the auspices of the State medical societies. Toward all these agencies the Society stands in the relation of the "producing" to the "distributing" end of a manufacturing business. With its wide outlook over the national field it is in a

strong position to provide statistical material, to receive and pass on new knowledge, new experiences, new methods which have been found valuable in one field and should be used in others. In another view the Society may take the position of "middleman" between the research workers and statistical students producing new facts about cancer at the sources of knowledge on the one hand, and on the other the many agencies, general and local, which will bring the practical bearings of this knowledge, new and old, directly home to the people. In general, then, one of the most useful functions of the Society is to act as a burden of information and clearing house which is at the service of all workers and institutions interested in the study and control of cancer.

Relation to State Committees.—The relation of the national Society to similar movements within the various States should be clear from what has been said. In no case will the Society seek to set up local agencies to parallel work already adequately organized under the auspicies of State medical societies and boards of health. Provision is made for local committees to be organized under the supervision of the resident directors of the National Society wherever no State or local agency is in a position to undertake the work. Such groups will not be formed, however, except under full agreement with present State agencies. Where, as in Pennsylvania, under Dr. Wainwright, and similarly under the auspices of State medical societies in Maine, Wisconsin, Kansas, Colorado, Louisiana, Texas, and many other States, active local committees are at work, every effort will be made to assist these groups in the manner already outlined and so far as the constitutional limits of size permit to secure from them representative delegates to the governing council of the National Society. At least one director from each State will eventually be chosen to act as a local correspondent who will inspire and stimulate work in his own State while at the same time assisting in formulating the general policies of the National Society.

Relation to other General Committees.—It is an earnest of the good feeling and harmony with which the cancer campaign is evolving toward a single coherent national movement to consider the high degree of integration with other national agencies which has already been attained. Some of these had begun effective work long before the present Society was established. Aside from such admirable local campaigns as that of the Pennsylvania Commission and the work inspired by Dr. C. C. Carstens in Michigan, the Clinical Congress of Surgeons of North America had in the field an active Committee on Cancer under the chairmanship of Dr. Thomas S. Cullen of Baltimore, the other members being Dr. Simpson of Pittsburgh and Dr. Howard C. Taylor of New York. This committee, as is well known, caused the publication of widely read and influential popular articles by Samuel Hopkins Adams. It is instanced merely as indicative of the get-together spirit that animates the National Society that all three of these men naturally took their places as members of the Executive Council of the new association. Subsequently the American Medical Association appointed a cancer committee representing its council on Health and Public Instruction, and again to avoid duplication of effort the same men were made members of that committee. Dr. Frederick R. Green, the capable executive of this Council of the American Medical Association, has been from the first a director of the Cancer Society, and has given invaluable advice and co-operation in its publicity campaign, printing every week in the press bulletin of the A. M. A. a popular article on cancer prepared by the Society, which thereby reaches 3000 or more editors in all parts of the country.

A similar identity of committees has been effected in local fields, especially in Minnesota, and is typical of the desire to carry on everywhere a well-coordinated national campaign which shall embrace representation from all the principal local agencies and shall thus move forward with absolute harmony and unity of purpose to the accomplishment of its difficult but glorious ideal—the progressive reduction of the mortality from this historic scourge of mankind.

Rumination and Pylorospasm.—E. Aschenheim reports two cases in which these conditions were associated. The primal causes were held to be pathological reflexes and a neuropathic disposition.—*Zeitschrift für Kinderheilkunde.*

Society Reports.

AMERICAN MEDICAL ASSOCIATION.

Sixty-sixth Annual Session Held in San Francisco, Cal., June 21-25, 1915.

(Special Report to the MEDICAL RECORD.)

(*Concluded from Vol. 87, p. 1093.*)

COMMEMORATION DAY EXERCISES.

Wednesday, June 23, 1915.

WILLIAM L. RODMAN, M.D., OF PHILADELPHIA, PRESIDENT, IN THE CHAIR.

THE Board of Trustees of the American Medical Association set aside this day as Health Conservation Day in recognition of the service of the men whose contributions to sanitary science and preventive medicine had made possible the construction of the Panama Canal, and in commemoration of the progress of medicine which had resulted in the betterment of conditions of human life. All the Sections of the Scientific Assembly cooperated in the observation of Commemoration Day and held no section meetings. The addresses given by experts in the fields they represented were designed to show the origin and evolution of preventive medicine from scientific foundations and to make plain the benefits which had come and were yet to come to the world from the application of such scientific knowledge. Since the audiences included many who were not of the medical profession the speakers presented their subjects in simple language suited to such an occasion.

Dr. WILLIAM L. RODMAN in opening the meeting, said that the building of the Panama Canal from the standpoint of engineering was not so difficult a task. The attempt to build a canal had been made before but failed because of the prevalence of yellow fever and Chagres fever which could not be controlled until modern medicine had shown the way. He quoted from an address of ex-President Taft's on the value of the sanitary work of the United States in Cuba, Panama, and the Philippines to the effect that while he could not speak with absolute certainty as to the political and educational benefits conferred on these countries by the United States, he was thoroughly convinced of the blessings conferred on those countries by the sanitary work done by the medical men of the United States Army and Public Health Service. No better illustration of this could be given than the facts in connection with typhoid fever in the army. In the Spanish war 90 per cent. of the volunteer troops had the fever while a few years ago, after vaccination against typhoid fever became a routine procedure in the army there was not one case of typhoid fever among the troops sent to the Mexican border, excepting in the case of one man, a teamster, who refused to be vaccinated.

Infection and Immunity.—Dr. VICTOR C. VAUGHAN of Ann Arbor made this address in which he said that it had been the habit of the human race to look upon epidemic disease as due to an angry God avenging their sins, or if sickness and death came to them personally they said "Whom the Lord loveth he chastiseth," and were resigned. Another theory of disease was that of Hippocrates who promulgated the miasmatic theory of disease and reasoned that if a large number of people became affected the cause must be something that reached all the people and therefore it must be the air. This idea had come down many centuries and even today influenced their ideas. Even as late as the Spanish war there were those who, with bated breath, said that the fever in the camp at Chicamaugua was not typhoid fever but Chicamaugua fever. Other instances might be cited in our own time showing that locality was supposed to be responsible for disease. Our modern view of infection had its inception with Pasteur, who began to work on the phenomena of fermentation and proved that this was due to living organisms, and that each kind of ferment had its own specific organism Many had confirmed his findings and theories. Robert Koch developed the ideas of Pasteur and we now knew that every infectious disease was due to a specific organism, and that these organisms were living bacteria. A few bacteria caused disease because of the poisons they elaborated. Such diseases were tubercu-

losis, tetanus, botulus, etc. There were some widely prevalent ideas concerning bacteria which in his opinion were quite erroneous. It was generally stated that bacteria were low forms of plant life. Plant cells, generally at least, contained cellulose; bacteria did not. Plants under normal conditions took in carbonic acid and gave off oxygen; bacteria absorbed oxygen and gave off carbonic acid. Many thought that bacteria contained no nuclei but it had been shown that they were composed almost wholly of nuclein. Functionally bacteria were highly developed. It had been thought that pathogenic bacteria alone developed poisons but it had now been shown that non-pathogenic bacteria developed as much poison as the pathogenic. The fact that determined their pathogenicity was their capability of growing and multiplying in the animal body. They next found that there was as much poison developed in animal protein as in bacteria. One gram of casein might generate enough poison to kill 8,000 guinea pigs. They then tried to find whether poisons were present in vegetable proteins. It would be interesting to his friends, the vegetarians, to know that there was as much poison present in vegetable protein as in animal protein, and they were just as deadly. Whether bacteria grew in an animal depended on their ability to feed on that animal, and on the ability of the animal cells to feed on these bacteria. Nothing could assimilate without digestive ferments and these were specific in action. The prodigiosus was non-specific because it could not eat and digest the proteins of man's body and the ferments of man's body digested the ferments of the prodigiosus. They had also learned that the ferments of the cells of man's body could be altered so that bacterial cells that under normal conditions would not be digested by the body cells could, under other conditions, be digested. This was the principle upon which vaccination was based. After speaking somewhat further of typhoid vaccination and of the work of Jenner, Dr. Vaughan showed that the effects of the great discoveries of modern medicine had greatly lengthened the average span of human life. If they would go back to 1880, the first time an accurate census was taken, and compare the figures with those of the present time it would be found that the average duration of life had increased ten years since 1890 and it was stated that in the last decade it had increased four years. In the middle ages, so far as could be estimated, the average duration of a human life was 20 years. This estimate was made from Statistics of London during the latter part of the fifteenth and sixteenth centuries. In 1880 in this country the average duration of a human life was thirty years and today it was forty-two years. The mortality rates of the United States were lower than those of Europe and the average of human life was longer and if this was true two other facts were true: the average intelligence was greater, and the efficiency of the medical profession was greater in this country than in any other. If the people of the country as a whole would put into operation such sanitary rules and regulations as General Gorgas had formulated and applied in the Canal Zone, the average life of our children would be sixty-five years. This was a matter in which they should all interest themselves since sanitation was the keystone and the triumphal arch of civilization. If for one month the sanitary rules and regulations under which large numbers of our people were living in our cities, and especially in San Francisco, were abandoned we would see an epidemic such as had not been seen since the middle ages. Dr. Hoffman of the Prudential Life Insurance Company had stated that if the same conditions with reference to tuberculosis existed since 1901 as had existed before that time, there would have been 200,000 more deaths from tuberculosis than had actually occurred. This was a great achievement and they counted their victories, not like those of the battlefield by the number of lives lost, but by the number of lives saved. In closing, Dr. Vaughan urged that all join with them in this great work. They were learning that riches and honors and learning were of small value in comparison with health and though he hoped such a thing would not come to pass, it might be that the time was not far distant when we would need the strength and vigor of the country in order to maintain our existence.

In the absence of General Gorgas, Dr. Rodman spoke further of his work in the Canal Zone and introduced Col. Arthur of the Medical Corps of the United States Army.

Personal Reminiscences of Surgeon-General Gorgas.—Colonel WILLIAM H. ARTHUR, Assistant Surgeon-General, U. S. Army, spoke informally, stating that sending him to take the place of General Gorgas was like asking for a steam shovel and being given a pewter teaspoon, but that he was glad of the opportunity of bearing witness to General Gorgas' noble and lovable qualities and of congratulating the civilized world on the work he had done. He then gave an account of his personal acquaintance with General Gorgas since 1895, when he studied with him at the New York Polyclinic Hospital. He recalled the way in which Dr. Gorgas applied the scientific knowledge that had been gathered by Reed, Carroll, Lazear, and Agramonte to the practical work of cleaning up Cuba and Panama, and attributed his success to the fact that he could not be discouraged, and to the patience with which he awaited the opportunity to carry out a work in which he was interested.

Cancer: Its Prevention and Cure.—Dr. WILLIAM J. MAYO of Rochester, Minn., read this paper. He said that while Professor Vaughan's paper dealt with saving the lives of thousands, his dealt with saving the individual. The disease was prevalent enough to be classed as a scourge. Statistics showed that the disease was on the increase, but this increase was relative, probably, rather than real. The average length of life in the last decade had increased by 15 years, thus augmenting the proportion of individuals at the "canger age." Another point was the improvement in modern methods. Cancers exposed to the eye showed no increase, but rather those internal ones, exposed by the surgeon's knife and the Roentgen ray. An important question, often asked, was concerning the heredity of cancer. This had not been proven, but one could say that tissues liable to be attacked by cancer might be inherited, and individuals would more readily contract the disease. Life insurance companies did not take cancer heredity into consideration. Was cancer contagious? Not, as far as known, from one person to another, but it was contagious in the same individual. Heterogeneous grafting took place in mice, but homogeneous grafting had failed, while autografting certainly took place. Metastases took place at a point distant from the primary lesion, carried in the direction of the lymph stream. Was there anything in the tales of "cancer houses" and "cancer towns?" This excess was relative, not real. Towns called "cancer towns" were found to be those from which the younger population had migrated, leaving a larger proportion of "cancer age" individuals. Cancer houses were accounted for by the "mathematics of chance." The question of etiology of cancer found two groups of adherents; first, those who believed that certain cells had the properties of growth and repair. These cells, were, so to speak, "set on fire." The question then arose, "What set them on fire?" Secondly, there were those who believed cancer to be parasitical. This theory was mainly upheld by Erwin Smith's experiments on plant cancer. One main feature of cancer was that it never appeared of itself. There was always a primary lesion, resulting from trauma, injury, or infection. The precancerous lesion appeared before the cancer. A change appeared in the cell, which became like an embryonic cell, but still the cell kept its natural position. Later the position also changed. All vertebrate animals suffered from cancer, produced in some way by the habits of the animal. Thus in Denmark, Danish rats in the sugar refining houses, did not suffer from cancer, but American rats imported into Denmark, did so. The reason for this was found to be that American rats ate cockroaches, in which were trematodes which bored into the mucous lining of the stomach, causing cancers. Other cases were equally demonstrable. Thus, draft cattle, whose horns were bored for a rope to draw loads, developed cancer at the base of the horn. Chinamen, whose scalps were customarily shaved with a blunt razor, developed cancers of the scalp. In India and the Philippine Islands where the betel nut was carried next the gum and chewed, 85 per cent. of cancers were of the buccal mucous membrane. Australian ulcer was caused by sunburn, irritated by certain sand. Chinamen who ate hot rice, developed cancers of the pharynx, while the female, who ate later and got her food cold, was immune. The smokers' cancer in America was well known, and in this respect the American women were catching up with the men. Thus cancer was always preceded by chronic irritation. The cure consisted in

the early removal of the precancerous lesion. Cancer in the early stages was a local disease. If removed then it was certainly curable. The general pessimism relative to cancer had one definite reason. The persons who had been cured by surgical interference, did everything to conceal the fact that they had suffered from cancer, while those who were incurable could not hide the fact. Certain people, however, who had chronic spots of irritation, did not develop cancer, showing that there must be a certain immunity. Work of the future would be developed to increase this immunity, and it was even possible, that, without knowing directly the cause of the disease, one could, by increasing immunity, prevent the development of cancer.

Syphilis as a Modern Problem.—Dr. WILLIAM ALLEN PUSEY of Chicago presented this subject. Dr. Pusey stated that from the standpoint of medicine, syphilis was a preventable disease. The problem was now one of sanitation. In recent years the most important problems had been solved. Beginning with 1903, when Metchnikoff and Roux had demonstrated that syphilis was inoculable in animals, other important discoveries had followed: the discovery of *Spirochæta pallida* by Hoffmann and Schaudinn in 1905; the application of serum diagnosis of Bordet and Gengou, by Wassermann in 1906; the prophylaxis of syphilis of Metchnikoff and Roux in 1906; the discovery of salvarsan by Ehrlich in 1907; and the cultivation, and reproduction in animals, of *Spirochæta pallida*, by Noguchi in 1911. Immediate practical benefits had followed these important findings. Since the practical use of salvarsan the danger of infectivity to the community had been minimized, and this with Metchnikoff's personal prophylaxis, were the best aids in this great problem of modern society. This disease occurred in man alone and infection only came about by direct contact with infection, in parts not protected by skin and mucous membrane. A break in the surface was necessary to contract infection. A sanitary attack could be made from two directions: limitation of time of infectivity and protection of the healthy from the infected. Quarantine, as for acute infections, was impossible with a long-standing disease like syphilis; therefore the course of infection must be shortened. If patients infected could be treated within two weeks of infection, in 95 per cent. of cases the disease could be stamped out immediately. Even in 6 weeks the further course could be made almost negligible. With intelligent treatment the percentage of the disease could be reduced one-third. Treatment on a large scale by the State was possible, as the early syphilitic was an ambulant case who could come to the dispensary for treatment. Such dispensaries should be fully equipped to give free treatment to large numbers. To ignore such cases constituted a public danger. The medical profession needed training in early diagnosis, and systematic prevention, as had been carried on for years in Scandinavian countries, should be inculcated. This was far more possible now with mercury and salvarsan treatment. Such a procedure involved no complex sociological or moral questions, such as the segregation of syphilitics, or legal recognition of prostitution, which latter idea would never find foothold in Anglo-Saxon communities. The only adequate sanitary attack was to protect the public from the infected. It was unfortunate to view the syphilitic as suffering from his own fault, and therefore to be ignored. This involved danger to the innocent. The Metchnikoff and Roux prophylaxis consisted of a 33 per cent. calomel ointment applied to the site of infection. This plan had been used in the army and navy with remarkable result. It also protected doctors and dentists in the exercise of professional work. This prophylaxis had been wrongly regarded by some as an encouragement to lax morality, but morality, guarded only by fear of syphilis, must soon fall to the ground. The method must be regarded as rational as the prevention of yellow fever by control of mosquitos. The main problem was a sanitary one, but education of the child and the young adult as to the dangers of venereal disease was also essential. The social problem of late marriage was a serious one in the control of syphilis. An economic system which made it impossible for young men to marry was dangerous to the community. The sexual appetite, after hunger, was one of the strongest factors in human action, and, biologically, no plan was possible which attempted to control disease by controlling the sexual appetite. The control must be a sanitary one. This was the state of the problem which the syphilographer had to offer to the public.

The afternoon of Health Conservation Day was devoted to popular lectures given by well known experts and illustrated by lantern slides and motion pictures on malaria, yellow fever, dysentery, typhoid fever, plague, hookworm, leprosy, tuberculosis, syphilis, gonorrhea, pellagra, rabies, epidemic cerebrospinal meningitis, poliomyelitis, pyorrhea alveolaris, and trypanosomiasis.

In addition the Board of Trustees of the association had placed an exhibit in the Palace of Education of the Panama-Pacific International Exposition showing the activities of the Propaganda for Reform Department of the *Journal*, the work of the Council on Medical Education, and of the Council on Health and Public Instruction. There was also an exhibit calling attention to certain facts relating to patent medicines for the purpose of presenting the truth to the public rather than to the members of the profession.

SECTION ON DISEASES OF CHILDREN.

Thursday, June 24—Second Day.

Dr. LAWRENCE T. ROYSTER OF NORFOLK, VA., IN THE CHAIR.

Craniometry in Diseases of Children.—Dr. G. HARDY CLARK of Waterloo, Iowa, presented this paper and demonstrated the method of using the instrument which he described. He said it was difficult with our present knowledge to make any statements as to the value of craniometry in the diagnosis of disease. Any advance must be based on the acceptance and use of a simple method of measurement. The craniometric points on the dry skull were very difficult to adjust and use. It was desirable to have a base line extending from the glabella to the inion as a foundation which met the requirements of craniometry in that it might be set at a definite angle. If it was desirable to establish the facial angle upon a plane parallel to the cerebral base line this could also be done. A lead tape was used to make a record of the profile of the skull. The height of the cranium above the base line at any point could be ascertained. This instrument would make many comparisons of skulls possible. As the skull underwent rapid changes in early life this instrument would be helpful in determining the amount of the changes and should give information of value in the diagnosis of diseases and in determining the effects of mental training and character development in health subjects. The latter the author considered of considerable importance as the development of mentality and character in a race was coincident with symmetrical cranial lines and generally speaking the occurrence of abnormally sharp curves or flat surfaces appeared to predominate in individuals who were least efficient as factors in social progress.

Dr. J. P. SEDGEWICK of Minneapolis said Dr. Taylor was making some studies of a similar nature at the University of Minnesota. He related the case of a child with a high vertex suggestive of oxycephalia. The child died when two months of age and at post mortem was found to have an aortic stenosis and a patent ductus arteriosus. The question came up whether the increased vertical measurements had anything in relation to this condition of the heart. The instrument might be useful in giving them some information in regard to other conditions aside from oxycephalia, anacromegaly, and conditions of that class.

Dr. C. G. GRULEE said he had seen a case somewhat similar to Dr. Sedgewick's, but there was no heart lesion. He thought that to be able to get measurements and to study skull deformities would be a distinct advance.

Dr. HENRY DWIGHT CHAPIN of New York said he had made a study of bone development and mental condition in the New York Juvenile Asylum some years ago and they had not found that the shape of the skull bore any direct relation to the mentality. The brain would tolerate and adapt itself to any condition of the skull if it were slow in developing.

Dr. J. A. COLLIVER of Los Angeles said he had been associated with juvenile court and made a study of the effects of tobacco on young boys, but found nothing that was particularly characteristic accompanying its use in these boys. The size of the skull did not seem to have any relation to the use of this narcotic, at least it had seemed impossible to come to any definite conclusion.

Tuberculin Tests in Children of Colorado.—Dr. GEORGE H. CATTERMOLE of Boulder, Col., read this paper

in which he said that most of the available statistics on the prevalence of tuberculosis among children were derived from studies made in the hospitals and dispensaries of large cities. There seemed to be no data derived from private practice or observations made on school children living in small communities. In his series of 132 tests made on 110 persons, sixty-nine of whom were under fourteen years of age, using the von Pirquet and Morro tests, 38 per cent of the children gave a positive reaction; 41 per cent were negative. Fifty per cent of these children had parents who suffered from active tuberculosis. In summarizing the essayist said that where children had never been infected or in cases in which the number of bacilli received was small and the child's resistance good, as in Colorado, they did not react and were either not infected or were immune. In this series of cases there seemed abundant opportunity of infection and he believed that many of the children were immunized, though this point required further study. Possibly all tuberculosis was contracted in childhood and from three-sevenths to six-sevenths of the population acquired immunity at this time while the others succumbed to the more acute conditions of childhood or later developed pulmonary tuberculosis. In the prevention of tuberculosis one should aim to protect infants from all sources of exposure and older children from massive infection. Moderate and gradual infection in older children probably insured immunity.

Dr. E. C. GRULEE emphasized the fact that the large proportion of infections with tuberculosis were from individual to individual. Such infections far exceeded the infections from milk.

Dr. LANGLEY PORTER of San Francisco called attention to the fact that many children were infected from their grandparents, since these old people with persistent winter cough and chronic asthma, so-called, usually had tuberculosis.

Dr. HENRY D. CHAPIN of New York said he thought it was well not to put too much emphasis on the danger of bovine infection since it might scare persons so that they would be afraid of using milk. This would be unfortunate since milk was so essential in the treatment of tuberculosis.

Dr. ERNEST LACKNER of Chicago said he had been agreeably disappointed to find that in a series of 400 children from the Ghetto only about 20 per cent responded positively to the von Pirquet test.

Dr. J. I. DURAND of Seattle said that Dr. Manning had found only 22 to 23 per cent of a group of children in Seattle reacting positively to tuberculosis. One reason why more of Dr. Manning's children did not react to the tuberculin test might be because they had been making such a vigorous campaign against tuberculosis in Seattle. When they found a child with tuberculosis positive von Pirquet in the clinics they examine the parents and in this way were able to get a number of cases in the early stages.

Dr. T. C. MCCLEAVE of Berkeley said they all acknowledged that the largest proportion of tuberculous infections in man were of the human type, but the reason many had objected to even a reference to the bovine type was because they feared it would distract attention from the human type wherein the greater danger lay. They were now outgrowing this attitude of mind.

Quantitative Determination of Nitrogenous Elements in Newborn.—Drs. F. W. SCHULTZ and C. J. PETTIBONE of Minneapolis presented this paper in which they had tabulated the results of the quantitative determination of some of the nitrogenous elements of the blood of the newborn and compared these figures with some of those obtained in adults. By the newer methods these estimations could be made with from 15 to 20 c.c. of blood. After reviewing the views which Slyke and Meyer had formulated as to the fate of the protein digestive products in the body and referring briefly to the findings of Schondorf, Farr, Austin, Folin, Delaunay, Abderhalden, and others, they stated that their series of cases numbered twenty-six infants from one to ten days old. A review of their different results showed that the total nonprotein nitrogen per 100 c.c. of infant's systemic blood was approximately the same as in the adult. The age and weight of the infant and the period after feeding had no bearing. The percentage of urea nitrogen was uniformly high and averaged about 50 per cent of the total nitrogen. It was lowest in a newborn infant one-half hour old and in the cases that had not been fed. The amount of ammonia nitrogen was extremely small in every instance and was also not influenced by the age of the infant or the time after feeding. Probably the most interesting fact brought out was that aminoacids were constantly present in appreciable amounts in the infant's blood and were found shortly after birth when no feeding had as yet been given. It could hardly be said that the changes in the non-protein nitrogen in the systemic blood reflected the stages of protein digestion.

Dr. LANGLEY PORTER of San Francisco said he did not think they should let this paper pass without some discussion. He felt that with some training it would now be possible for them to use this method and that it might help them to solve some of the questions that would come up in pediatrics.

Dr. SCHULTZ said he had forgotten to mention one interesting thing that had come up in work of Osborne, Mendell, and Lusk, and that was that the feeding of aminomacids enabled them to sustain life for a considerable length of time in animals and the introduction of elementary aminoacids seemed to stimulate proteid metabolism.

Epidemic Abortion Reactions in Children.—Dr. J. P. SEDGEWICK and W. P. LARSON of Minneapolis presented this paper, in which they reviewed some facts with reference to the occurrence of epidemic abortion in cattle. It had been found that the *Bacillus abortus* occurred in a number of species of animals and was probably more common in man than had been supposed. After relating the results of some of the laboratory experiments on animals with reference to their reaction to injections of the *Bacillus abortus*, the authors stated that they had been using the complement fixation test, using the *Bacillus abortus* as an antigen. In the course of their investigations they had examined the blood of puerperal mothers, newborn children and children with bone lesions and other diseases. This form of infection was found more often in the children of the poor who were using ordinary store milk. The symptoms were quite similar to those of tuberculosis, and it had been found a number of times in newborn infants and in children with bone lesions. In two instances women on farms where the cattle were suffering from epidemic abortion aborted. The *Bacillus abortus* in the cases coming under their observation was found oftener than a positive Wassermann reaction.

Cerebrospinal Meningitis During the Texas Epidemic of 1912.—Dr. J. S. BARDIN of Fort Worth, Texas, read this paper, in which he reviewed a series of eighty cases of cerebrospinal meningitis, nearly all children, which he had treated during the epidemic of 1912. He said the disease was regarded as infectious and contagious and was quarantined. He had had a mortality of 18¾ per cent. It was not observed that weak and delicate children were more prone to infection than the well nourished and robust child. It had been noticed that epidemics in Texas had occurred with the beginning of cold rains following a series of dry years with especially mild winters. Sporadic cases occurred in which there was no evidence of exposure. The germ seemed to be every where, but only a small percentage of persons were susceptible to the infection. In most of their cases the characteristic symptoms were present, and the diagnosis was easy. There was some unusual cases that might have been taken for intestinal autointoxication or malaria. There were two symptoms which aided materially in the early diagnosis of the disease and these were the "meningitis moan" and the "meningitis expression." The moan differed from the cry of hydrocephalic patients in that it had a certain degree of regularity and was decidedly characteristic to one who had become familiar with it. The facial expression of the early stage of the disease was difficult to describe, but was likewise characteristic; there was a loss of luster of the eyes and often the absence of conjunctival reflexes. There was usually a pinched expression with cyanosis. It was their custom to puncture every case, and if the fluid came away under pressure to administer serum in every case. The duration of the disease was very variable. Most cases that recovered made a perfect recovery. The cases of spotted fever invariably died. They had no absolute rule for giving the serum. They had to be guided by the symptoms as to the number of punctures and the length of time between the same. They had some relapsing cases, but these all recovered. They had found blood pressure observations during puncture impractical and of no value. The condition of the respiration was their most important guide during the procedure of puncture. The syringe method of injecting the fluid was preferred. In posterior oasic

meningitis direct puncture of the ventricles might be done, but he had had no experience with this procedure. They had done a lumbar puncture in all cases, and the time between the punctures had varied from six hours to two weeks.

Dr. HENRY DWIGHT CHAPIN of New York said that in his experience with reference to the mortality in spinal meningitis he had found that if the patient could be kept alive for ten days or two weeks he would probably get well. For this reason proper nourishment was very important. Another point was that they did not seem to get the large effusions of blood now that they used to see in the cases that they called "spotted fever." They used to see very large ecchymoses, but now if they saw this condition the spots were only pin points. In his experience the gravity method of injecting the serum had been a little safer than the syringe method. The serum should be administered very slowly, taking ten or fifteen minutes to introduce it.

Dr. LANGLEY PORTER spoke of meningitis as he was seeing it in California. He thought the cases could be divided into two types, one in which there was increased pressure and one in which the pressure was not greatly increased and the fluid was thick, tenacious, and gluey, the symptoms in such cases being due to toxic and irritative cord conditions. He spoke of puncture of the corpus callosum in cases in which the aqueduct of Silvius was closed, which would allow the fluid to escape into the subdural space.

Dr. J. S. BARDIN of Fort Worth, Texas, said someone in discussing the paper had spoken of dry punctures, and his experience had led him to be very suspicious of dry punctures. If one did not get fluid down low he should go up higher, for sometimes the fluid might be walled off higher up in the canal. He cited one case in which he was unable to get fluid, and punctured the ventricle and the child got well.

Involvement of the Urinary Tract as the Result of Focal Infection in Children.—Drs. CLIFFORD G. GRULEE and F. W. GAARDE of Chicago presented this paper, in which they related the history of six cases in which a focal infection in some distant part of the body seemed to be responsible for affections of the urinary tract. In most of these cases the urinary symptoms developed six or seven days after the onset of a severe tonsilitis. The findings in the urine included hyaline and granular cast leucocytes and red cells. In several instances an organism was isolated from the urine similar to that found in the focal infections and this suggested an etiological relationship, between the focus of infection and the urinary disturbance. The amount of prostration was slight, and the condition tended to rapid remission. The treatment had been urotropin and sodium bicarbonate. The striking feature was the rapidity with which the urinary condition cleared up after the focus of infection was removed in several of the cases.

Dr. WALTER D. LUDLUM of Brooklyn said that the small doses of hexamethylamine which Dr. Grulee used were not sufficient, in his opinion, to have any effect. He was in the habit of giving very much larger doses as a urinary antiseptic .

Dr. F. C. NEFF of Kansas City said it seemed to him that the point of this paper was that when they had made a diagnosis of one condition they should not be too ready to conclude that that was the only trouble, but should look for the primary source of infection.

Dr. L. T. ROYSTER of Norfolk said he would like to ask if any one had gotten any results with vaccines and whether they had used sodium phosphate for acidulating the urine. The urine should be examined in every case of infectious diarrhea since there might be a colon bacillus pyelitis.

Dr. GRULEE, in closing, said that perhaps Dr. Neff's theory with reference to the large doses of hemamethylamine was correct, but it did not work out in practice. More than two or three grains were not necessary since it was not broken up in more than certain amounts. It was very difficult to prove that we do or do not get results in these cases, but I know the findings in such cases clears up gradually after small doses.

Mental and Physical Survey of Suposedly Normal Children.—Drs. LANGLEY PORTER, A. HUFFAKER, and A. RITTER of San Francisco, presented this communication, consisting of data based on the study of 195 children, all over two and one-half years. These children were cared for at the Agency Baby Clinic by R. Holsclaw and Dr. Rude and were boarded out by the Children's Agency of the Associated Charities. Each child was given a thorough physical examination, a Binet mental test, and Healy psychological test. The Wassermann and von Pirquet tests were also done. It was found that 55 per cent of these children were in need of dental care and 53 per cent had diseased or hypertrophied tonsils. Only four cases showed a positive Wassermann reaction. The children were classified as normal, retarded, borderline, moron, and imbecile. The most interesting groups were the retarded and borderline cases. In the retarded group were placed those who did not test up to age, but whose environment and health conditions might be responsible for their temporary retardation. Such cases must be sharply differentiated from the feeble-minded group as one would do an irreparable injury by committing a child to the feeble-minded group. Into the borderline groups were assigned those cases which were not normal, though they might seem normal intellectually, but whose environment was bad and training often vicious, and whose mental equilibrium was limited during the development period. Most delinquents fell into this class and might be prevented from becoming criminals by careful supervision and guidance. Following this classification they had found that the absolutely normal children comprised almost 66½ per cent; the retarded about 23 per cent; the borderline about 7 per cent; the morons, 4 of 119 cases, which were subjected to the psychological tests. On the physical side the most interesting fact was the high proportion of children who showed evidence of involvement of the tracheobronchial lymph glands, while only five cases showed the usual symptoms of involvement of the lung with tuberculosis. Eighteen children showed involvement of the mediastinal gland as was confirmed by radiograms. In this connection they had investigated Ewart's, von Koryani's, and Oespine's signs and their experience had led them to attach great value to the latter. This was an echoed whisper following a spoken word heard in the stethoscope placed over the seventh cervical and first or second dorsal spine. They had also studied whispered pectoriloquy over the spine and had found that it ran quite parallel with the dullness. They found in well-developed cases of mediastinal evolvement, but that it was a much earlier and more delicate sign than any other yet brought to their notice. The *x*-ray had shown infiltration in every case showing this sign. Ear complications and eye defects were very rare. Nine per cent showed tracheo bronchial adenopathy which would be interpreted as tuberculous by many clinicians and which was probably tuberculous in a large proportion of the cases.

Dr. EMMA MERRITT of San Francisco, called attention to the posibility of enlarged bracheobronchial lymph nodes as a sequellæ of whooping cough. She said that Jules Seamen in the clinic of Les Infants Malades in Paris had called attention to this thirty years ago. While there was no *x*-ray at that time, from auscultation and percussion and the knowledge gained at autopsies, they had been able to learn a great deal about these enlarged glands and they would sometimes remain for a number of months, but they were probably not tubercular.

Dr. A. HUFFAKER of San Francisco, described in detail the method of bringing out the pectoriloquy and of detecting enlarged mediastinal glands. Where the signs indicated the existence of enlarged mediastinal glands the *x*-ray should be used to confirm the diagnosis so that the patient might receive appropriate attention.

Dr. A. J. COLLIGER of Los Angeles, said he had examined in the neighborhood of 2500 and found accidental heart murmurs in 20 per cent of the cases. The examinations were made about the age of puberty, then again one or two years later, when it was found that 75 per cent of the murmurs had disappeared. He believed that efforts directed to the correction of physical defects caused a decrease in the amount of delinquency.

Starch Digestion in Children, with Some Clinical Observations.—Drs. H. H. YERRINGTON and CLYDE T. WETMORE of San Francisco, presented this paper in which they reviewed the physiology of starch digestion and showed that many children were suffering from excessive amount of starch. During the last four or five years in the out-patient clinic of the Division of Pediatries at the Stanford Medical School they had been making a routine examination of urine and stools in the majority of cases, especially in those having intestional disorders, and in all cases examined for tonsil and adenoid operations. There was a certain type of child

whose dietary was made up principally of carbohydrates and whose stools showed an excess of undigested starch. They had examined 372 stools from 338 cases ranging from one to fourteen years. The diagnosis varied, but there were 267 cases of hypertrophied tonsils, 41 of digestive disturbances, 10 of eneuresis, six of ricketts, and 14 of other conditions, including bronchitis and skin conditions. The greatest percentage of starch excess was found in the cases having digestive disturbances and next was rickets. They concluded that there was a type of indigestion in children presenting certain clinical manifestations brought on by the continued use of a diet compound, principally of carbohydrates, that this condition could be cured by eliminating starches and giving a mixed diet at proper intervals. Frequent examination of the stools was absolutely necessary to aid in the diagnosis and check up the progress of the case. Before attempting to correct the dietary errors of the oral cavity should be corrected. Chronically inflamed tonsils and nasal secretions played a most important part in relation to the proper digestion of the child's food.

Casein Milk Feedings in Infancy and Childhood.—Dr. WALTER GELLHORN of Seattle, presented this paper, in which he described his method of preparing a casein milk. He stated that his observations conformed pretty closely to the experience of the authors who favored the use of casein milk, but he had found that he could improve results by making not only the carbohydrates but also the fats a variable constituent. Miller and Hoobler had published similar views. They had used the powdered casein which Hoobler recommended in the county hospital and had found it just as valuable as any other preparation. The modification was made of 4 per cent milk, and consisted of 17 ounces skimmed milk, 1½ ounces of cream (top), 17 ounces of water, three level teaspoonfuls of plasmon. This was boiled. The caloric value after adding 5 per cent dextro-maltose amounted to about 440 calories per 1000 c.c. It contained only about one-half as much fat as albumin milk, two-thirds of its calcium and 0.8 per cent more lactose. In severe cases the sugar was not started until the third or fourth day. The fats and sugar could be increased as the patient became able to take care of adidtional amounts. The report was based on the experience of the writer with this food in 163 cases, not hospital cases.

SECTION ON SURGERY.

Thursday, June 25—Third Day.

Fascial Tubulization in Repair of Nerve Defects—An Experimental Study.—Dr. DEAN D. LEWIS of Chicago read this paper. A number of different materials had been used to prevent the action of scar tissue on the injured nerves and to form tubes through which neuraxons developing from the proximal stump could be conducted to the distal end of the nerve in cases in which there had been an actual loss of substance. Foramitti's hardened calves' arteries and veins were probably the best to date. They were slowly absorbed and did not provoke scar tissue. Best results in transplantation were obtained by using autogenous materials. Lewis said he used fascia late in tubular formation. Had experimented upon 40 dogs, using the sciatic nerves. Killed them from one day to 14 weeks and made histological specimens of the most of them. He believed microscopical study was after all the best index of nerve regeneration. The fascial tubes became filled with a soft coagulum. Avis cylinders grew distally within the fascial tubes. Tubes remained patent for weeks during the growth of these nerve ends. Blood should be controlled for it interfered with good repair. He illustrated cell proliferation 2½ cm. proximal to divided end at different periods of time and emphasized the importance of keeping nerve ends in direct line and free from torsion that motor and sensory nerve ends may meet each other respectively.

Dr. A. A. LAW of Minneapolis, Minn., reviewed the use of decalcified bone, magnesium tubes, blood vessels, and egg-shell membranes and declared in Minnesota he had used fascia to best success.

Dr. J. GOLDEN of Chicago freshened the nerve ends before bringing them together. He asked whether it was necessary to oppose axon to axon or to leave them to find one another. He also said the length of defect in the nerve determined the quality of the repair. Had used muscles most satisfactorily to date.

Dr. MACKENZIE of Portland reported a case of tumor growing from the sheath of the sciatic nerve. It was diagnosed as sarcoma and its chief symptom was intense pain. He resected the sciatic from the lower border of the glutens maximus to its end, having the popliteal suspended. Marked trophic disturbances resulted, necessitating a second operation. He brought nerve filaments together from the remaining trunks and covered the anarlomoses by muscle.

Dr. RINKENBURGER of Los Angeles reported a case of ulnar paralysis functionally restored by anastomosis after two operative attempts.

Dr. LEWIS in summing up replied that he did not know whether the neurotrophism for sensory nerves corresponded with that of the motor neurones. He thought MacKenzie's case illustrated tubulization by muscle. He considered fascia, however, more accessible.

Election of Officers.—On nomination of the Executive Committee the following officers were elected: *Chairman*, Dr. E. W. Andrews of Chicago; *Vice-Chairman*, Dr. F. T. Murphy of St. Louis; *Secretary*, Dr. Samuel J. Mixter of Boston; *Delegate*, Dr. D. D. Lewis of Chicago; *Alternate*, Dr. W. D. Haggard of Nashville.

Selection of Operative Cases in Chronic Intestinal Stasis.—Dr. W. B. RUSS of San Antonio, Tex., read this paper. He gave a brief review of the literature to date—most of the cases got well under good management. Many were physically deformed, with unstable nervous systems and had evolutionary bands. In spite of these conditions they often, if left to themselves, lived to old age. Constipation was common and caused no bodily injury even though the bowels moved but once a week. The neuromuscular wall of the cumen and colon became atonic but gave no symptoms until it became infected. Surgical interference should be postponed as long as possible. He thought we were passing through a surgical fad similar to that characterized by kidney fixation and ovariectomy. He favored appendicostomy. He recognized as operative indications chronic appendicitis and back pressure with the ileum. Besides appendicostomy he plicated the dilated ceco colons and fixed them to the anterior wall.

Dr. J. N. JACKSON of Kansas City said there were two classes of workers that were detrimental to the progress of intestinal surgery, those with definite ideas based on small experience and those opposed to new ideas. He held that hopeful optimistic conservatism was necessary. The physiology of the colon was beginning to be appreciated although its surgery had been confined to mechanical indications. Many cures had been obtained by simple appendectomies.

Dr. R. C. COFFEY of Portland declared that he was the first to publish in the American Medical Association Journal a report of intestinal short circuiting. He later removed the same patient's colon. Later the patient presented himself, wishing to have the rectum removed and was finally said to have been cured by circumcision. He had concluded that operations involving opening the intestine were dangerous. He found peristalsis normal after short circuiting the normal gut and reversed in the case of the abnormal gut. He did not favor the Wilhis method. The best results were obtained by the removal of the ascending and half the transverse colon.

Dr. REA SMITH of Los Angeles said that there was no value in short circuiting the ileum for colonic constipation, but for stasis in the ileum the operation was useful. Most cases were properly medical. He doubted the wisdom of fixing the cecum without fixing the ileum too.

Dr. RINKENBURGER of Los Angeles had studied with Lane. Twenty young men, none of whom were over 22 years of age, showed the same intestinal positions by *x*-ray as Lane's operative cases had done.

Dr. R. T. MORRIS of New York thought that many of their ancestors short circuited. Intestinal cases were always complicated by other defects, ductless glands, ancestry and the like. Many were amenable to suggestion so that the picture was a composite one. Stiginata increase directly with cultural limitations of a race.

Dr. J. W. DRAPER of New York with his colleague, Dr. J. M. Lynch, had studied 13 cecocolons grossly and microscopically. In each there was a common mesentery to the terminal ileum and the colon; an evidence of non-fusion, and the ceca were of the herbivorous or pseudo herbivorous type. Microscopically, in three the normal mucosa was absent; in three there was beginning polyposis; in three Auerbach's plexus was absent:

in all the musculature was attenuated. Total colectomy should be avoided because of the importance of the intestine and caudad colon as an excretory organ for certain poisons.

Intestinal Adhesions. — Dr. W. B. BRINSMADE of Brooklyn read this paper. He mentioned trauma, infection and blood clot as three causes of adhesions. These might develop after operation, and might or might not be the cause of symptoms. Very slight adhesions might give severe symptoms; while very extensive adhesions might give no adhesions. There was no definite rule as to cause and effect. He had noted the free use of dry gauze in the European clinics in 1912. Operations upon dogs had confirmed his belief in the usefulness of rubber dam as an agent to prevent traumatism of the gut and subsequent adhesions. He had long since eliminated the contact of gauze, either wet or dry with the peritoneum. He had duplicated his clinical operations on dogs, using gauze in some and rubber dam in others. Less adhesions were found in those in which rubber dam alone had come in contact with the viscera. Six dogs were eviscirated at the surgical laboratory of the New York University and were similarly treated. In this series there were number of adhesions following the use of rubber dam had been used. W. H. Barber, at his suggestion, had operated on six dogs and found no difference in the number of adhesions following the use of rubber dam or gauze. In none of the animals were adhesions present excepting at the sites of the intra-abdominal wounds and on the posterior surface of the abdominal wound itself.

Dr. A. S. LOBINGER of Los Angeles considered anesthesia and subsequent intestinal narcosis a factor in adhesion formation, as well as chemical irritation due to antiseptics.

Dr. A. F. JONAS of Omaha said that the degree of adhesions depended upon the type of irritant and its intensity, whether bacterial or mechanical. Exposure to air; too many abdominal pads: particularly their changing—all these tended to increase adhesions. He advised the careful selection of the wound area, the use of visceral forceps, of moistened pads, the avoidance of frequent change of pads and the least possible handling of the intestine.

Dr. L. S. PILCHER of Brooklyn congratulated the section on the tone of the papers read before it. He considered Dr. Brinsmaid's paper very important. No more violence than just enough to accomplish the result should be used. Much depended upon individual judgment. He considered bacterial invasion a factor and the use of rubber dam a simple method. Laboratory experiments were not absolutely convincing. Sodium citrate should be considered.

Dr. J. W. DRAPER of New York said that he had assisted Dr. Barber in carrying on the laboratory experiments for Dr. Brinsmaid. These had more firmly fixed in his mind the importance of the essayist's contention that the utmost gentleness should be used in handling the viscera. The problem was, however, far from being solved because of the fundamental biological considerations to which Dr. Brinsmaid had also referred. These were in brief the ratio between fibrolytic and fibrogenetic forces which as yet could not be estimated and which differed greatly in all mammalian individuals.

Malignant Diseases of the Large Intestine.—Dr. H. B. DELATOUR of Brooklyn. Cancer was more frequent in sigmoid and cecum. Abderhalden reaction might be of value in determining diagnosis. The prognosis was good. Colostomy was often an essential, and the patient could be made much more comfortable than generally supposed by the use of a proper bag for for gatherng the feces.

Combined Abdominal and Sacral Operation for Carcinoma of Rectum.—Dr. D. F. JONES of Boston. By the time these cases reach the surgeon they are often hopeless and he urged a more careful study by the general practitioner and a more extensive operation than the Kraske by the surgeon. The combined operation in one thigh was too severe, as a rule, and should be done in two stages. A permanent colostomy, with excision of entire rectum, was the operation of choice. The essayist reported sixteen cases with three deaths.

Dr. M. F. PORTER of Fort Wayne, said that it often was hard to diagnose cancer of the intestine, even with the abdomen open. Good laboratory technique was very important as clinical aid.

Dr. C. B. DAVIS of Chicago said that Hartmann's prognosis after abdominal recurrence was 18 per cent. following sacral operation 68 per cent.

Dr. ALEXIS MCGLANNAN of Baltimore discussed the surgical pathology of carcinoma of the intestine and described two types: the cylindrical-celled, which matastasized late and the cuboidal celled which involved the adjacent organs early. In the latter case death was due to carcinoma; in the first, to obstruction.

Dr. L. J. HIRSCHMAN of Detroit emphasized importance of rectal examination in all suspected cases.

The Transverse Incision for Operation in Appendicitis.—Dr. A. E. ROCKEY of Portland had used the transverse incision for appendectomy since 1904. The incision is anatomically correct, being in the line of the nerve and muscle fibres and lines of the skin. After pus cases it was less likely to be followed by hernia.

Dr. FARR of Minneapolis preferred the oblique incision which avoided the nerves and cut the transverse fibers obliquely.

Dr. MOSCOWITZ of New York said that he used the Kammerer and MacBurney incisions for appendectomy and the transverse incision in the upper abdomen. It was most accessible for drainage and for suture and left but little scar.

Dr. CHRIS O'DAY of Portland requested that the transverse incision be tried, inasmuch as it could not be described.

Oration on Surgery: The Intestinal Tract.—Dr. SAMUEL J. MIXTER of Boston delivered this address. Intestinal malformations had been corrected; strictures and dilitations had been explored by the surgeon, thoracic esophagectomy remained the most difficult, and should be left for those experimenting upon it. The stomach was insulted in various ways and abused surgically. The excision of malignant disease and chronic ulcer of the stomach were accepted facts. In gall-bladder with a small stone of the strawberry type often caused some of the symptoms of ulcer. He had favored excission rather than drainage of the inflamed gall-bladder. Lymphoid tumors of the small gut occasionally required treatment. The appendix, when retrocecal, often passed unrecognized until rupture. It was often removed; although innocent, for disease in other parts of the body. The colon never lay in the lines and curves prescribed by the old anatomies. Fecal stasis was recognized as evil and to relieve it operations had been designed. Ptosis did not require operation. Neuroses and autointoxication required further study. The cause of adhesions was not known. The least traumatism; the use of wet gauze; the covering in of raw edges helped to prevent adhesions. Advance had been made in the treatment of intestinal stasis; the large intestine was more frequently the source of obstruction and required early operation. Create an artificial anus to save life. No one should attempt a serious operation without having served under a good master. The College of Surgeons represented a step in the right direction. One should operate first upon the lower mammals and should undertake gradual study in surgical research. Surgical judgment was more important than surgical skill, and the clumsy technician was less dangerous than the undisciplined operator.

Postoperative Roentgen Studies in Gastric and Intestinal Operations.—Dr. J. T. CASE of Battle Creek said studies should be functional rather than morphological and could be best made through the *x*-ray. Stomatized stomachs emptied rapidly and completely or rapidly and incompletely. The pyloric stoma was the site of election except for dilated, atomic stomachs. The contractile ring observed in the duodenum had also been observed in the jejunum aboral to the gastrojejunal anastomosis. Iliac stasis appeared not immediately but possibly within three years following ileo sigmoidostomy. Enemata might regurgitate into the ilea. In ceco-sigmoidostomy the current ascended both arms of the colon.

The Use of Inlay and Dowel Grafts in the Treatment of Fractures.—Dr. F. H. ALBEE of New York considered the indications for open operation and internal fixation in fresh and ununited fractures. He preserved the grafts in sterile vaseline 48 hours before using. He favored the elimination of all foreign substances—used kangaroo tendon for silver wire. He demonstrated his methods and instruments by lantern slides.

Dr. H. P. H. GALLOWAY of Winnipeg had performed fifty-six graft operations with good results. Foreign grafts might be inserted into infected areas and good union obtained.

The Suprarenal Gland in Shock.—Dr. J. F. CORBETT of

Minneapolis read this paper. He pointed out the epinephrin content of the normal gland and that of the gland in shock. He produced shock experimentally by traumatizing the intestines. He reviewed the work of Henderson, Meltzer, and Crile. Traumatic shock might depend upon epinephrin for its relief. He found the suprarenal cortext not affected in experimental shock. He considered shock a complex associated with adrenalin exhaustion and oligaemia. Trauma was an important causation factor.

Dr. J. E. MOORE of Minneapolis observed shock infrequently at the present time. To account for this he pointed out the more skilled anesthesias; the better psychological care of patients and the diminished sepsis. Why could shock not be prevented by the giving of adrenalin?

Dr. Corbett replied that it was his purpose to show how epinephrin became exhausted and how it might be preserved. When administered it did not prevent shock because the amount to be given was small and would have to be kept up for a long time and would injure the blood vessels.

Cystoscopic Methods in Ureteral Structure and Calculus.—Dr. BRANSFORD LEWIS of St. Louis demonstrated the direct and indirect methods of catheterizing the ureters. The intraneural ureter might be dilated or incised to secure relief from stone when the stone lay in reach. If above or cephalad to intraneural part a bougie might be passed to dilate below.

Dr. WILLIAM F. BRAASH of Rochester added that many stones existed in ureters without symptoms or indications of operation. It was best to dislodge them and allow them to pass. Peristalsis was strong enough to force out most stones of smaller size. The caudad ureter might be split without harm, as was shown by Draper and Braash in 1911.

Dr. LEWIS gave the mortality of 15 to 20 per cent for the operative removal of ureteral stones by abdominal section.

Roentgen-Ray Epitheliomas Curable by Radium—An Apparent Paradox.—Dr. ROBERT ABBE of New York said that *x*-ray irritation was occasionally followed remotely by cancers of varying severity. In stages of hyperkeratosis, epithelioma, or finally, squamous cell carcinoma. In the last stages it involved the lymphatics and was beyond favorable action by radium. The beta rays were the efficient force in the cure.

Experiences in Military Surgery.—Dr. W. E. DRENNAN of Birmingham, Ala., said the psychology of the soldier favored his convalescence. The treatment of wounds was free drainage. Cases of tetanus when operated upon often recurred. So the antitoxin should be given. The gas gangrene was best treated by multiple incisions.

Casualties of Modern Naval Warfare.—Dr. F. E. MCCULLOUGH of San Francisco said that laceration was common in all wounds and that infection was general. He pointed out that rifle wounds, particularly of the chest, were usually not serious. Iodine was not efficacious. He advised salicylic-boric acids to dust over the wound and a creolin base in ointment form. The nitrogen fumes of bursting mines proved very fatal.

SECTION ON THE PRACTICE OF MEDICINE.

Thursday, June 24—Third Day.

Specific Treatment of the Malignant Forms of Malaria.—Dr. C. C. BASS of New Orleans read this paper. He said that the malignant forms of malaria included those proving fatal; those which would die without proper treatment; and those cases in which the life of the patient was in danger. Practically all of these cases were due to infection by the estivoautumnal parasite. The only specific drug known was quinine and it was interesting to know the susceptibility of the estivoautumnal parasite to quinine. The life cycle of the parasite was 30 to 48 hours in the red blood cell. The parasite developed considerable size, reaching the full measure of the cell and was much more resistant to pressure than the tertian variety. Three-fourths of the life cycle of this parasite was spent in the capillaries, where instead of being elongated like the pliable red blood cell its resistance resulted in blocking of the capillaries. In this position it was inaccessible to quinine. Autopsies showed capillaries of important organs to have been obstructed. Anemia of the brain with subsequent coma was produced in this manner. These parasites could not be reached until they mingled in the blood stream. Many patients died of toxemic conditions in spite of large doses of quinine, even after the destruction of the parasite. Administration by mouth was useless in pernicious malaria. Introduction of bi-muriate of quinine subcutaneously or intramuscularly could be used, but it was irritating to some individuals. To obtain quick results, doses should be given intravenously, but not more than 30 grains in 24 hours, as larger doses were dangerous to the patient, and the patient died sometimes in spite of them. The enormous amount of foreign protein represented by the malaria parasite, as much as 600 c.c. to 6000 c.c. of blood, often caused a toxemia sufficient to kill the patient.

Dr. BREM of Los Angeles said he distinguished three groups clinically: (1) cases due to blocking of brain capillaries; (2) intense infection of the red blood cells, equal to .6 per cent of the cells, with accompanying hemoglobinuria; (3) the provisional group with hemoglobinuria, *i.e.* blackwater fever types. Quinine could not reach parasites lodged in the brain and the cerebral type did not recover. Quinine had been given intramuscularly, when impossible by mouth on account of vomiting. If given by mouth in the morning, one escaped the paroxysms of the disease which occurred usually in the afternoon, and the patient could retain quinine better, 30 grains thus given were better than 40 later in the day. Patients often showed intense toxemia at autopsy.

Dr. CHARLES S. WILLIAMSON of Chicago asked how long it was necessary to keep up treatment after apparent disappearance of the parasite from the blood. He had often been disappointed by the recurrence in cases he had supposed cured.

Dr. BASS replied that relapses were the exception rather than the rule. Relapses were usually reinfection. Malaria carriers were often present in the family of the patient and these persons were capable of reinfecting mosquitoes. Malaria parasites often disappeared from the blood in a few days. The condition leading to hemoglobinuria was the disruption of the parasites from the cell. Thus hemaglobinuria could be made worse by quinine. Quinine served only the purpose of killing the plasmodia.

Syphilis of the Stomach.—Dr. FRANK SMITHIES of Chicago made this presentation. He found dyspepsia in various forms often associated with a positive Wasserman. Exploratory laparotomy often demonstrated syphilis. In 6 years he had discovered 25 cases by serological tests among 7545 cases. The lesion might be part of systemic syphilis or a local manifestation. Changes in the stomach wall were relatively common, but gummata and scarring were not. The changes were in the form of round celled infiltration of the stomach wall with occasional enarteritis. Other types were miliary gummata; multiple inflammatory nodules, and gastric adhesions. Of the 26 cases, 15 were in females. The ages were from 20 to 56 years. It was difficult to get a history of primary sore, but history of chancres on the penis or mouth sore had been obtained in a few cases. The Wassermann and Noguchi tests had been positive. Eight cases had been treated. The serological tests furnished the basis for classification. This was not entirely conclusive as cicatricial or inflammatory conditions of tuberculosis were often influenced by salvarson. The cases were of three kinds: (1) persistant gastric derangement in persons previously well; (2) constant dyspepsia for years; (3) gastric upset, followed by years of apparent health, and then relapse. The *x*-ray did not always reveal pathagnomonic signs, but a characteristic sign was an abnormal outline with apparently normal peristalsis. This, with positive Wassermann, made the diagnosis certain. Treatment consisted of salvarsan and mercury injections, with iodines and free use of iron and arsenic. Diet and lavage were hopeful.

Dr. DUDLEY FULTON of Los Angeles said he had seen one case of true syphilis of the stomach, a male, 36 years of age, with apparently typical symptomatology of ulcer with tendency to hemorrhage. The Wassermann was four plus and the case cleared up under mixed treatment. Dr. Smithies' paper was the refinement of diagnosis and recognition should be more easy in the future than in the past. Operation was of doubtful value in cases with atypical signs, as proven by autopsy. The therapeutic test was not unquestionable proof of syphilis. Treatment instituted late was of little avail. The statement, too, of the patient as to syphilis should be corroborated by a positive Wassermann, by active evidences of the diseases and by *x*-ray. Then the therapeutic test was reliable. Cases were probably more frequent than generally recognized.

Dr. S. M. WHITE of Minneapolis said that this paper was important because syphilis of the stomach was frequently overlooked. The serological tests were of extreme importance in this connection. Syphilis of the heart was a similar question. It had to be considered.

Dr. EINHORN of New York said this was an important subject. He believed syphilis of the stomach was more frequent than generally admitted. There were varieties which give rise to tumor formation, simulating cancer of the stomach, with no free hydrochloric acid and with presence of lactic acid, occult blood and Boas Oppler bacilli. Surgery could not cure these patients. The Wassermann reaction was here of great assistance. Still, there were cases of syphilis of the stomach that gave a negative Wassermann. In one such case he treated the patient with iodide of mercury and the case recovered. In these cases antiluetic treatment did no harm to the patient and might do good.

Dr. GEORGE EUSTERMAN of Rochester, Minn., said he had had 21 proven cases of syphilis of the stomach. Ten had been exposed by surgery. These made recovery under antisyphilitic treatment. Eleven were non-operative cases and were diagnosed by the positive Wassermann and history of infection. The *x*-ray findings and evidence of gastric disturbance were important in these cases. Positive Wassermann reaction could not always be obtained. All his cases had definite symptomatology with marked reduction in enzymotic activity. Hemorrhage played a secondary rôle.

Dr. CHARLES E. SEARS of Portland, Ore., was interested in the therapeutic test as a diagnostic procedure. Undoubted cases with definitely proven lesions were few. It was safer to exclude cases diagnosed by the therapeutic test. In the majority of demonstrable cases he had found achylia present and also absence of pain; whether these symptoms were characteristic he did not know.

Dr. SMITHIES said that often there was absence of free hydrochloric acid in syphilitic lesions as in cancer, but in intermittent cases the Hcl. was about normal. He considered the positive Wassermann the surest diagnostic test. There was often hyperperistalsis and delayed emptying in these cases and a relatively low formaldehyde titration in the gastric extracts.

Gastric Cancer as a Sequel to Gastric Ulcer.—This paper was read by Dr. WILLIAM FITCH CHENEY of San Francisco. He called attention to three points: (1) gastric cancer occurred secondarily to chronic ulcer more frequently than was thought; (2) no definite methods existed for deciding when malignancy took place until advanced disease had occurred; (3) in consequence of this position, surgery should be advised with less delay. Unanimity of opinion was general as to the possibility of the first proposition. As to the frequency, surgeons reported variously percentages from 26 to 59 per cent and pathologists about 70 per cent of malignant changes. The German workers, however, considered that ulcer was often secondary to cancer, the ulcer occurring on the cancerous base. The differences were in the point of view, one set of observers judging from microscopical examination, the other from clinical history. Three types were established: (1) long repeated attacks; (2) the initial attack a few years previously, then sudden malignant development; (3) malignancy without previous symptoms *i.e.* patient did not consider symptoms important). The change to malignancy was impossible to detect. Loss of weight, anemia, no relief of pain by food, might occur without cancer, or might not be marked with cancer, nor were the gastric analyses entirely characteristic. Cases suitabale for operation were those in which food retention occurred or those which showed relapse. Resection or gastroenterostomy (in the later the duodenal contents regurgitated into the stomach) might be done; or, thirdly, combined resection and gastroenterostomy. Operation should be advised earlier without waiting till cancer has occurred.

Dr. FRANK SMITHIES of Chicago stated that the crux of the situation was the future history of the ulcer. Ulcer symptomatology was often simulated by gall-bladder or appendix lesions. The time factor was here an aid in differentiation. Where the history had been present eight years the ulcer had been proven by surgery or autopsy. Gastric ulcers might get well but, on the other hand, it rested with medical men to decide whether in chronic recurrent cases they should urge upon the patient an exploratory laparotomy with a 1 per cent mortality, or risk a later operation for gastric cancer with 100 per cent mortality.

Dr. MAX EINHORN of New York said he thought Dr. Cheney was very favorable to surgeons when he said 50 per cent of ulcers became cancerous. This did not tally with his experience. He did not consider chronicity and acidity constituted an ulcer. Of the severe cases a small number would become cancerous, probably one in 20. The minority did not improve. All ulcers could not be treated by this minority. Only cases of apparent mechanical obstruction should be treated by operation.

Dr. SPEIK of Los Angeles said that certain cases of mechanical obstruction were due to œdema or the pylorus and patients might improve. An amusing case illustrated this: A Jew, 65 years old, who had lost 70 pounds, with history of hyperacidity and frequent vomiting, came to the California Hospital for operation. He became frightened at the anesthetic and ran away. Dr. Speik took care of the man and with medical care and diet he became practically well and gained 60 pounds. Surgeons were often not competent and the mortality was as great in cases not suitable for operation as it was from cancer. Ulcer should be recognized early by medical men and given tyrannical treatment. Patients often dosed themselves with patent medicine and got temporary improvement. If these cases were taken early one should hear less of carcinoma of the stomach.

Dr. MACRAE of Philadelphia said he thought the difference in opinion was accounted for by the difference of material that came to surgical and medical clinics. Surgeons often thought hyperacidity meant ulcer and learned by operation that it was not so.

Dr. CHENEY said that there were three points: All ulcers were not ulcers; some got well. All cure was not cure; some relapsed. All surgery was not surgery; all surgeons were not competent. Medical men owed it to their patients to see that they had competent surgeons to care for them and also that surgery was not too long delayed.

Essential Factors in the Diagnosis of Duodenal and Gastric Ulcers.—Drs. CHRISTOPHER GRAHAM and GEORGE EUSTERMAN of Rochester, Minn., gave this paper which was a review of experimental and therapeutic advances in application of diagnosis of benign and chronic gastric ulcers, in 2400 cases, studied in the Mayo Clinic from 1900-1914. Eighty per cent of cases showed chronicity or remission of symptoms. Pyloric and duodenal ulcers without advanced complications showed periodic exacerbations, often in spring and fall. Factors influencing recurrence were—nervous and physical fatigue, infection, exposure, dietetic indiscretions, and intestinal disturbance. The average age was 12.5 years. Pain was the most constant symptom. Relation of food intake to pain was of diagnostic importance in 80 per cent of cases. Atypical cases were—perforating processes; chronic complicated types; severe cases where earlier symptoms were overlooked by patient; suggestive malignant types. Differentiation between gastric and duodenal ulcer was almost impossible; in 5 per cent of cases both lesions were present. The *x*-ray was valuable but not entirely reliable. The position, size and depth of the ulcer were important; if shallow, it might not be shown by *x*-ray. Pain to the left of the median line and the presence of occult or fresh blood were important diagnostic signs. The relation of pain to time of food intake was important. If the interval was long the ulcer was low; if pain was more prompt, the ulcer was higher. Hemorrhage was a safe diagnosis for ulcer in 95 per cent of cases; blood in stools in 25 per cent of cases. Appendix involvement in 2 per cent of cases showed blood in the stools.

Dr. J. N. HALL stated that more cases were due to appendix involvement than were clinically supposed. Presence of abdominal rigidity was an important sign. Its presence indicated organic lesion, not merely hyperacidity. There might be jaundice or biliary colic due to interference with the gall duct by the ulcer. Early surgery would save much mortality from cancer.

Dr. EINHORN said that cases with stagnation near the pylorus often came to surgeons and so they considered duodenal ulcer more frequent. Cases of gall-bladder trouble might be differentiated by examination of the bile through a tube. If it were cloudy, not clear, there was gall-bladder involvement.

Dr. J. A. LICHTY of Pittsburgh, said the differentiation between acute and chronic gastric and duodenal ulcers was important. This would decide which were medical and which surgical cases. One writer had stated that cases of gastric ulcer came to the internist about six years after onset, and to the surgeon ten

years after. It was foolish for surgeons and internists to quarrel over cases when so much damage had been done that neither could do the patient much good.

Concerning the End Results of Gall-Bladder and Duct Disease.—Dr. J. A. LICHTY of Pittsburgh read this paper, which emphasized the difficulty of making reliable and satisfactory diagnosis in gall-bladder and duct disease. Important points were the feeling among surgeons that next to appendix cases gall-bladder operations gave the best results, and the difference of opinion among physicians as to procedure, even when diagnosis was certain. In 600 cases 193 were operated upon and 407 not operated upon. Of the operated cases 25 died, a few less than non-operated. The fatal cases were usually common duct cases of long duration. These cases differed from appendix cases in that many refused operation. The appendix cases dared not refuse operation. The gall-bladder cases had intervals with no symptoms and often six years elapsed between diagnosis and operation, which explained the mortality in many cases. Gall-stone disease was frequently associated with pancreatic disease and 1 per cent glycosuria was found. Diabetic cases were 150 in 1400, thus the incidence was small. Indication for early operation was proven by the fatality of late common duct cases. The non-operated cases lead miserable lives and were frequently drug habitués.

Dr. J. N. HALL said that if people were educated for early gall-bladder operations, as they were for appendix operation, 30 per cent of cases which became later cancer of the gall bladder would be prevented.

Dr. MCGEARY of Los Angeles asked Dr. Lichty if he had found any particular etiological factor. The incidence of typhoid cases seemed small.

Dr. J. A. LICHTY said that he had been disappointed in his statistics regarding typhoid cases. He expected them to be high, but such was not the case. He believed the only marked factor was long standing digestive disturbance or hyperchlorhydria, leading to stone formation. Surprising results had been obtained from medical treatment and care.

Dr. EINHORN said he had found good results from glycerin medication two or three times a day.

Dr. LICHTY said he hoped that would not get out. The olive oil remedy, he thought, had occasioned loss of life by patients believing they could avoid operation. If they heard of glycerin they would be influenced in the same way.

Chronic Nephritis with Report of 250 Cases in Private Practice.—Drs. W. JARVIS BARLOW and R. L. CUNNINGHAM of Los Angeles read this paper. The report covered a period of eighteen years and was made entirely from a clinical standpoint. Four groups of cases were classified: (1) primary nephritis, 75; (2) cardiovascular nephritis, 82; (3) miscellaneous cases, 24; (4) nephritis secondary to tuberculosis, 69. Etiologically classified the groups were: (a) acute infections or alcoholism; (b) chronic endocarditis and arteriosclerosis; (c) chronic disease, infectious or otherwise; (d) pulmonary tuberculosis. In the group (d) the treatment depended upon the state of the tuberculosis. The true disease was associated with cardiovascular change; without this it was open to question. Many cases were due to toxemias and there was no real change in kidney tissue. With improvement in the infection albuminuria disappeared; if it persisted a true nephritis might later appear. The disease was most common in the sixth and seventh decade and appeared in indoor workers subject to mental or physical overstrain. Nephritis cases associated with joint pains occurred with *Streptococcus viridans* infections from the roots of the teeth. In cases with arterial hypertension the Wassermann was positive in five cases. Cases with retinal hemorrhages had usually a fatal prognosis. The urine analyses showed albumin in all cases. Granular casts were found more frequently than hyalin casts. Urea excretion varied with diet; a decrease was followed by retrogression and an increase by progress. A high specific gravity occurred in groups one and three. Treatment was climatic, hydrotherapeutic, dietetic, and by rest. A low elevation with equable temperature was most suitable to prolong life. A low proteid diet was an important factor, with red meat elimination. The bowels were kept active by fresh fruit and cereals. Helpful drugs were caffeine, strychnine and spartein. The conclusions were that under favorable conditions patients with chronic interstitial nephritis might enjoy good health for twenty-five years or more. Some cases were not true nephritis. These all terminated favorably.

Dr. ALEXANDER LAMBERT of New York stated that a primary kidney condition was different from kidney involvement in acute infections. The infectious cases could be improved more than those with cardiac lesions. The kidneys were primarily filters trying to filter out what was thrown in by the body. They could not handle metabolic cobblestones. The underlying metabolic changes lay somewhere between the ductless glands, the pancreas, and the liver. Exactly what the change was was not known. It had various names, gout, hyperthyroidism, pancreatitis, but the change was metabolic. Rest, diet, and equable temperature worked improvement, especially in the cardiovascular cases who were making a double struggle.

Dr. PHILIP KING BROWN of San Francisco said he had charted the histories of 6000 admissions to the Southern Pacific Hospital of cases with clinical symptoms of nephritis. He had tried to find out what the prognosis was for chronic interstitial nephritis with blood pressure above normal, in the working man. The patients were found to live on an average, five years, after diagnosis was made. Cases with syphilis were less amenable to treatment. In any case life could not be prolonged without complete change in labor and environment.

Dr. JOSEPH CIPES of Albuquerque, N. M., said that the fourth group of Dr. Brown, the tuberculous cases, did not receive as much consideration as the others, because when renal disease was found with tuberculosis, the doctor generally gave the patient up. Patients, however, often survived, to the surprise of the doctor. It was the duty of physicians therefore to find out whether the nephritis was parenchymatous, in which case the prognosis was often fatal, or interstitial, non-exudative cases, in which the patient had a fair chance for improvement.

Dr. BARLOW of Los Angeles said that if the patient could be tided over the trouble for five years, he had a chance to live for twenty-five, under proper supervision. Most of their cases were of the leisure class, in contrast to those of Dr. Brown, who were not able to have so much personal care. This accounted for the difference in the figures.

Standards of Urea Excretion.—Drs. THOMAS ADDIS and JUNSAI WATANABE of San Francisco read this paper. Dr. Addis stated that they had established a standard of urea excretion in young healthy adults in the hope that by comparison of the variations from this standard, an early diagnosis of chronic interstitial nephritis could be made. No test made the distinction between cardiorenal disease and arterial disease with cerebral hemorrhage. The phenolphthalein test to distinguish glomerular from tubular disease was not of value. It was unsatisfactory for the clinician. The earliest kidney lesions were functional and we did not know the normal functional variations. Experiments were therefore made for a six day period, with constant food and water intake, on a group of students and instructors to determine the urea levels in blood and urine. The 24-hour averages were taken and also 4-hourly specimens. The blood was collected the third and sixth day. Doses of 20 and 40 gm. urea were given at the commencement of each of the last three 24-hour periods and the concentration of urea in blood and urine compared, before and after giving urea. The concentration was found increased after the dose. The variation was slight in normal individuals, and possibly it would be found that in kidney disease the decrease in the urine was secondary to increase in the blood. "Ambard's constant" for blood and urine was tested. In normal cases a constant was found (0.06 to 0.08), but in cardiorenal cases, the results would be, according to Ambard, practically normal. The results depended upon the mathematical characteristics of the formula. Other investigators had corroborated this. In uremia the figures changed from 0.06 to 1.0 as Ambard stated, but this same conclusion could be reached by watching the urea in the blood. There seemed then to be no particular value in the formula, beyond pointing out a comparison of substances in blood and urine at the same time. Changes in the blood in early cases were slight; in later cases, very marked.

Botulism—An Experimental Study.—Dr. ERNEST C. DICKSON of San Francisco gave this study. He said that the causative factor had been supposed to be only spoiled meats. The toxin was produced by an anaerobic bacillus which caused a lesion in the Nissl granules and thrombosis at the base of the brain. The Darmstadt epidemic, in 1904, however, had been traced to bean salad, but the report stated that the beans had been

cooked with meat. Very little knowledge had been obtained from brains and cords of human beings in these cases, but the cord, pons, and medulla had been examined in experimental animals. In 1913 an epidemic occurred at Stanford University, the probable source being canned beans. Lesions in these cases were of the vessels at the base of the brain and meninges. Experiments were then made to culture the *Bacillus botulinus* in canned beans and also to determine whether thrombosis of the pia mater could be reproduced by toxins from this source. Canned beans were inoculated and allowed to stand from three to twelve months. The cultures were then made and animals were inoculated with fluid from the cans. The *Bacillus botulinus* was recovered in nearly all the cans. It also grew typically in a bean infusion. The bacillus had been supposed to grow in alkaline media, but these experiments gave results in a medium 3.2 acid to phenolphthalein. About 50 per cent of the animals died of botulism. This agreed with the mortality in human beings. At autopsy characteristic hyperemia of the abdominal vessels was found, with enlarged spleen, from which the bacillus was recovered. The meninges were congested and thrombosis at the vertex of the cerebellum was found. There was marked leucocytosis. These results showed the grave danger of badly canned vegetables. The ordinary methods of sterilization in home canning were not sufficient to kill the bacillus.

Dr. THOMAS MACCRAE of Philadelphia said that this was a valuable demonstration that many cases of so-called "ptomaine" poisoning were really due to acute bacterial infection.

Influence of Age and Sex on Hemoglobin—A Spectrophotometric Analysis of 919 Cases.—Dr. CHARLES SPENCER WILLIAMSON of Chicago presented this paper. He stated that the ordinary method of hemoglobin estimation, even in careful hands, was entirely inadequate for exact examination. There was no standard for hemoglobin which was applicable to all ages and both sexes, as a great variation existed. He had undertaken the compilation of a scale of hemoglobin standards by the spectrophotometric method in a large series of healthy, normal persons, or ages varying from fifteen minutes to 114 years. The class of persons above seventy-five years, however, had been taken as one group. The infants tested were breast-fed, robust babies. Hemoglobin was highest at birth, 100 per cent; after that it dropped rapidly, by steps, till at one year it was at a minimum. The drop was 25 per cent. At puberty, or about sixteen years, it had again risen to a stage, maintained for the rest of adult life, until fifty-five years, when it declined slightly toward old age. Sex differences were unimportant at birth. At puberty females were 9 per cent lower than males. This difference lasted during menstrual life and ten years after the menopause, when the differences again became unimportant in the declining years. This had an important bearing clinically. The differences of age and sex should be taken into consideration or one ran the risk of making a diagnosis of anemia in a perfectly normal individual because of a variation from an accepted standard, which was incorrect.

Dr. THOMAS ADDIS of Philadelphia asked what was the variation in a given group, say of sixty men, at a certain age.

Dr. C. WILLIAMSON replied that the variations at birth were trifling. In adult life there were variations of 10 or 12 per cent. In old age the uniformity was startling. By acquiring a standard we could determine the normal physiological variations. Experiments in raising the hemoglobin of normal individuals would be interesting. Institutional children showed on the whole a higher curve than children in private practice.

Prognosis in Heart Disease from the Point of View of Etiology.—Dr. W. H. WITT of Nashville, Tenn., read this presentation. He wished to urge a more scientific classification of disease of the heart. The question of prognosis in regard to valvular involvement, blood pressure, age, habits, etc., could be discussed in a general way. The value of appreciating the underlying cause was, however, undeniable. Myocardial insufficiency and endocarditis differed materially from tubercular and syphilitic lesions. Etiologically the classification was as follows: Syphilitic, nephritic, arteriosclerotic, infective, endocarditic, etc. In some cases the heart condition was overshadowed by other conditions, as in hyperthyroidism. In rheumatic infections there was often associated arthritis, tonsillitis, chorea, or other lesions. This group comprised 50 per cent of cardiac cases and the prognosis assumed great importance. Two important features were that in simple endocarditis the initial attack was followed by recovery; secondly, there would doubtless be a recurrence. The danger lay in the recurrence. The first attack was generally in childhood. In adults there was gradual decompensation. The reinfection of patients in these cases was a serious matter. Teeth or tonsils might play an important rôle and removal of foci of infection should be insisted upon. Poynton said that chronically infected tonsils must be removed. Syphilis of the heart had a tendency to attack the arteries and cause aortitis. True gummata were rare. Arrhythmias and precordial pains were characteristic in these cases. They cleared up with specific treatment. Serological examinations were to be insisted upon in such lesions. Syphilis was complicated by alcoholism. The haste of modern life was a factor in increase of heart disease. The patient would not heed warning and avoid physical and mental strain. No drug would help these overstrained hearts, and if the strain occurred under ordinary duties the prognosis was worse. Patients with cardiac disease who led sedentary lives might with advantage change to less heavy diet and more active mode of life. In anginic pains a slight precordial pain often had as severe a prognosis as marked pain. Such cases died suddenly. With high blood pressure the heart undertook more than it could do, and when associated with chronic interstitial nephritis the condition was more serious. When edema was present preventive measures should at once be undertaken.

Dr. CHARLES WILLIAMSON of Chicago remarked that Dr. Witt had said that the prognosis in heart disease depended upon etiological considerations, rather than upon anatomical. Dr. Williamson would add upon functional considerations also. He had done experiments to show the normal reaction of the heart to exercise. He had tried with cases with slight heart lesion and had given them exercise to the full extent of their power, 50 per cent of these had clean cut contractions about 1.5 cm. In ten or twelve cases of severely damaged hearts, with edema of feet, and enlarged liver, 50 per cent showed contraction. This showed that functional power was maintained in spite of the condition of the valve. A heart with slight mitral murmur, Dr. Williamson said, was in better shape than that with myocardial condition.

Dr. J. S. MCLESTER of Birmingham, Ala., said that the function of the heart, he thought, depended upon the extent of myocardial damage. Syphilis was a common factor, and in a large charity hospital 70 per cent of cases of myocardial insufficiency had been found to have a positive Wassermann. At autopsy many showed spirochetes in the myocardium. There was also a chronic parenchymatous nephritis in many cases. The kidney might be primarily the cause and not the heart.

Dr. WITHERSPOON of Nashville, Tenn., emphasized the fact that alveolar abscess was as important an infective factor as diseased tonsils. The dentist frequently reported normal gums where infection of the root of the tooth was present. *X*-rays must be taken and the infected teeth removed to prevent further infection and damage.

Dr. G. E. EBRIGHT of San Francisco stated that he thought a child might recover in the first attack of acute endocarditis, but the cases would become chronic in the adult. Cases in the child should not be overlooked. Complete rest for from three months to a year should be given in these cases until the myocardial irritability disappeared. This would prevent cardiac disease at 30 or 40 years.

Dr. WITT, in reply to Dr. McLester, said he thought that examination of the heart in untreated cases of syphilis, as in the negro, would prove instructive. In reply to Dr. Ebright he said that it was often impossible to give the necessary rest to children with endocarditis. Treatment should be directed to getting rid of the focus of the infection. In older people it was difficult to tell just where the focus of infection was. Teeth should no doubt be examined with great care by the *x*-ray method. Infected tonsils and teeth should be removed.

Hyperidrosis of the Palms.—H. G. Adamson reports a case of this condition in a girl aged 16 years in whom there was profuse and continuous sweating of the palms and palmar surface of the fingers of both hands. From time to time large vesicles formed about the fingers and burst, leaving sore places.—*Proceedings of the Royal Society of Medicine.*

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

STATE BOARD OF MEDICAL EXAMINERS OF GEORGIA.

Atlanta, October, 1914.

(*Continued from Vol.* 87, *p.* 1050.)

PATHOLOGY.

1. Name and describe briefly the forms of infiltration.
2. Discuss the practical diagnostic value of the leucocyte count, both total and differential in acute appendicitis.
3. Name the different forms of sarcoma, and give the microscopic appearance of the round cell type.
4. Discuss anaphylaxis.
5. Give the pathology of pellagra.
6. Give morbid anatomy both macroscopically and microscopically of chronic interstitial nephritis.
7. Give morbid anatomy of atrophic cirrhosis of the liver.
8. Give the lesions that occur in the intestines in dysentery.
9. Give the etiology and morbid anatomy of acute simple endocarditis.
10. What conditions favor cerebral hemorrhage?

ANSWERS.

PATHOLOGY.

1. "*Fatty infiltration* is the deposit of fat within the cell or intercellular tissues. May be general or local. It may occur in cells that normally contain no fat, or else appear in excess in cells that do contain it. The fat contained within the cells is made up of neutral palmitin, olein, and stearin.

"*Glycogenic infiltration* is a deposit of glycogen within the cells. It is found normally in small amount throughout the body except in the mammary glands and central nervous system. It is greatest in amount in the cells of the liver, in voluntary muscles, and in the kidneys; is also present normally in the blood, both in the plasma and in the cells, particularly the polymorphonuclear leucocytes. It is also commonly found in malignant tumors of the mesodermic origin (sarcomata). The origin of the glycogen is not clear; it is a carbohydrate, but seems to be derived from proteid and carbohydrate substances. Glycogen is most frequently found in the condition known as diabetes.

"*Serous* or *edematous infiltration* is a condition of dropsy of the cells. All kinds of cells may be involved, but it is most common in the epithelial. It is an absorption of an excess of plasma by the cells.

"*Pigmentary infiltration* is the deposit of pigment within the tissues. According to their origin, pigments may be divided into four classes: (1) Those derived from outside of the body; (2) those formed from hemoglobin and its derivatives, the hematogenous pigments; (3) the hepatogenous or biliary pigments; (4) metabolic pigment; that resulting from cellular activity within the body is known as melanin.

"*Calcareous infiltration* or *calcification* refers to the deposit of earthy salts within the tissues. It occurs in consequence of a deficiency of oxygen and an excess of carbon dioxide in the tissue juices, which causes a deposit of the carbonates and phosphates of magnesium and calcium. Oxalates are also generally present. This process occurs only in those tissues that are either completely destroyed or else undergoing degeneration as a result of imperfect nutrition."—(McConnell's *Manual of Pathology.*)

2. "Catarrhal appendicitis is accompanied by a mild degree of leucocytosis, rarely above 12,000. An increasing leucocytosis, from 15,000 upward, generally indicates a severe infection. In some cases of severe catarrhal appendicitis one may find a count of 25,000 to 30,000. If the count remains stationary, it is indicative of a walling off. If the leucocyte count decreases gradually in a mild attack, it signifies improvement. If it decreases suddenly after a severe attack, it signifies either gangrene, perforation with beginning peritonitis, or the rupture of an abscess into the general peritoneal cavity. The majority of cases in which perforation or gangrene occurs early, and causes peritonitis, have a low leucocyte count, owing to the lack of resistance on the part of the organism and the overwhelming of the system by the toxins.

Gibson believes that with a moderate rise of the total leucocytosis there should be, in favorable cases, a moderate rise of the polynuclear cells only, showing that the infection is localized and absorption is limited. On the other hand, if there is only a moderate leucocytosis with a notable increase in the polynuclear cells, it indicates almost unquestionably that there is either a severer form of lesion or less resistance to absorption, or that both conditions exist."—(Eisendrath's *Surgical Diagnosis.*)

3. FORMS OF SARCOMA. (1) *Round-celled:* Embryonic or immature connective tissue. Blood-vessels without walls, or thin-walled, ramifying among the cells. Small or large round cells, embedded in a small amount of granular or homogeneous intercellular substance. (2) *Spindle-celled:* Cells varying much in size, spindle-shaped, with long, fine tapering extremities, separated by very little intercellular substance. Often have a fibrous appearance (Recurrent Fibroid). (3) *Giant-celled (Myeloid)*: Masses of protoplasm containing two or more nuclei—up to 20 or 50—with a varying amount of round and spindle cells. (4) *Alveolar:* Alveolar space filled with sarcoma cells; the trabeculæ composed of spindle-cells. (5) *Melanotic:* Sarcomata of various kinds in which brownish or black pigment becomes deposited as amorphous granules in the cells as well as the connective tissue and blood-vessel walls of the tumor.—(*Cyclopedia of Medicine and Surgery.*)

4. *Anaphylaxis* is a condition of supersensitization induced by the injection of a serum. It is the opposite of prophylaxis, and in place of rendering the person injected immune the serum has made him particularly susceptible. It has been followed in some instances by alarming symptoms, such as: Heart failure, collapse, convulsions, coma.

5. "The exact cause of pellagra is unknown. . . . The anatomical changes are not constant. In the spinal cord degeneration of the posterior and lateral tracts occur. The intestinal lesions consist in some instances of ulcerations, but are inconstant. The frequent occurrence of amebæ has been noted. The other lesions are those commonly found in all chronic wasting diseases."—(French's *Practice of Medicine.*)

6. "*Chronic interstitial nephritis* may sometimes be secondary to chronic parenchymatous nephritis, connective-tissue overgrowth having become marked, and resulting in contraction of the kidney. Usually, however, it is a primary affection, and is known as renal cirrhosis, red granular, granular, or contracted kidney. In the diffuse form the kidney is reduced in size, it may be to one-third the normal or less, is hard and markedly granular. The capsule is adherent, leaving a rough surface on removal. Small cysts are often present on the surface filled with urine or colloid. The kidney is hard on section, the cortex much reduced in width, and cysts may be scattered through its substance. The color is reddish with whitish mottling, and in gouty cases there may be whitish striæ, due to deposits of urate of soda. *Microscopically*, the lesions are principally seen in the cortex; at first patches of cellular infiltration appear, then the intertubular connective tissue becomes increased and fibrous, with destruction of glomeruli and the corresponding tubules. The glomerular epithelium becomes swollen and desquamates, Bowman's capsules may be much thickened by concentrically arranged layers of nucleated fibrous tissue, and the Malpighian bodies in places may be converted into nodules of fibrous tissue, in others into cysts. The corresponding tubules undergo atrophy with disintegration of their epithelium; here and there multiplication, with convolution of the tubules, may be present, suggesting an adenomatous formation. There is everywhere an increase of the stroma, in the cortex and pyramids, between the tubules, and around the glomeruli and vessels, with pronounced round-celled infiltration or well-formed fibrous tissue, in which calcification may occur. The vessel walls are thickened, chiefly owing to an endarteritis. Lardaceous infiltration may accompany the interstitial nephritis."—(Hewlett's *Pathology.*)

7. *Atrophic cirrhosis of the liver.* "In a well-marked case the liver is smaller than normal and presents both marked induration and shrinking, the new connective tissue being disposed in large bands which run in various directions and by their contraction divide the organ into many irregular lobes. When these latter are small they project above the surface and resemble nail heads, hence the name "hob-nail" liver, sometimes applied.

Owing to the arrangement of the fibrous bands the condition is sometimes called "multilobular," since many acini at a time are grouped and constricted by it. The liver tissue, sharply circumscribed, presents a yellow color if fatty, and with admixture of bile pigment may be darker. The capsule may be thickened or adherent to the diaphragm, the gall-bladder presents no constant appearance except that it is often empty. Adhesions form between the abdominal walls and contents and tend to relieve the portal stasis for a time.

"*Microscopically* the formation of connective tissue may be traced in all its stages in the line of the portal subdivisions, in the youngest places appearing as a focus of round cells about the sheath of the veins with later development of spindle cells. These foci blend and the fibrous tissue becomes poor in cells and firmer, coincident with contraction. This causes compression of the portal capillaries and at the same time there is often an obliterating endophlebitis; the result is to offer an obstacle to the entrance of the portal blood, with increasing stasis throughout the origins of the system. This explains many of the clinical symptoms, the ascites, gastric and intestinal catarrh and hemorrhage, piles, and distention of superficial abdominal veins (caput medusæ), to which latter effect ascitic distention adds. Jaundice, however, appears later if at all and the spleen is not swollen till toward the end."—(Thayer's *Pathology.*)

8. "In *acute bacillary dysentery* the principal changes in the intestinal mucous membrane are: (1) Intense hyperemia, the mucosa being swollen, corrugated, and here and there hemorrhagic. (2) Necrosis, and fibrinous exudate, with formation of a pseudo-membrane. (3) Ulceration, at first on the summit of the folds, but extending both deeply and laterally.

"In *chronic bacillary dysentery* the mucosa is thickened and granular, and the whole gut is thickened. There are chronic ulcers with thickened edges, and areas of scar tissue. Consequently there are partial strictures of the bowel, which is dilated above. A typical dysenteric ulcer therefore has the following characters: (1) Site; on the ridges of the large intestine. (2) Edges; irregular and thickened. (3) Base; may be formed of any of the coats. (4) Tendency to contraction on healing. The so-called 'diphtheritic dysentery' is a form in which necrosis is very extensive and the development of pseudo membrane pronounced. In advanced cases the whole mucosa may form 'a black, rotten, friable, charred mass' (Rokitansky).

"In *amœbic dysentery* the lesions are chiefly seated in the large intestine. They present—(*a*) small gelatinous swellings of the mucosa, with partial ulceration; (*b*) necrosis and sloughing of the underlying tissues. The ulcers of amebic dysentery thus have undermined edges. The amebæ are found in the ulcerating mucosa, but more abundantly in the tissues beyond the ulcerated area (submucous or muscular coat), where they set up edema and necrosis. Later, along with the ulcers, cicatrices, leading sometimes to partial stricture, may be found." (Wheeler and Jack's *Handbook of Medicine.*)

9. ACUTE SIMPLE ENDOCARDITIS. *Causes:*—"It is usually secondary to some other affection, particularly acute articular rheumatism (especially in young people), chorea, pleurisy, pneumonia, pericarditis, Bright's disease, and the infectious fevers such as scarlatina, influenza, and diphtheria. Gonorrhea is an occasional cause. Cachectic states such as accompany tuberculosis and cancer are predisposing causes. It may be secondary to chronic endocarditis.

Pathology.—"Acute simple endocarditis may be prenatal as well as postnatal. In the former class of cases, the right side of the heart is usually involved, while in those instances observed after birth the disease is most often limited to the left side. While the disease may attack the entire lining membrane of the heart it is especially marked at the valvular portions of the endocardium. The earliest change is that of hyperemia of the membrane, rendering it red and swollen. As the inflammatory exudate is thrown out the surface of the valves become roughened and warty excrescences are formed. These verrucose formations are to be found on the auricular surface of the mitral valve and on the ventricular surface of the aortic valve at the line of contact of their leaflets, usually from 1 to 2 mm. from their free margin. These vegetations are produced by a proliferation of the cells of the adventitia and of the external connective tissue; fibrin from the blood is deposited on the formations, thus serving to increase their size. The excrescences are friable and may be easily detached or broken off and carried in the blood stream as emboli, to various parts of the body, particularly the left side of the brain, the kidneys, and the spleen. If retained in position fibrous tissue is eventually formed; the valves become thickened and contracted producing chronic endocarditis. The leaflets may then become the seats of various infiltrations."—(Hughes's *Practice of Medicine.*)

10. *Conditions favoring cerebral hemorrhage:*—Age, syphilis, gout, alcoholism, rheumatism, uricacidemia, arterial sclerosis, increased arterial tension, Bright's disease, overexertion.

(*To be continued.*)

Books Received.

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RADIOGRAPHY, X-RAY-THERAPEUTICS, AND RADIUM THERAPY. By ROBERT KNOX. Published by The Macmillan Company, New York; with 64 plates, 246 illustrations in the text, and a frontispiece in color. Price, $8.00; 406 pages.

TRANSACTIONS OF THE AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION. Volume 21. Published by The American Medico-Psychological Association at the Seventieth Annual Meeting, held in Baltimore, Md., on May 26-29, 1914; 593 pages.

THE GOLD-HEADED CANE. By WILLIAM MACMICHAEL, M.D. Published by Paul B. Hoeber, New York. Price, $3.00 net; 254 pages.

PERSONAL HYGIENE. Edited by Walter L. Pyle. Published by W. B. Saunders Company, Philadelphia and London. Sixth Edition, Revised and Enlarged. 12mo. of 543 pages, 139 illustrations. Price, cloth, $1.50 net.

SLEEP AND SLEEPLESSNESS. By H. Addington Bruce, A.M. Published by Little, Brown & Company, Boston. 219 pages. Price, $1.00 net.

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SOZIALE PATHOLOGIE. Von Prof. Dr. med. Alfred Grotjahn. Published by August Hirschwald. Price, Mk. 15.00. 532 pages. Second Edition.

UEBER DIR VERSORGUNG UNSERER VERWUNDETEN IM FELDE. Von Dr. W. Korte. Published by August Hirschwald. Berlin: 1915. 43 pages.

WÜRZBURGER ABHANDLUNGEN, AUS DEN GESAMTGEBIET DER PRAKTISCHEN MEDIZIN. Herausgegeben von Prof. Dr. Joh. Muller und Prof. Dr. Otto Seifert. Die operative Behandlung der Lungen-Tuberkulose. Von Prof. Dr. F. Jessen, Davos. Published by Curt Kabitzsch. 118 pages.

DERBY MENTAL HOSPITAL. Twenty-sixth Annual Report, for the year ending December 31, 1914. Published by J. W. Simpson & Sons, Ltd., Printers, Friar Gate, Derby. 65 pages.

DEFECTIVE CHILDREN. Edited by T. N. Kelynack, M.D. Published by William Wood & Company. 462 pages. Price, $3.00.

REFERENCE HANDBOOK ON THE MEDICAL SCIENCES. Edited by Thomas Lathrop Stedman, A.M., M.D. Published by William Wood & Company, New York. Third Edition, Completely Revised and Rewritten. Volume V. Illustrated by Numerous Chromolithographs and Seven Hundred and Thirty-three Half-tone and Wood Engravings. 923 pages.

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EVOLUTION AND DISEASE. By J. T. C. Nash. Published by William Wood & Company, New York. 73 pages. Price, $1.40 net.

DISEASES OF THE DIGESTIVE ORGANS—DIAGNOSIS AND TREATMENT. By Charles D. Aaron. Published by Lea & Febiger, Philadelphia and New York. Illustrated with 154 engravings, 48 roentgenograms, and 8 colored plates. 790 pages.

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In peculiar contrast to other bodily organs the tonsil possesses the unique distinction of having given rise to the most flatly contradictory of opinions as to whether it is of great advantage or great disadvantage to its possessor. Why is this so? How have such irreconcilable ideas arisen? The problem here raised is of very much more than mere controversial importance, for, as we shall presently perceive, upon its solution may hang the future comfort, freedom from protracted illness, and the lengthening of the lives of great multitudes of people. Our textbooks on physiology strongly reflect the obscurity with which we are confronted whenever we attempt to gain from them any light upon the subject of the tonsil's function. If summoned to act as witnesses in court and expecting to be asked to state to judge or jury the use, to man, of his tonsils, what reply could we make? Diligent search for knowledge upon this in any of our libraries would show a remarkable dearth of information therein. Some books would be found to ignore the subject completely that we might, naturally, expect would tell us all we would require to know about it. Others would supply hazy statements of no value. Still others would flatly acknowledge our ignorance upon the question. "Physiologists," says Dr. Faulkner, "know nothing of faucial tonsils. Their textbooks do not mention them. * * * There is no accord even in the definition of a normal tonsil."[1] He had evidently been trying to gather some information on the subject from our authorities and failed. Some of us find ourselves about where Prof. Austin Flint confessed being during a college examination. He is reported as having asked a student under examination to tell him the function of the tonsils. "To swell and suppurate in quinsy," came the reply. "What, then, is the function of the spleen?" continued the professor. "Why, to enlarge in malarial fever," answered the student. "That will do," the professor is said to have replied, "you have passed a perfect examination, for you know as much about the subject as I do."[2]

At that time a growing belief in the doctrine of organic evolution was stimulating a more than usual study of comparative anatomy and this, naturally, gave promise of being able to enlighten us upon these dark subjects. It was found that reptiles, birds, and mammals are furnished with tonsils, thyroid glands, thymus glands, etc., but that on descending to the fishes the respiratory gills take their places. In the mammalian pharynx pouches opening out from the side into the cervical region indicate where the gill clefts are in the anatomy of the fish. The Eustachian tube and middle-ear, the tonsils, the thymus gland, and the thyroid gland in us appear to mark the old relationships. "Structurally," says Gaskell, "the thymus, parathyroids, and the epithelial cell-nests are remarkably similar, so that the evidence appears to point to the conclusion that, in the neighborhood of the gill-slits, segmentally arranged organs of a lymphatic character are situated, which give origin to the thymus, parathyroids, tonsils, etc."[3] In considering the embryology of the subject Mackenzie states that the tonsil "does not develop as a lymphatic gland from a plexus of existing lymph vessels in the mesothelium, but as an ingrowth of the endothelium from the second bronchial pouch, and, therefore, in origin must be classed with the thymus and the thyroid, the former originating from the third and the latter from the fourth, while the parathyroid takes its origin from the third and fourth branching pouches, all by inbudding of the endothelial lining of the primitive pharynx."[4] If tonsils have developed from ancient gill-glands, are they readaptations of such glands performing a new but kindred function to that which they performed in fish, or must we consider them as more like coccyx, appendix, or ear-moving muscles, mere degenerating and now functionless organs? For nearly half a century, immediately following the publication of the Origin of Species, the latter view predominated. It did not seem to occur to any one at that time that inasmuch as swim-bladders had been transmuted into lungs, fins into legs and feet, and the forelegs of quadrupeds into arms and hands of men that the glandular structures associated with gills might become something useful to mammals. There was nothing in the history of tonsils to indicate that they were, like the appendix, atrophying. On the contrary, the evidence, such as it was, seemed to indicate that they were becoming relatively somewhat larger in the most highly advanced organisms. The belief in their degeneration kept growing stronger, however, until it was deemed a mark of erudition for one to be able to refer to them as vestiges of the past. Inasmuch as no particular function could be attributed to them it was thought best to assume that they had no function. This refusal to hold the mind in suspended judgment, until some substantial facts could be secured, was, in great part, due to a faulty conception of heredity. They supposed that the form and structure of every organism resulted from some sort of polarity of the body as a whole, whereas, now, we are coming to see that these are most likely due to tropisms residing within the individual cells. Cell stimulates cell, producing a result that is due to symbiotic relationships between them. A disturbance of these relationships,

unless very great, is not likely to be serious for the simple reason that there are recessive qualities fitting them, when called forth, to alter the final result and produce another different harmonic form. Heredity may be dual or triple for any given organism, but the stimulus must occur early enough in the development to produce the different results. These new results have been interpreted as acquired characters and thus has arisen a belief in the inheritance of characters which were already inherited, under the supposition that they were hereditarily new. The gill-glands, that became the tonsils and thyroids of the higher organisms, had but to readjust their cell responses to the altered stimuli of the changing environment. Natural selection had, long before, given them recessive qualities which the altered stimuli made dominant. The phagocyte-harboring tonsils are, probably, the phagocyte-harboring glands of the gills and the thyroidine-producing thyroids are, very likely, iodine-secreting glands of the same organs. The old functions were only slightly altered to suit the new conditions and even the alterations were, perhaps, latent characters.

Had the facts, on which these suppositions are based, been known when the majority of biologists were beginning to realize the truth of evolution there would have been far greater hesitancy in condemning the tonsils as useless vestiges than there was. Having been impeached at the bar of the then scientific judgment there very soon were discovered other reasons for their utter condemnation from that viewpoint. Among the earliest of those who made a bitter attack upon them was Sir William W. Gull, a well-known and much respected English physician, and Fellow of the Royal Society. When addressing the Clinical Society of London, in 1872, he said: "In our bodies we men have many organs which are of little or no use to us, and are only relics of a former state of being. What, for instance, is the comparative anatomy of the tonsils? Were I to make a man, I do not think I would put tonsils in him. Yet these, and such like organs, in accordance with the general law, are more prone to disease than are the others which are of real use in the system." This fact of their being more prone to disease than other organs would, at that time, have proven a staggering argument against any one who should have dared to come to their defense for, as we shall presently see, it was only too true. He closed his remarks with the statement that, "The surgeons ought to be indebted to me for hints toward the extermination of superfluous organs—a grand prospect for the surgeons of the future."[5] The publication of these remarks, by Professor Youmans, in the first number, of the first volume, of the *Popular Science Monthly*, made them carry a tremendous weight in the moulding of medical and surgical opinion in the United States. Gull's prophecy that this was "a grand prospect for the surgeons of the future" turned out to be appallingly true if recent bacteriological and pathological research work can be relied upon.

As soon as medical attention became centered upon what the tonsils seemed to be doing for us the tide of condemnation became irresistible. The unusual number of diseases—both chronic and acute—that, somehow, appeared to be correlated with tonsillar inflammations multiplied, under investigation, to an alarming degree. Vast epidemics, as well as great numbers of sporadic cases, of our worst acute infections were found to act as if the contents of Pandora's box had been emptied into our bodies through these organs. It was not long until numerous papers were written advocating their merciless extermination. Ballinger's book on Diseases of the Nose, Throat, and Ear tells us that "It is being more and more recognized that the complete enucleation of the tonsil with its investing capsule is the most satisfactory method of dealing with diseased tonsils."[6] Dr. L. M. Hurd tells us that "The tonsils may be clinically divided into three classes: (*a*) The large round glands that hang almost free in the throat; (*b*) Those which partly protrude beyond the tonsillar pillars and are partly imbedded between, and (*c*) Those which do not protrude at all and are more or less covered over by the pillars. This latter is the so-called submerged tonsil. The first class is the least harmful and probably most often removed, for they are easily recognized, and as easily removed. The second and third classes cause the more general trouble and are less often recognized, because the general idea is that the protruding and large tonsil is the offender. * * * The opinion of many good observers is that the lymphoid tissue of the throat is the point of entrance for measles, scarlet fever, and other exanthemata; acute articular rheumatism, pero-, myo-, and endocarditis, arthritis, adenitis, osteomyelitis, strepto- and staphylococcus infections, and possibly chorea, neuritis, certain forms of nephritis, pleurisy, iritis, phlebitis, Hodgkin's disease, and appendicitis."[7] Surely no more appropriate spot could have been chosen for degenerating vestigeal organs to appear than that occupied by the tonsils, had malevolent "purpose" aimed at the most refined form of torturing our race. This list of maladies tells of the perfection of the exposure to infection. The ophthalmologist to the Conemaugh Valley Memorial Hospital, Pennsylvania, tells us that "When a tonsil once becomes diseased it is apt to continue its malign influence, causing an extension of inflammation which affects the ears and nasal passages or gives rise to various ills in remote parts of the body. * * * The condition of acute tonsillitis is well known to all of us, but I feel positive that its importance is often underestimated. In addition to the usual symptoms it has given rise to otitis media, edema of the glottis, acute endocarditis, rheumatic fever, pneumonia, and gangrene of the lung. I have personally treated one case where septicemia and hemorrhagic nephritis resulted. * * * The pharyngeal tonsil histologically presents a structure simulating that of its faucal neighbor. It possesses crypts and may be the seat of acute inflammation which is often undetected. In its hypertrophied form we know it as 'adenoids' or 'adenoid growths.' As such it impedes nasal breathing and associated or alone causes impaired speech, chronic rhinitis, cough, mouth breathing, middle-ear disorders, permanent facial deformity, and a profound evil influence on the mentality and general health. Mouth breathing is an evil of grave consequences. The face becomes narrow, a vacant expression is present, the teeth are poorly arranged, the palate is highly arched, intruding upon the nares, and the dust-laden, unwarmed air is drawn directly into the lungs. The outcome of this is a narrow-chested, weak-lunged individual whose entire respiratory tract is weakened, making him quite susceptible to any disease affecting these parts, and no small number of tuberculosis cases can point to a similar history and condition."[8]

If the non-resisting qualities of the tonsils, due to their being atrophied or vestigeal organs, is the cause of so many deaths and so much suffering there would appear to be plenty of good reasons for their extermination. But, if this is the correct explanation it is a wonder that Natural Selection has not rid our bodies of them long ago. European physicians have likewise taken notice of their apparent malignant influence. When Sir Felix Simon, Physician Extraordinary to his Majesty the King of England, was visiting the United States, in 1904, during his lecture at the Long Island College Hospital, he dwelt earnestly on this subject, treating particularly of numerous, very malignant forms of pneumonia, nephritis, edema, and general septicemia which had frequently come under his observation. He declared that these unusually severe and highly fatal cases he had found were associated with tonsillar inflammations. He declared that "Diphtheria in the majority of all cases shows itself first in the tonsils. * * * Most of the acute septic processes, of which I speak, commence in the form of the apparently ordinary tonsilitis." "Surely," the reader now thinks, "it will be difficult to explain away such a mass of incriminating evidence and to defend the tonsils as organs of any particular value to their possessors." It has been my purpose to try and make the case against them as strong as possible. But still another serious accusation that is brought against them needs to be emphasized so as to do justice to the side of the opposition. Vast epidemics of streptococcic and diplococcic infections have been traced to the tonsils as the chief places of first attack. These have been reported from many regions, but the cases of greatest interest occurred in Christiania, Boston, Chicago, Baltimore, Minneapolis, and a number of English cities. The numbers of people infected ran up into the thousands in several of the cities named. In the Chicago epidemic there were several thousands attacked. In the Boston epidemic Cambridge alone claimed to have had about one thousand sufferers. In and around there the onset of the attacks simulated diphtheria but produced by far its highest mortality among the aged and infirm. Dr. E. A. Darling reported that of 527 patients whose sex was recorded, there were 160 males and 367 females, or 30 per cent. of the former to 70 per cent. of the latter. One-fourth of all the cases had complications such as abscesses in the throat, axilla, legs, lumbar and gluteal regions. Some 38 cases had arthritis, 11 pneumonia, of whom 8 died; 5 laryngitis, 7 acute endocarditis, 6 acute nephritis, and 2 phlebitis. The source of the infection was traced to one of the best kept and most up-to-date dairies in America. So perfect was its management and equipment that Professor Rosenau took his students from the Harvard Medical School there to teach them the advantages of "certified" over ordinary milk. Prof. W. T. Sedgwick, our American authority on sanitation, commenting upon the situation said: "Milk is incriminated as a carrier of disease. It can carry scarlet fever. The community has already suffered severely from these, and now a new form of iniquity is placed on milk. For the first time, also, a milk producer has employed a skilled man to make a thorough examination and bidden him tell the whole truth. That truth you have had tonight. Like Dr. Rosenau, I have long had and am continuing to have the Deerfoot milk in my own home. The greatest lesson of all is the utter inadequacy of milk inspection."[10] The lesson seems to be that inspection and certification are impotent when undiscovered carriers are around scattering viable germs. Dr. Hirschberg stated, in relation to the Baltimore epidemic, that the most striking clinical picture was, "The sharp onset, with the invasion always in the throat, general adenitis, great virulence, fulminate type of death in forty-eight hours in the lethad cases, impossibility of proving milk, water or food responsible in the spread of the epidemic, and the constant presence of the pneumococcus as a possible causative organism. In all of my cultures, obtained from abscesses, glands, ear discharges, infected tonsils, and other secretions * * * an encapsulated diplococcus was isolated. This organism was also obtained by me in pure cultures from an epidemic fatal to white rats that occurred in one of the laboratories of the Johns Hopkins University." Of forty-two cases, he states that one had enlarged cervical glands, 10 had enlarged submaxillary glands, 10 had remittent fever for two weeks, 1 had appendicitis, 1 died of peritonitis, 1 died of septicemia, 3 had arthritis of different joints, 8 had pharyngeal injection with systemic infection but no tonsillar involvment, 6 had bronchitis, 4 otitis media, 1 a mastoid abscess, 1 meningitis, 1 peritonsillar abscess.[11] Dr. L. P. Hamburger, in reporting the same epidemic, claims that it was traced to the milk supply as a whole but not to one particular dairy. He also claims that it was transferrable from patient to patient, from the ailing to the well.[12] While there were cases that show no tonsillar involvement this does not mean that an examination of the tonsillar flora would not have shown the presence within them of the offending bacterium.

With so startling a mass of facts arrayed against the tonsils, singling them out as the chief agents through which diseases may enter the body, and with what was long taken for a sound scientific theory pronouncing them inherently dangerous, because of their supposed degenerative proclivities, can we wonder that the tide of public opinion should have turned strongly against their retention when they happened to become inflamed in any degree? Inasmuch as a majority of children are said to have inflamed tonsils at some time in their growing years there was plenty of incentive toward a general "massacre" of these organs. The sentiment, indeed, became so strong that Dr. Mackenzie declared that "A leading laryngologist in one of our largest cities came to me with the humiliating confession that, although holding hostile views against its performance, he had been forced to do a tosillectomy in every case in order to satisfy the popular craze and to save his practice from destruction." One distinguished surgeon of large practice whose experience had convinced him that complete removal of the tonsils was decidedly injurious to many, if not all patients, told the same gentleman that it was "his deliberate opinion that of all the surgical insanities within his recollection this onslaught on the tonsils was the worst."[13] Even the general public seem to have an acute attack of tonsilomania if the story is true that one lady came to her physician and requested him to remove the tonsils of her little daughter "because she sometimes wets the bed." This is all, of course, the result of the medical profession having given these organs a bad name. Such is the force of public opinion that if a saint came to

be secretly reviled and had no opportunity to defend himself he would have to suffer unredressed. But for the general belief that no persisting organ can be as wholly bad as these were claimed to be, there would have been no one left to do them justice or to defend them against their accusers. Deaths due to hemorrhage in tonsillectomy, and impaired phonetic qualities in the voices of those that had been subject to this operation, soon came to give strength to the opposition and to the general principle upon which it was based. Then came a reversal in our views regarding the nature of inflammation that has been working in favor of the conservative treatment of tonsils ever since.

Whatever may be the chief reason for the existence and perpetuation of these glands one function that should not be overlooked is the phonetic. Owing to their size, position, structure and form they must constitute no inconsiderable fraction of the total vocal apparatus in man. Dr. R. B. Faulkner, of Pittsburg, has laid particular emphasis on this point, in his volume of 400 pages on The Tonsils and The Voice in Science, Surgery, Speech, and Song. That this is not their sole function, nor even their chief function, is at least suggested by the fact that those in the carnivora much more nearly resemble those of man than do those of the herbivora. In the devouring of the carcasses of other animals there is far more danger of infection from mammalia-invading parasites than there is in living upon grass, fruit, or grain. Man's meat-eating habits have always placed him in this same danger. On the theory which the writer advocates, that all proteins have been selected because of their power of resisting certain kinds of parasites, the meat itself is a danger, through its anaphylactic qualities, just as bacteria and protozoa are. The anaphylactic danger from living parasites and dead meat may in some way enable us to account for this resemblance in tonsils. If we can discover that they have some sort of fixed relationship to invading parasites and to meat-eating we will, probably, be on the way to the discovery of their most important use. In 1882 Metchnikoff made some researches on the lower forms of animals, at Messina, Sicily, that seem to have a bearing upon this subject. He then gave the first steps of the proof that the destruction of parasites in these forms is a part of the ordinary process of digestion. He says: "The *Daphniæ*, those small crustacea so numerous and so frequent in fresh water, furnished me with a favorable medium in which to study a real struggle which takes place between their leucocytes and the spores of a vegetable parasite belonging to the group of Blastomcetes. In many cases the ameboid cells guarantee the integrity of the animal by devouring a large number of these spores and transforming them into an inert detritus. In other cases, on the contrary, the fungi get the upper hand in the struggle; they succeed in germinating and in overcoming the resistance of the leucocytes by reproducing themselves rapidly and by killing these cells with their poisons."[14] In such a case as this there is no essential difference between immunity against infection and the ordinary digestion of the host. If we carefully study these two processes—digestion and immunity—all the way up from the protozoa to man we will find ourselves unable to tell where the one ends and the other begins. The two parallel each other while showing a tendency to become separate functions but the separation is never—not even in man—complete. When an amœba devours bacteria they constitute its normal food. When the bacteria acquire the power of thwarting the digesting ability of the amœbæ a condition of disease results. If we ascend the scale of life to the sponges we will discover the continuance of these two processes side by side. In the sponges many cells are grouped into a single organism and we find that "Food substances in the form of minute organisms, which have penetrated the pores of the sponge are seized by the ciliated or ameboid cells lining those spaces, and are then killed and digested."[15] When organisms enter the pores of the sponges that they are unable to digest, disease occurs, for the latter turn the tables upon the sponge cells and digest them. If we next investigate the Polyps we discover that their digestive sac or gut is "lined by digestive cells which have the same ameboid character as phagocytes, and actually digest to a large extent by swallowing or taking into their individual protoplasm raw particles of food. Such particles are inclosed in a temporary cavity, or vacuole, into which the cell protoplasm secretes digestive ferment and other chemical agents. Now there is no doubt that such digestive vacuoles may burst and so pour out into the polyp's stomach a digestive juice which will act on food particles outside the substance of the cells, and thus by the substitution of this process of outpouring of the secretion for that of ingestion of food particles into the cell we get the usual form of digestion by juices secreted into a digestive cavity."[16] Here we see that stomach digestion began as a form of phagocytosis and that the two processes are fundamentally identical.

We all know that the leucocytes of our blood, and of the blood of all vertebrates, still continue to seize and digest pathogenic organisms just as do the amœbæ of ponds and the cells of sponges. At the dawn of life the struggle for existence could only have been a struggle of monocellular with monocellular organisms. Each sought to rob the other of its living substance by acting thereon with its digestive fluids. At no time from that day to this can it be conceived that this sort of thing has ceased. To-day, as it was millions of years ago, monocellular organisms attack our free-floating leucocytes, the monocellular organisms of our blood, and endeavor to digest them while our leucocytes retaliate by trying to digest the invaders. "If you fail to digest me I will digest you," is the law of every living thing to-day as it was in primitive times when the earth contained only protistan forms. Enzymes are now, just as they were at the dawn of life, the chief instruments of warfare. The struggle between Metazoa, with tooth and claw, has been superimposed upon this more fundamental and more far-reaching and important part of that destruction out of which fitness continuously survives. Our skins and intestines constantly carry potential enemies of this microscopic kind and these refrain from digesting our cells only because the latter are able to hold them at bay by the use of resisting substances. When we get chilled or hungry, heated, wounded or bruised, wearied or faint, thus getting out of proper adjustment with our environments, the armed neutrality between our cells and our minute foes is destroyed and we suffer. When the environment varies in ways that make readjustment difficult then these enemies rise in open conflict and start disease. The lessening of

the resisting power of a host gives the advantage to its load of microscopic fauna and flora, converting them from potential into actual enemies. This we are constantly made cognizant of when we see tissues invaded by *Bacillus coli*, streptococci, or staphylococci. In the inflammations which supervene we have struggles in which the cells automatically tend to maintain the integrity of their structures and their proper places within the organisms, and to dislodge and destroy the invaders, while the latter, with a similar blind pertinacity, tend to destroy the cells and convert them into microbe pabulum. Burnet tells us that "Phagocytosis is summed up by intracellular digestion,"[17] but it is equally true that microbic pathogenicity is summed up by microbe digestion. Ehrlich likewise gives us to understand that the complements and amboceptors of immune sera are digesting agents.[18] To the biological chemist any other explanation is improbable. He is compelled to reconcile the matter with his knowledge of the fact that carbohydrates, fats, chitins, proteins, and other tissue substances, are all, so far as he has been able to discover, hydrosynthetic products. Their decomposition, by reversal of the synthesizing process, can be only through hydrolytic cleavages. The digesting enzymes of sera are probably, as declared by Metchnikoff, products of the phagocytes so that all bacteriolysins are subject to rational explanation when we look upon them as digesting substances similar to or like those of the pancreas. Pfeiffer's reaction is perfectly simple when viewed from this position. Its specificity is easily explainable when we take into consideration the differences in the material structures of different species of bacteria or of other microbes. They differ in their membranes, in their envelopes, in their proteins, in their nuclear material, in their linin, etc. Every such difference means a corresponding difference in the composition of the digesting fluids that will be capable of dissolving them. According to Ehrlich the amboceptor, and not the thermolabile complement, carries the specificity. This would mean that each particular substance requires a different kinase to start the reaction which the enzyme facilitates. In bacteriolysis the first thing that has to be digested, in a number of known cases, is the waxy envelopes in which they imbed themselves. When the leucocytes are unable to do this the bacteria can multiply in defiance of them. After the removal of this envelope other amboceptors and, probably, other complements, are required to digest the semi-permeable membrane that envelops the protoplasm. This gone and still other parts of the bacterium require still other enzymes and amboceptors.

The presence in the serum of these different digestive substances, matching the chemical compositions of the microbes, constitute what we know as bacteriolysins. Moor and Hewlett have shown how these act. They say: "If a mixture of microbes and serum be injected into the peritoneal cavity of a guinea-pig, and after half an hour a microscopical preparation of the peritoneal exudate be made, it will be found that the microbes are in all stages of dissolution—that is to say, the serum causes the solution of the microbes, and so destroys them. This is termed bacteriolysis, and the phenomenon is known as Pfeiffer's reaction, after its discoverer. * * * Pfeiffer's reaction is a very specific one, and is largely made use of to determine the nature—*i.e.* the species—of a microorganism. If a vibrio isolated from a water be suspected to be the cholera germ, some of the culture, together with some anticholera serum, is injected into the peritoneal cavity of a guinea-pig. If bacteriolysis occurs, the vibrio is cholera; if not, it is some other species. Metchnikoff subsequently showed that the reaction would occur *in vitro* (in a glass flask) if to the mixture of microbes and serum some of the fresh peritoneal exudate of a normal guinea-pig was added. Bordet afterward found that the reaction occurred *in vitro* in the mixture of microbes and immune serum alone, provided that the serum was perfectly fresh."[19] The *specific* serums used in these tests are procured from animals that have previously been treated to repeated doses of the specific microbes concerned in the reaction. The animals into which the microbes are injected gradually produce a serum that is able to dissolve the particular kind of microbe with which this inoculation occured. To secure sera for other microbes the same process must be gone through for each. The body-cells require time to produce these results whether the microbes are injected artificially or enter during an infection. The leucocytes, or other cells concerned in bringing about these results have to be, what we may call, "trained" into the power of producing such sera. Microbes having the ability to produce waxy coverings that defy the body's enzymes, and protect them from lysis, become, if they are able to multiply, exceedingly dangerous. The cells are unable to dissolve or injure them. A microbe that is able, through this trick of covering itself with indigestible wax, to defy the digesting powers of both leucocytes and sera, is not chemotactic to phagocytes and should it be able to produce, while in this condition, its cytotoxins, *i.e.* cell digesting substances, we would expect it to be negatively chemotactic. The phagocytes would move away from it. As soon as the cells are able to produce substances that can digest the capsules these would act as opsonins producing positive chemotaxis. This, at least, is the simplest and most probable explanation of what happens in these cases. It may be that reducing substances derived from the amino acids may aid in the poisoning of the cells on one hand and of the microbes on the other, but it seems evident that the chief work of destruction, accomplished by both cell and microbe, is due to the hydrolytic cleavages which they are able to produce. When Hektoen tells us that "It does not necessarily follow that phagocytosis of bacteria is always synonymous with their destruction," he has but stated a truism, if the phagocytes only act by digesting and in some cases the bacteria are indigestible.[20] It is a well-known fact of biology that the digestibility of different species and genera varies very greatly, particularly in their external coverings. The enzymes that digest hair cannot digest wool with the same facility. Those that digest the hide of one animal may find it difficult to digest the hide of another. Those that digest the kernel of a nut would find it difficult, if not impossible, to digest the shell. Those capable of digesting the shell of a filbert might not be able to digest the shell of a walnut, a hickory, or a Brazil nut. Those that could digest the shell might not be able to dispose of the outside husk or pericarp. Those able to hydrolyze the outer coverings of beans and peas might fail with the inner coverings. It is thus seen that there is great diversity in the chemical natures of outside coverings with great

specificity. Look where we will, throughout the living world, and this specific character of the outer coverings is everywhere discernible. The fact that bacteria and protozoa differ among their respective species in this same way is not at all surprising. Bacteriolysis and the digestion of food being fundamentally identical we should expect bacteria to behave, under digestion, much as our food would behave if we swallowed it intact—unchewed or intact. Unbroken nuts, unhusked corn, unskinned birds and fish, etc. would require specific treatment in being digested. The enzymes for digesting hair, wool, feathers, scales, and other such specific coverings would not be able to manage hide, and those that could dispose of the kernel of a nut could not dissolve the shell. Under such conditions each particular article consumed at a meal would require a different digestive fluid. In the lysis of bacteria each species has to be dealt with in a different manner, and time is an element in the readjustments. In order to obtain this time our bodies have pursued the very ancient plan, seen as far down as in the sponges, that of having their motile cells meet the bacteria or protozoa at the very earliest moment of their invasion. By attacking them thus early they gain enough time to be able to adjust their digesting powers to the particular invader. Metchnikoff, in his book on Immunity, tells us that "Some years ago Stöhr demonstrated that the wall of the intestine and especially the tonsils and other lymphoid organs are traversed by an enormous number of leucocytes which execute a kind of migration toward the cavities containing microorganisms. This continual and normal condition is often termed Stöhr's phenomenon. It is evident that we have here a process of phagocytic defense in which the leucocytes, disseminated through the digestive canal, give chase to the microorganisms that are nearest to the living portions of this organ. When we remove a particle of mucus from the surface of the tonsils of a person in good health we always find that it contains leucocytes, especially microphages, filled with microorganisms of all kinds."[21] Adami confirms what Metchinkoff has declared by telling us that "If we examine a scraping or swab from the surface of the pharynx or nose, we find that this contains fairly abundant leucocytes. In other words, leucocytes are constantly passing out between the epitheliel cells to gain the surface. Many of these, properly stained, show within them bacteria and their remains. They are acting as scavengers and cleansers. It seems probable that the majority, having performed their functions, undergo dissolution or are swept away by currents of saliva. But some, at least, find their way between the lining cells into the subjacent tissues. This can be well determined if one takes, as did Riffer, the rabbit's tonsils, kill the animal, remove and immediately harden and prepare the tonsil—staining sections for microorganisms. The tonsils are essentially lymph nodules, lying immediately beneath the surface epithelium. Such sections show, besides the lymphocytes forming the lymph nodes, two other orders of cells, the one polynuclear —some of which contain bacteria—the other, larger cells of endothelial type and origin (Metchnikoff's macrophages), of which some contain polynuclear leucocytes and their remains. * * * * It is wrong, therefore, to imagine, as it is too often taught, that the hinderance to the entrance of bacteria into the tissues is, under all circumstances, complete in the healthy individual. *A certain number of microbes is always gaining admission*—nay, is being actively introduced by the cells of the organism. But, *under such circumstances they do not cause infection. In health they tend to be destroyed very soon after their reception.* The evidence that this is the case is now overwhelming. It is true of the lower respiratory tract. Careful study of the peribronchial glands shows the same presence of intracellular bacteria, although not so abundantly as in the tonsils. It is true also of the intestines. * * * That such leucocytes as have escaped into the lumen of the gut and have returned can and do pass into the blood stream, has been demonstrated with admirable precision by Prof. A. B. Macallum of Toronto. * * * And, lastly, not to dwell on the convincing results of Nocard, Ravenal, and Behring, upon the passage of tubercle bacilli and other organisms into the lymph of the thoracic duct of dogs and other animals when fed more especially with fatty foods. Dr. W. W. Ford, in our laboratory at the Royal Victoria Hospital, has demonstrated most conclusively that immediately after death organs like the liver and kidneys of dogs, cats, rabbits, and guinea-pigs are not sterile, but contain some few bacteria, which are capable under favorable conditions of still growing. * * * These observations, then, prove conclusively that *bacteria are constantly entering the organism.*"[22] Such discoveries greatly unsettled our old beliefs concerning the sanctuarized conditions of blood, lymph and viscera. The doctrine taught a generation ago that disease germs could gain no access to the circulation except through traumatisms is now completely discredited by the cold, hard facts revealed to us by the microscope. Leucocytic diapedeses have a wider range than was supposed—a range that includes the gland walls within the alimentary canal, in the absence of inflammation. The leucocytes have here a function to perform that was not dreamt of by our thinkers of the last century. In their ingress and egress migrations they carry bacteria to and from the blood in ways that seem puzzling.

Dr. Barth, in a lecture on the Physiology of the Tonsils, given at a meeting of the Verein für Innere Medicin, of Berlin, in 1907, showed that it had been experimentally proven that bacteria and colored substances, such as carmine, when injected into the circulation reappeared in the tonsils, and were discharged by them into the palatal cavity.[23] It has long been known that in morphine poisoning a large part of the morphine can be recovered from the stomach when it has been given by hypodermic injection. Dr. A. F. Hess, after injecting *Bacillus prodigiosus* directly into the blood of rabbits and dogs found that these organisms were "excreted from the blood, not only by way of the liver through the bile, and the kidneys through the urine, but also to a less extent, directly through the intestinal wall. This was found to take place in one hour when one platinum loop of culture medium was inoculated."[24] Campbell and others have shown that in syphilis cases *Treponema pallidum* germs are carried by the leucocytes from the seat of lesion to the tonsils with such constancy that their presence in carefully secured serum smears from these organs is easily demonstrated in a large proportion of cases. Indeed, so constantly has he found them in primary, secondary, and tertiary cases that he has been able to use this method as a means of diagnosis. He tells us that when the tonsils present no

superficial lesion, but are enlarged and hyperemic they are invariably present. When they present an absolutely normal appearance he has found the Treponema "in most cases of secondary syphilis." In no case where syphilis was absent did he ever find them.[25] To know that the acid of the gastric juice has the power of destroying most, or all, bacteria that develop in alkaline or neutral media, and that the duodenal contents can sterilize those able to run the gauntlet of the stomach, is to perceive great usefulness in this carrying of pothogenic microbes that are able to resist phagocytic digestion, to the tonsils, to be emptied into the palatal cavity. Dr. P. H. Hiss, starred as a bacteriologist of the highest standard, in American Men of Science, adds a new and far from improbable light to this subject. He says that "It is not, in this connection, to my mind, a far-fetched idea to suppose that phagocytic cells may depend naturally on other cells and bacteria as a part of their regular food supply. The polymorphonuclear leucocytes may thus depend to some extent on the ever-entering bacteria and their remains; for, as we know, bacteria are constantly entering along the regular channels of absorption."[26] As has already been shown, there has been no cessation, during the entire course of phylogeny, to this sort of leucocytic activity and that at its beginning it was purely an act of food securing. There is absolutely no evidence that at any time during this exceedingly long period bacteria have ceased to act as food for these cells. Why should they when they contain the very same amino acids as the cells contain and as the cells use from other foods?

From the standpoint of both leucocyte and microbe immunity is nothing more than getting the upper hand of prey in the hunt for pabulum. Nor does this apply to the leucocytes alone among the body cells. There are many good reasons for believing that every cell in the body is able at times to act as a phagocyte. Dr. Washbourn says that "The endothelial cells of the vascular system are phagocytes capable of englobing bacteria which have entered the circulation. * * * Werigo showed that anthrax bacilli after injection into the circulation of rabbits at once disappeared from the blood, being englobed by the endothial cells of the blood-vessels; and this has been shown to be true for other bacteria. The endothelial cells of the blood-vessels of pigeons infected with swine septicemia are found to be crammed with bacilli; and similar phagocytic functions have been found in other infections."[27] This division of labor in the disposing of pathogenic microorganisms enables the body to cope with a far greater number of them, at any single invasion, than it otherwise could attend to. But, inasmuch as we have seen that *all immune reactions against microbes must be more or less specific*, for the reasons already presented, there is required to be the most complete harmony of action between the cells as a whole during an engagement with an army of rapidly multiplying invaders in order to compass their destruction or expulsion. For one lot of cells to be secreting enzymes adapted to the destruction of *Bacillus coli* when the invader may be the anthrax bacillus would be working at cross purposes. For some of the cells to have themselves in readiness to digest protein only, others carbohydrate only, and still others waxy substance or fat only, when all are needed to face the anthrax invaders would be to be found in a condition of utter unpreparedness. They would be at the mercy of the enemy, and particularly so if that enemy came fresh from the invasion of a host of the same species. The enemy would be fully prepared—positively virulent—while the cells would be incapable of making even reasonable resistance. It has been again and again experimentally proven that it takes time for the cells to prepare themselves for such emergencies.

The first production by any organism of any given specific serum is never the work of a day. To fabricate proper antibodies to match newly introduced antigens requires time. The so-called "period of incubation" is now believed to cover the number of days needed for these preparations as well as for the multiplication, up to the invasion strength, of the enemy. Few, if any, pathogenic microbes are ever able to get into the circulation in sufficient numbers to cause septicemia in less time than is covered by this "period." Few, are able to overwhelm the circulation with their "toxins" in less time than this, when they are, as organisms, unable to themselves reach the blood stream. Whatever may happen to be the portal of entrance they must reach a place of sufficient safety for themselves so as to permit of speedy multiplication. They must, in the meantime, adjust their powers of resistance to the lysins of the cells, otherwise their rapid multiplication is impossible. While they are multiplying, and while as they multiply they increase the amount of their toxins, the cells, too, are busy acquiring the power of digesting the invaders—of dissolving off protecting envelopes, and of matching and rendering non-injurious the cytotoxins. If an army of microparasites came upon the cells at once, in sufficient numbers and with sufficient digesting power to destroy great numbers of the cells a defense would be impossible; invasion would mean the death of the host every time. Here then we gain a clear conception of the tremendous importance to the body of the migrations of leucocytes into the digestive tract. It is a taking captive of the advance guards of the invading army, an experimental discovery of the secret of the way to dissolve their armor, a sensible system of early preparedness. Stöhr's phenomenon is thus seen to be of life and death importance to every living species of animal, particularly when young, and the tonsils are the first open doors for them through which to perform their most efficient work of salvation. They lie near to the entrance of the digestive tract and their structure is such that it could not well be improved upon for the most facile way of conducting such a campaign. It shows the utmost preparedness for facilitating the transportation of leucocytic troops and for their return with prisoners to the detention camps where they can be utilized to the best advantage of the body.

The British Encyclopedia tells us that the tonsil "is very vascular, deriving its blood from five neighboring arteries."[28] This the reader cannot help seeing is just such a condition as would, by the aid of leucocytic diapedeses, enable the freest possible communication, in many directions, with the circulation through the body, so as with the utmost possible speed to disseminate the inoculating material. Speed in mobilization and in obtaining war supplies is among the most important of martial advantages. The tonsils are built in exactly the way that supplies to the body this very advantage. They occupy the very place, too, that helps in this particular. The soldiers of the body

do, actually use them, for this very purpose. Every known fact about them fits exactly as evidence of this explanation. That others have partly anticipated me in this view of the matter is made evident on learning from the *Journal of the American Medical Association* that "Orandorf considers that the tonsil has for its function the early establishment of immunity to bacterial toxins. Its location is the most suitable point for the certain collection of specimens of every kind of microorganism entering the oronasal cavity. When the bacteria have been in the crypts long enough to elaborate a sufficient vaccine, which is transported by the lymph current through the system, an immunity not associated with a toxemia has been induced for that form of bacterium. This organism is then annihilated by bacteriological substances brought by the returning lymph current and is removed from the system."[29] The bacteriological substances here referred to are, from our viewpoint, the hydrolyzing enzymes and their cooperating chemical aids. The bacteria are literally, and not figuratively, digested, as much so as they would be in the alimentary canal. Instead of being removed from the system it seems more likely, from a knowledge of their chemistry and chemical changes, that they serve, in great part, as pabulum for the body. The existence of the crypts as catch-alls for bacteria adds materially to the fitness of the tonsils for the performance of the function herein outlined. The elaboration of the vaccine, however, occurs wherever cells are acting as phagocytes and digesting the parasites. The crypts can do but a trifling part of this. It is the work of cells in all parts of the body. When rapidly accomplished there is sure to appear the symptoms known as inflammation. This, as we see, is itself a defensive reaction. When the tonsillar invasion is overwhelming, so that a negative chemotaxis occurs, we have, as pointed out by Dr. R. C. Brown, in the MEDICAL RECORD, a systemic infection without a tonsillitis.[6] In this condition the swift diffusion, without local injury, increases the chances for survival by its greatly diluting the virulent toxins and bringing the individual microbes face to face with myriads of phagocyting tissue cells as well as leucocytes. This, of course, results in a general septicemia—a terrible fate for the host—but, all things considered, the best result possible and the least of two evils. To have made the other choice of an utterly hopeless local inflammation, with uncheckable gangrene and necrosis of tissues, would certainly have been no improvement. In negative chemotaxis the best thing that can be done is to dilute, and thus reduce the overwhelming virulence. These results are precisely such as we have reason to expect if biological adaptations are the results of Natural Selection. They always fall considerably short of ideal perfection. They are always of such a character as to be subject to a good deal of improvement. On any other theory of their production they stand as an everlasting evidence of mismanagement on the part of their "purposeful" producer.

The modern doctrine of inflammation with which this view of tonsillar function corresponds is well stated by Adami, in Allbutt and Rolleston's System of Medicine, in which he says: "We regard the irritant as capable of causing cell- and tissue-destruction, and so long as the irritant is in action so long may this destruction continue. But inflammation itself we regard as the series and sum of the reactive processes set up in the tissues, and then bringing about, not destruction, but the very reverse. Taking as our definition, that inflammation is the response or reaction to injury, we are inevitably led to see that this response results in counteracting, or more exactly in tending to counteract, the deleterious effects of the irritant; the inflammatory process tends toward repair. It may not result in repair, for, as we have pointed out in several instances, too often the reaction is either inadequate or excessive. * * * Studying the various factors involved, it is forced more and more upon us that each tends in one definite direction, and the sum of the processes is reparative."[31] In explanation of this reparative trend the same author states that "In the course of evolution those individuals survived who, by chance, let us say, happened to manifest this reaction on the part of their vessels in response to stimuli of a certain order, whereas those who did not were more unfavorably placed and so succumbed; that they conveyed the same power to their descendants who also possessed this advantage over individuals incapable of affording the reaction; then we can conceive the development of a race possessing a mechanism for countering a given stimulus by a given reaction, a race in which provision is made, or gained, for dealing with a given order of events; then it will be seen that what primarily is accidental becomes secondarily purposeful, through the survival of the fittest and the inheritance of defensive acquirements."[32] This modern view of inflammation puts a new phase on the entire subject of pathology. In the case of tonsils it compels us to make a radical overturning in the old viewpoint. Without having been at all conscious of the incongruity of our position we have all along been inclined to reason about them much as Mark Twain, in one of his funniest moods, undertook to reason about going to bed. A friend was telling him of his terror when on fast trains and in steamships because of the many people that met death through accidents to the trains and ships. Mark replied that he had been making a study of the official statistics of death rates and found out that many more people died in bed than anywhere else and this had made him terribly afraid of venturing into a bed. Our surgeons have been studying the death rates from tonsil infections and discovered that more people suffer and die through these than through any other source of infection; *ergo*, tonsils are dangerous things and must be gotten rid of.

What if these organs do become inflamed with greater frequency than most others? What if through them have passed more, and more malignant, infections than through any others? If our cells are, ordinarily, unprepared to meet, successfully, the invasions of pathogenic microbes, and if these cells require from a week to two weeks to make the necessary preparation for the repelling of the majority of attacks from such microbes, and again, if the tonsils constitute one necessary part in the mechanism of the preparedness, how can we justify an operation which forever after it is performed defeats the very results for which such tonsils were selected as fitnesses in the struggle for existence? When these organs are laden with the debris of dead leucocytes and dead bacteria, when they are swollen to such an extent as to check respiration, or when, in any way, their damaged condition seriously handicaps any other organ in the performance of some important function, no

one should object to a tonsillotomy. Even in this, however, we should not lose sight of the fact that we are only choosing the lesser of two evils. The microbes, and not the cells of the tonsils, are the offenders. To sacrifice a single tonsil cell that can be safely saved is to sacrifice a small fraction of regenerative material—is to do that much damage to the patient. By all means get rid of the microbes and in doing so the less tissue cells removed the better. Nor is it necessary, in order to get rid of the microbes that are scattered through the gland that every part of the gland must be removed. A certain number of the invaders can be destroyed by the cells after the overwhelmingness of their numbers has been reduced. When the inflammation is not excessive, when the leucocytes are diligently at work destroying the parasites, and when regeneration and restoration of the damaged tissue are slowly going on, why should we seek to increase the trouble at the risk of the future comfort and life of the sufferer? That the theory here presented explains numerous facts which have not before been explained or correlated, is evident. If it is true, as already seems probable, then whenever a tonsil is wholly removed its owner must face future infections with a reduced ability to overcome the same. If it is a child, then it must die from the scarlet fever which attacks it a month, a year, or several years later, though the virulence of the attack be no more than would have caused a slight indisposition had the tonsils remained. And this is equally true for every kind of infection that is likely to attack it during life. Otherwise mild diseases, even though they may not kill, are rendered much more intense, injure more organs as complications, and leave the patient a chronic invalid where he might have passed the ordeal of attack with but trifling damage. If the patient is an adult, an invasion of *Diplococcus pneumoniæ*, that would have ended as a trifling affair had his tonsils been intact, gains sufficient virulence through lack of bodily preparedness to terminate his life. In view of such grave possibilities why should we not be glad to assume the position taken by Dr. J. W. Jarvey, when he said: "I doubt if there is a surgeon who will not admit having seen many excellent and permanent results following tonsillotomy; yet, many plead for tonsillectomy as a routine procedure. Do they practise what they preach? If they do they are wrong, for they admit the frequent efficiency of the simpler measure; and, if they don't they are wrong again, for they are misleading those whom they should teach aright."[33] Until the surgeon who advocates tonsillectomy can show some other meaning for Stöhr's phenomenon than that here presented, until he can show why the tonsils have differentiated in adaptation to the evident requirements of many different kinds of mammals, instead of atrophying as his theory of them requires, until he can show why their circulation is so great while that of the os coccyx, appendix, and other vestigial organs, has shrunken into an almost negligible amount, he is assuming a terrible responsibility. He is blindly risking the future career of his patients on a gamble which he knows is one of great uncertainty, even should he have the hardihood to deny the premises and conclusions here presented. How could he possibly know that a death that occurred years after his operation may not have been due to that operation, until he has found some other meaning for Stöhr's phenomenon than that here given? Besides this tonsillectomy is far from being free from more than the ordinary dangers of other operations of like size. The risks from hemorrhage must be more than usual when fatal bleeding may occur from either of the dorsales linguæ and from either the ascending or descending palatine. The carotid, too, is endangered.[34] Why jeopardize the patient's life when the only thing that can be reasonably charged against the supposedly offending tonsils is that of being where contending armies meet often to test the patient's fitness to survive the struggle?

Poor Belgium is at present performing the tonsil function for war-cursed Europe. We can see with what tragic results to her people she is compelled to take this part. If, because of the serious state of inflammation in Belgium, and because that over her soil invading armies passed to produce a similar febrile condition in France, what would we think of the intelligence of the French people should they blame the Belgians for their troubles and earnestly advocate the destruction of the whole people of Belgium in reprisal? Belgium, too, suffered in a somewhat similar way during the battle of Waterloo. What if the English, the Germans, the French, and the Austrians should unite in bringing this up against the Belgians because, forsooth, that battle was correlated with a severe febrile condition through all of Europe? With all the muddled logic that the present war has produced nothing quite so muddled has been proposed as the massacre of the entire Belgian people in order to avoid future repetitions of such diseased conditions. Yet this is the kind of logic by which tonsils have been sacrificed making it impossible for them ever to regenerate or take any part in the future weal of the body. It is exactly as if we held that the future peace and comfort of Europe depended upon Belgium being converted into everlasting marshes and deserts. The war will leave a heritage of ruin, irritation, poverty, and pain that will rack the sensibilities of other peoples for years to come, but no one is likely to be foolish enough to condemn the poor Belgians for this trouble. When the armies have been removed and industry reestablished there will be regeneration to heal the injuries and restore the usefulness to mankind of these poor people. It is exactly thus with the tonsils unless new diseases appear. Conservative treatment of any organ, like the conservative treatment of a crushed people, is the best treatment. If the lungs or heart offend we know better than to advocate their extermination. The functions they perform are too evident for anyone to suggest their complete removal. Where other functions are less immediately vital it is safe to assume that they exist and require as careful treatment even though death may not be imminent. It is the surgeon's duty at all times to choose the lesser of two evils and it is also his duty to be sure which of the two is the lesser.

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681 TENTH STREET.

FLUOROSCOPIC BRONCHOSCOPY.*

(SUPPLEMENTAL REPORT.)

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IN the *Journal of the A. M. A.*, February 21, 1914, I published a short article on this subject, referring to three cases on which I had operated and including also a case report by Dr. Stanton A. Friedberg. I think both of us now realize that the article was liable to misinterpretation by the general practitioner who might conclude that with the aid of the fluoroscope the operation might be safely attempted by almost anyone. Such an impression would be a misfortune, for it would undoubtedly lead to disastrous results in many cases; but to the well-qualified bronchoscopist the method will prove a valuable aid in certain difficult cases where the usual procedure has failed.

In inexperienced hands bronchoscopy for the removal of foreign bodies has been attended by a very high mortality, similar to that from splenectomy or deep gall duct operations, and I have no doubt that under similar conditions it will be equally serious in the future; but as individual operators grow more and more skillful, the mortality should steadily decrease until it should be no greater than from laparotomies with operations upon the pelvic organs. Nevertheless, even the most skilful must necessarily fail in some instances and fatal results will occasionally follow. I am satisfied that fluoroscopic bronchoscopy will lessen the danger and decrease the number of failures in the conditions where it is indicated.

I think this operation is indicated in all cases in which the foreign body casts a shadow with the *x*-ray where the ordinary method has failed; but more especially, in the following classes:

1. Those in which there is so much mucus, pus, or blood that it is very difficult or impossible to see the foreign body.
2. Those where granulation tissue covers the foreign body.
3. Those in which the body is hidden, in an abscess cavity.
4. Those in which a stricture has formed proximally to the foreign body.
5. Difficult cases in which the body is lodged in a bronchus going to the upper lobe of the lung, or in any bronchus where it cannot be exposed by ordinary methods.

In this procedure one should have a good *x*-ray apparatus and the assistance of an experienced radiographer. Usually no anesthetic is required and it is much better to get along without it if practicable. It is specially important to have a narrow strong forceps with which one is not likely to do damage and one that will not slip when the object has been grasped.

The patient is placed on a special table with the *x*-ray tube beneath it; and it may be necessary to have a board on which the patient may lie raised four inches above the table, in order that his head may hang over the end. This is desirable because the position of the tube beneath the table makes it difficult to bring the patient's body near enough to the end of the table so that his head may hang over it.

With the fluoroscope ready the bronchoscope is introduced into the trachea and carried down as nearly as practicable to the foreign body. The *x*-ray is then turned on. The surgeon, standing at the left side of the patient's head and holding the bronchoscope with his left hand, directs it by the shadow toward the foreign body. The forceps, held by his right hand, is passed through the bronchoscope , and by its shadow guided down to the foreign body. It should then be moved back and forth laterally to ascertain whether it is in the same bronchus or cavity with the foreign body—if not, or if it is in front or back of the latter, its shadow will pass beyond the shadow of the foreign body with these movements. If this occurs, by gentle manipulation the forceps must be repeatedly passed in somewhat different directions until a position is attained where the shadow of the foreign body moves laterally with that of the end of the forceps. The blades are then opened and the forceps passed down a little farther so as to grasp the foreign body. Several attempts may be necessary to accomplish this, especially if the foreign body is in an irregular abscess cavity; but when it is in a bronchus there should be but little difficulty. When the foreign body has been seized and is shown to be coming with the forceps, the surgeon should not let go until it is brought out, even though considerable traction may be necessary to draw it through a stricture. The operator may grasp the pulmonary tissue instead of the foreign body but by care and gentleness this can be discovered so that injury may be avoided. One should make very little traction until certain that he has only the foreign body,

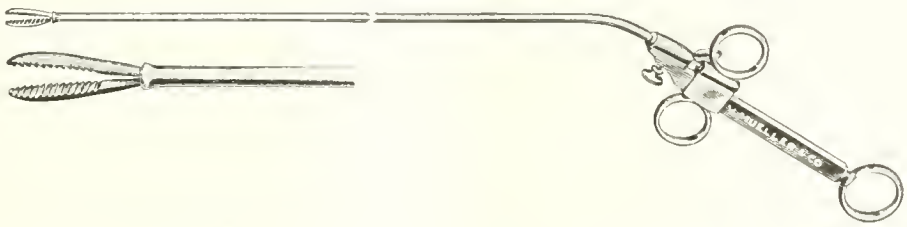
*Presented at a meeting of the American Laryngological Association, Niagara Falls, Canada, June, 1915.

but when assured of this I think that from 5 pounds to even 10 pounds might sometimes be justifiable, according to the condition of the lung. This, however, must be left to the judgment of the operator.

The forceps I recommend for this operation is a simple narrow, very strong tube forceps to which is attached a Krause handle.

The face of the blades is cut like a file with the sharp edges toward the handle. The tube, and the blades when closed, are only 4 mm. in diameter. This is an excellent forceps for nearly all work within the bronchi or trachea excepting when the foreign body is of such a nature that it is liable to be crushed.

The cases recorded in my former paper each possessed some special interest and the two cases now reported further illustrate the utility of this method.



Strong tube forceps with file-like surface to blades; 4 mm. in diameter. Krause handle.

Case I.—The first of these was sent to me by Dr. Bullock of Silver City, N. M. The patient, S. W. P., had aspirated a nail two years previously but no one believed that it had passed into his air passages. After the accident he was thought to be suffering from stomach trouble, and he had a good deal of cough with expectoration of some pus and blood and pain in the right chest which finally led to the belief that it was tuberculosis; for which he went to Dr. Bullock's Sanatorium. On making an *x*-ray examination, Dr. B. found the nail. I saw the patient first April 16, 1914, immediately after my return from California, and attempted a bronchoscopy in my office under cocaine, but the patient's throat was very irritable and he jerked the tube out of the trachea before I could see anything.

The *x*-ray showed the nail at the lower part of the right lung below the fifth rib in front, and between the ninth and eleventh ribs behind. Laterally the shadow was shown about 2½ inches in front of the spinal column. Because of the irritability of the throat, I decided on lower bronchoscopy and because of the depth of the nail, the time it had been in the lung, the probability of an abscess cavity, and the amount of purulent secretion, I prepared for fluoroscopic bronchoscopy. Assisted by Dr. Stanton A. Friedberg and some of the house staff, I did tracheotomy under local anesthesia, then took the patient to the dark room and introduced the bronchoscope. I found the bronchus so filled with granulation tissue that it was impossible to see anything below it. I then used the fluoroscope and with the forceps already referred to quickly removed the nail without pain or discomfort to the patient. The patient did well afterward and was discharged from the hospital as soon as the tracheotomy wound had healed. I heard from him recently and he appears to have made a perfect recovery.

Case II.—I recently saw a little patient for Dr. M. L. Goodkind at the Michael Reese Hospital, Chicago, in whom the history and the fluoroscope had shown a metallic foreign body in the right lung. The patient M. H., aged 5 years, last October told the parents he had swallowed a rivet. The subsequent symptoms had been attributed to the stomach. Following the accident, the boy had been very ill for about three weeks, and he was subsequently under medical care off and on, until about three weeks before he was sent to Chicago; at that time he was said to have developed a pleurisy and had since been coughing and running a temperature of from 102° to 104° F. every afternoon, but there was no expectoration.

The fluoroscope anteroposteriorly and laterally showed the position of the foreign body distinctly and from the negative it was located in the second interspace 2 cm. to the right of the middle of the sternum. We wrapped the child securely in a blanket and without any anesthetic, excepting a little cocaine to reduce coughing later on, I did bronchoscopy, assisted by Dr. Stanton A. Friedberg and Dr. Ralph B. Bettman and other hospital physicians; but we were unable to discover the foreign body even after a careful search for nearly an hour. Although 1/250 of a grain of atropine had been given hypodermically half an hour before the operation, the mucus and mucopurulent secretion was so abundant that more than 9/10 of the time was occupied in swabbing it out. We carefully explored the whole length of the right trunk bronchus which was free far below the foreign body; but we could not see into any lateral branch. The secretion appeared to come from a narrow opening at or near the site of the first division of the right main bronchus; but on account of the difficulty caused by the secretions even this could not be definitely located.

Finally, feeling that the child should not be subjected to a longer examination, I desisted. The patient had coughed a good deal during the operation, but he admitted that it had not pained him. I directed that the child be kept in a croup tent for 48 hours and given 2 drs. of liq. amm. acetatis four times a day. Following the operation the patient did very well indeed and I found him feeling comfortable next morning. The temperature 101.5°, pulse 125. The following day the temperature went up to 102°.

Three days later the pulse varied from 92 to 120 and the temperature from normal up to 100° F. With the same assistants and Dr. Frances Turley, the radiophagist, I did a fluroscopic bronchoscopy. When everything was ready, Dr. Friedberg introduced the bronchoscope for me and assisted me in holding it with my left hand while I managed the forceps with my right. I missed the track to the foreign body a couple of times and grasped soft tissue three or four times before I felt sure that I had seized the iron. I drew it out carefully, with 2 or 3 pound resistance, as it came through the stricture with a snap, and then brought it out at the end of the bronchoscope. It proved to be a smooth iron cylinder, part of a rivet, 6 mm. in diameter and 8 mm. long. It was a body difficult to hold but the forceps did not slip at all after really grasping it. The patient was put in a croup tent again for 24 hours. The morning following the operation he was in fine condition, respiration 22, pulse 88, temperature normal. The same day exploratory aspiration demonstrated a serofibrinous fluid in the pleural cavity. The following day the conditions were the same, the cough and fever had disappeared, and the patient was allowed to go home.

On May 11 I assisted Dr. Stanton A. Friedberg with this operation on a child who had an upholsterer's tack in a lung cavity with a proximal stricture which had rendered ordinary bronchoscopy futile, the history of which is herewith appended by Dr. Friedberg.

On March 17, the patient a girl, 12 years of age, had aspirated a brass-headed upholsterer's tack. The accident was followed by an attack that was called septic pneumonia. Previous to my seeing her, tracheotomy had been done and two attempts at removal had been made. I saw the patient first May 8 and did a bronchoscopy through the existing tracheotomy wound. Over an hour's time was spent mostly in removing pus and secretions. A stricture was found in a secondary bronchus of the right side through which I was unable to pass the smallest tube. A forceps passed through the stricture gave evidence of a considerable cavity. Further effort was postponed until the patient could be brought to Chicago. On May 11 the second attempt was made; with the assistance of Dr. Ingals, the bronchoscope was passed to the site of the stricture through which the forceps was introduced. Through the screen the move-

ments of the tack and forceps could be plainly followed. When the tack was secured the jaws of the forceps could be seen to be partly opened. Removal was accomplished without difficulty by pushing the end of the tube down while the forceps and tack were brought upward. When the tube met with the head of the tack they were both withdrawn. No ill effects were experienced from the operation, which was done without anesthesia.

104 South Michigan Avenue.

CARCINOMA OF THE CECUM WITH EXTREME PTOSIS OF THE ABDOMINAL VISCERA.

By M. R. SMIRNOW, M.D.,

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Cases, both of carcinoma of the cecum and of ptotic viscera are so common and the literature is so full of them that it is with the greatest amount of hesitation that the writer desires to record this one. The fact of the rather peculiar and extreme condition found, he hopes, will make it pardonable.

The case is that of an American woman aged 74, white, single, who entered the New Haven Hospital, Nov. 21, complaining of swelling and pain in the lower right abdomen. She had noticed a "swelling" in this location for four months previous and first felt "soreness" several weeks before her entrance to the hospital. On account of extreme deafness, no further history was obtained.

Physical Examination. (Dr. Comfort, resident physician, surgical staff.) "Patient much emaciated and poorly nourished. Skin has a yellowish tint, markedly pale, dry and loose from emaciation. Pupils small, react slowly to light and accommodation; slight arcus senilis, sclera clear. No paralysis of facial or ocular muscles, eyesight poor. Patient is very deaf. Her mucous membranes are pale. The tongue is moist and fairly clean. Pharynx is negative. Few small palpable cervical glands are present. Epitrochlears are not enlarged. Slight edema present over tibia. Reflexes are normal.

"*Chest.* Small; prominent supra and infraclavicular spaces; intercostal spaces also prominent; marked scoliosis to the right. Breasts atrophic. Lungs—expansion poor (palpation and percussion of lungs not recorded, presumably on account of weakness of patient). Roughened breath sounds at both upper lobes. Few moist râles at the end of inspiration posteriorly on the left just above scapular spine. Heart—left boarder 10 cm. from midsternal line; apex in the fifth interspace in the nipple line; right boarder at right sternal margin. A systolic murmur, soft and blowing, heard at apex and transmitted toward the axilla. The second aortic is louder than the second pulmonic, both sounds being accentuated.

"*Abdomen.* Somewhat distended. There is a prominence in the right lower quadrant. This mass is very evident, occupies the position of the cecum, is very tender, irregular in outline and more or less nodular in character. A little tympany is made out above the mass. Liver dullness extends from the third interspace to the level of the umbilicus, the surface of the liver is smooth and rather tender. The remainder of the abdomen is dull; considerable fecal matter in the bowel. No fluid made out. Left side not tender and negative to palpation. Vaginal examination not made."

The above physical examination was verified by Dr. Hawkes, of the visiting surgical staff.

Diagnosis.—Inoperable carcinoma of the cecum.

During the patient's stay in the hospital, her condition remained the same. She had no increase in temperature, her pulse rate varied from 80 to 100 and her respirations were about 20. Her urine showed a slight amount of albumin, an occasional granular cast and few leucocytes. The blood examination showed 4,350,000 reds, and 11,000 whites with 66 per cent. polymorphonuclear and 25 per cent. small non-nuclear leucocytes.

On Jan. 6, her temperature suddenly went up to 102.5° F. (axillary) from a subnormal (96.8°) on the day before. It fell just as suddenly as it rose, in about fifteen hours, and remained at 97° F. until death. Her heart rate increased to 120 beats per minute, and stayed there until death, accompanied by an increase of respirations, varying from 50 to 60. She died at 9 A.M. of Jan. 7.

Autopsy, Jan. 7, 3 P.M.,—6 hours post mortem. *External Examination.*—Body that of a woman 153 cm. in length, approximate weight 90 lbs. or less, of slight build,—and poorly developed. Color is pale with slight yellowish tinge to body, most pronounced in the face. Emaciation extreme and general, breast tissue practically disappeared; supra and infraclavicular spaces, likewise the intercostal spaces very pronounced. Sclera pale, somewhat yellowish, pupils small, mucous membrane of mouth and lips pale. Rigor mortis marked and general; lividity slight in dependant portions of body. Slight amount of edema over ankles. A large tumor mass is seen in the right iliac region. This mass is about the size of a large orange, irregular in outline and nodular. Another mass, elongated and more regular in outline, is felt to the left of the median line in the umbilical region. Axillary and inguinal glands not enlarged. A marked scoliosis to the right and a marked lordosis are present. Several incipient bed-sores are seen over the sacrum.

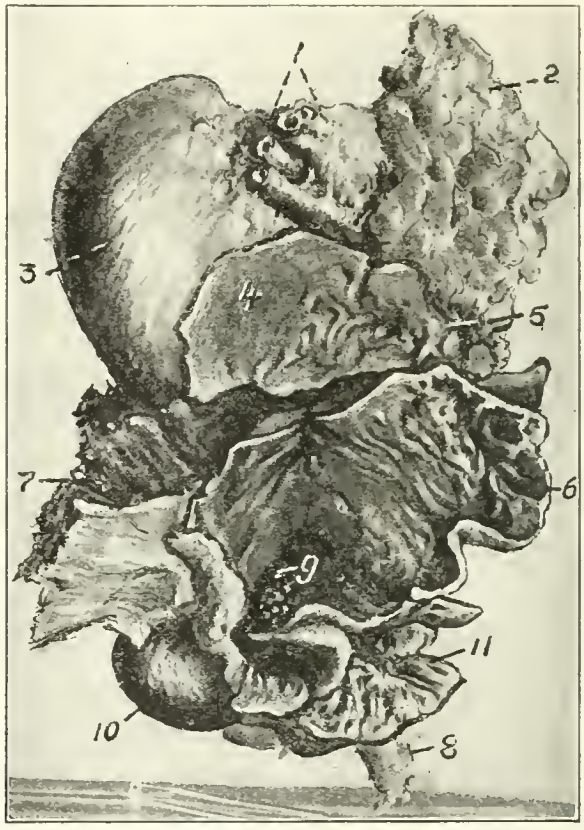

Fig. 1.—1. Common bile duct and hepatic artery, portal vein. 2. Pancreas. 3. Right kidney. 4. Stomach. 5. Duodenum. 6. Ascending colon. 7. Psoas muscle and part of pelvic wall. 8. Mesentery. 9. Tumor. 10. Cecum. 11. Small intestine.

Abdominal Cavity.—The abdominal walls very thin, fat practically gone. The abdominal cavity contained no fluid. The tumor mass mentioned under external examination, was found low down in the right iliac region and extended below the ileopectoneal line into the true pelvis. The omentum was adherent both to the upper surface of this mass and also to the anterior abdominal wall. The stomach was markedly elongated, tubular in shape and extended diagonally from the left hypochondriac to right iliac regions, its pyloric end being adherent to the tumor mass. Ptosis of all the abdominal organs is marked. The pancreas accompanied the stomach and was seen to lie partly parallel and partly posterior to the stomach. It was much elongated and flattened and was covered only by a layer of peritoneum (gastrohepatic omentum) which separated it from the anterior abdominal wall. The head of the pancreas also helped to form part of the mass. The liver extended from 8 to 10 cm. below the free margin of the ribs. The gallbladder was quite elongated. The right kidney was somewhat larger than normal and its pelvis was enlarged and markedly distended with fluid. It was found to lie immediately above the iliopectoneal line and helped

to form the mass described. The cecum was somewhat distended but felt firm. One or two loops of intestine was adherent to the mass. The position of the duodenum was remarkable. This portion of the gut was also displaced downward; it lay above and to the inner side of the mass described, running from the pyloric end of the stomach and tumor mass, downward into the true pelvis then curving upward over the promontory of the sacrum. The spleen was small, ptosed, but not adherent. The left kidney was somewhat ptosed. The dome of the diaphragm extended to the fifth rib on the right and the fourth rib on the left. The uterus was small, the left ovary and tube were free, the right was adherent to the tumor mass.

Chest Cavity.—There was no fluid in either chest cavities. The lungs were free except for a few fibrous adhesions between their bases and the diaphragm. The pericardium contained the normal amount of fluid and was normal in all other respects.

Heart.—Weight, 255 gm., was smaller than normal, contracted but not firmly so. The pericardium showed large white milk patches over the greater part of its

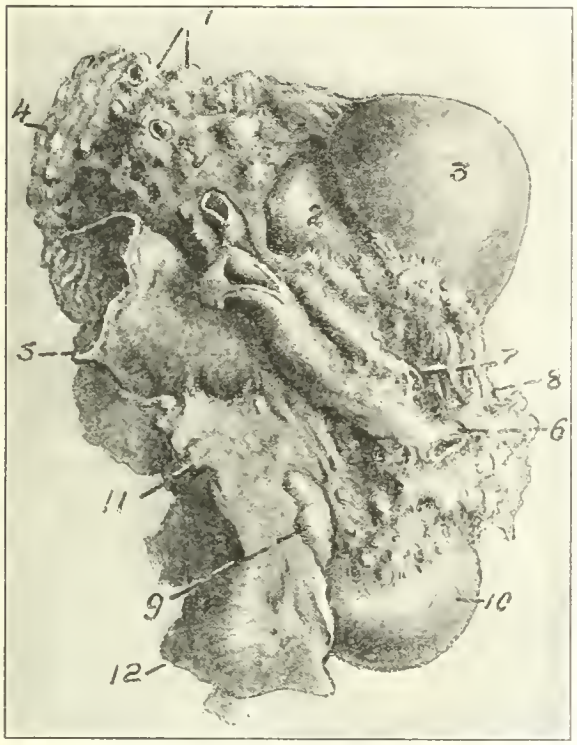

Fig. 2.—1. Common bile duct and hepatic artery, portal vein. 2. Pelvis of right kidney, showing hydronephrosis. 3. Right kidney. 4. Pancreas; superior mesenteric artery crossing it. 5. Duodenum. 6. Common iliac vein and vena cava above. 7. Internal iliac artery, common iliac above. 8. Psoas muscle. 9. Appendix. 10. Cecum. 11. Mesentery. 12. Ileum.

surface. Fat was rather abundant but had undergone serous degeneration. The vessels were rather tortuous. The mitral orifice measured 9 cm., free margins normal in thickness. Chordæ tendinæ much shorter and thicker than normal. Aortic valve was 7 cm., its cusps were moderately thickened and slightly bound together, but competent. Tricuspid valve measured 10.5 cm. normal; the pulmonic, 6.5 cm., also normal. The myocardium was reddish-brown in color, of good consistency, and measured 1.5 cm. on the left and 4 mm. in thickness on the right.

Lungs.—Right apex was somewhat retracted, surface smooth, presented one or two old adhesions at apex and at base. Upper lobe crepitated but slightly and had several larger and smaller modules of very firm consistency. The middle and lower lobes crepitated throughout. The anterior boarders were pale and emphysematous. Cut surface of the lungs, showed in the upper lobe several masses of gray, firm fibrous tissue, in places containing calcareous deposits and black pigment. Bronchi showed small quantities of frothy mucus. The lower lobes showed a large amount of frothy reddish fluid on squeezing. No pneumonic areas were present in gross but were found later under the microscope.

Liver.—Weight 870 gm., very small, surface smooth, capsule markedly thickened over upper surface of left lobe, margins much thinned out, the anterior border of the left lobe being almost transparent. Cut surface showed the tissue to be pale, yellowish gray in color and somewhat bile stained, the lobules were much smaller and their boundaries indistinct. Its consistency was much less than normal.

Spleen.—Weight, 85 gm., was much smaller than normal, capsule smooth; cut surface, normal color and consistency; on account of the atrophy the trabeculæ appeared more pronounced. The Malphigian bodies were distinct.

Right kidney removed with tumor mass, was already described. Left kidney: weight, 140 gm., capsule stripped easily leaving a slightly roughened surface; consistency about normal. The stellate veins were somewhat more distinct than normal. Cortex was of normal thickness, markings were quite distinct. The pyramids and their markings were normal. Few of the arteries stood open. Microscopically some of the glomeruli were replaced by fibrous tissue, the interstitial tissue was but slightly increased. The parenchyma was in general good condition, some of the arteries showed arteriosclerotic change.

The stomach was markedly elongated and contracted, otherwise normal, pyloric end adherent to tumor mass.

The pancreas was elongated and flattened, the head of the pancreas being included in the tumor mass.

The adrenals were normal.

The intestine with the exception of its malposition, and the lesion of the cecum which will be described below, was normal.

The bladder was normal.

The uterus was atrophied very firm and hard to cut, otherwise normal.

The ovaries were atrophied and sclerotic. The right ovary was adherent to the tumor mass.

The aorta showed numerous arteriosclerotic placques, some of which were calcified.

The Tumor Mass.—What is here spoken of as the tumor mass indicates not the tumor *per se* but also the cecum and the parts of the various organs adherent to it as removed at autopsy and shown in the illustrations. The general description and location of this mass has already been given, and will not be repeated, except to call attention again to the fact that the greater part of it and parts of the various organs attached to it were found below the iliopectoneal line and in the true pelvis. Anteriorly the mass of tissue was covered by the omentum and a few loops of small intestines held in place by a few light adhesions. Posteriorly it lay upon the psoas and obturator internus, pyriformis, and coccygeal muscles, and covered the common, external, and internal iliac arteries and their veins.

The tumor itself was in the posterior wall of the cecum and beginning of the ascending colon. It presented a very roughened papilliform surface and was black in color. The walls of the cecum were infiltrated by the tumor and also markedly thickened by chronic inflammatory changes. Microscopically the tumor proved to be an adenocarcinoma. It is noteworthy that there were no metastases.

Mention has been made of another tumor-like mass found on external palpation of the abdomen. This proved to be the anterior surface of the spinal column brought forward by the extreme lordosis and made more evident on account of the emaciation of the body.

Anatomical Diagnosis.—(1) Adenocarcinoma of the cecum. (2) Extreme cachexia and emaciation. (3) Marked distortion and ptosis of all abdominal organs. (4) Senile atrophy of the heart, liver, spleen, uterus, ovaries. (5) Chronic endocarditis with mitral insufficiency, chronic pericarditis, and serous degeneration of pericardial fat. (6) Healed tuberculosis of lungs, emphysema, chronic pleurisy, and terminal bronchopneumonia. (7) Chronic interstitial nephritis, hydronephrosis of right kidney. (8) Scoliosis and lordosis. (9) Chronic localized peritonitis. (10) Arteriosclerosis. (11) Jaundice.

Hereditary Familial Osteopsathyrosis. — Tillaye reports the history of a family of six children every one of whom, together with their father, sustained one or more fractures in the course of their life. In every instance the trauma was insignificant and the femur was the bone most frequently fractured.—*Revue d'Orthopédie.*

SYPHILITIC REINFECTION WITH NOTES ON IMMUNITY AND TREATMENT.*

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My patient is a man now fifty-two years of age. From all the history obtained I gathered no facts of previous illness or inherited taint relevant to the conditions I am reporting. He is a man of considerable education and refinement.

Upon the latter qualifications I have to depend somewhat for the intelligence and truthfulness of the history of his previous syphilitic infection, which occurred in 1886. He recalls an indurated persistent genital lesion, followed several weeks later by skin manifestation which were sufficient to convince the late Dr. Charles K. Briddon, then Attending Surgeon at the Presbyterian Hospital, New York City, a man of unquestionable skill, that the patient was infected with syphilis. He was given the usual sugar-coated granules containing 1-5 grain of protiodide, so popular at that time, and instructed to increase the dosage until free catharsis and salivation ensued, then to decrease the dose gradually and again repeat the course. This treatment was continued for two years. Four years later, namely, in 1900, he developed disease of the middle turbinated bones with caries and necrosis, involving, and causing perforation of, the hard palate, for which he now wears a plate and obturator. The condition was diagnosticated uncured syphilis and treatment was resumed, this time by deep intramuscular injections of mercury, and was continued for some time. From then until the onset of the second infection, he enjoyed good health. On October 29, 1912, he reported to me with a genital lesion on the left side of the penis, above the corona glandis, which he said appeared ten days before, and, as we learned later, two weeks after an exposure. It was not an ulcer, but an erosion on the same level as the adjacent tissues, and was hard and indurated. The inguinal glands on both sides were palpable, each gland separate and distinct, insensitive, hard and indolent. The picture was not one of persisting virus activity, but of a new infection. However, the patient was not so easily convinced. Smears were then made from serum obtained by curetting the untreated lesion, and the *Treponema pallidum* was demonstrated. A Wassermann test was made, and found negative, which further convinced me that the patient had recovered from the former infection. As the lesion was of only ten days' duration and the time required is usually over two weeks after the first appearance of the chancre, I concluded that sufficient time had not elapsed to produce a positive test from the latter infection, as it is necessary for the disease to have been in existence for a certain time to allow antibodies to develop.

Treatment was immediately begun with an intravenous injection of neosalvarsan, dosage No. 111, with the first intention of relieving the patient quickly of his symptoms, and the second of testing the effect on his former infection of this provocative measure. Five days later the Wassermann test was still negative. Ten days later, or twenty-seven days after the first appearance of the initial lesion, a positive test was obtained, thus proving to a high degree of certainty that the former infection had been cured. The evidence of a previous attack seemed quite positive, and I had convincing evidence of a second infection.

That reinfection with syphilis is possible, is acknowledged by a great majority of the older syphilographers, but that the occurrence is rare is manifest by the few cases reported in the centuries through which the disease has been recognized and treated. Some writers of repute believe that it never occurs. Sir Jonathan Hutchison relates at some length the case of a young surgeon who contracted syphilis in 1860, and again in 1865. Rodet mentions two cases. Diday has reported twenty cases, but many of them are open to question, for according to him, the usual secondary symptoms do not appear after the second infection, but after the so-called initial lesion of the reinfection, tertiary manifestations classed as gummata, nodes and deep serpiginous ulcerations follow within a short time. These may have been simply the manifestations of the primary infection. Probably the described initial lesion was a common tertiary manifestation, the so-called "chancre redux" which mimics in every detail the original chancre, for any part of the integument or mucous membrane upon which an initial lesion has existed may, at any time in the course of syphilis, be the seat of recurring nodules, which are liable to be mistaken for primary lesions.

Some of our well-known American syphilographers, concurring with Diday, seem in the light of our present knowledge to be also in error. From a monograph by a recognized authority, the late Dr. Prince A. Morrow,[1] we read about "the very rare but nevertheless well-authenticated cases of syphilitic manifestation in which the patient may exhibit the characteristic lesion of a second attack, while he bears upon his person the stigmata, or it may be the active manifestation, of a former attack. . . ." And Lydston,[2] commenting on cases of reinfection during the tertiary stages, writes that "a few of Diday's cases were contracted during the existence of tertiary manifestations of the previous attack, and this, too, he states, is an important fact as tending to show that typic tertiary lesions are not syphilitic at all, but simply non-transmissible sequels."

In Professor Fournier's excellent writings on syphillis, we find that he is not convinced that reinfections occur.

I also quote a paragraph from the American textbook edited by Bangs & Hardaway,[3] which expresses an opinion coinciding with Fournier. It states that "an individual who has once had syphilis is rarely thus infected a second time, and a large majority of the cases reported as acquiring the disease after a previous attack are open to much doubt."

From Dr. Keyes's[4] recent monograph, I conclude that he believed reinfection to seldom, if ever, occur, for he states: "All that one can safely allege is that there is only an infinitesimal danger of error in assuring one's patients that syphilis boasts a solitary virtue, viz., having acquired it once, they will never acquire it again."

Clinical manifestations alone cannot *now* be relied upon to determine the question, and I dare say that in the past the results were often unsatisfactory and sometimes even disastrous. The parasitologic, and usually the serologic, findings are absolute. They, as a rule, act as a forerunner to the developing clinical picture, and give the necessary information in time to institute treatment in anticipation of the awakening disease. Thus we avoid delay, the physical and social annoyance of secondary symptoms, and some at least of the unfortunate after results, for if secondary symptoms have once appeared, the course of treatment must be longer, and the prognosis, though good, is less favorable. In the tertiary period a serologic cure, or negative Wassermann test, is sometimes difficult to obtain, and even this is not a guarantee that the disease is eradicated as encapsulated spirochete may still remain. The biological reason for this may be physical as well as chemical.

When we consider the histological structure of a gumma, with its whitish-yellow central slough, devoid of blood vessels, surrounded by a zone of loose

*Read before the Section of Genitourinary Surgery at the New York Academy of Medicine, April 21, 1915.

connective tissue, while the periphery of the tumor is constituted by a round-celled hyperemic infiltration of the normal tissue of the part involved and an endarteritis with obliteration of the lumen of the smaller vessels has occurred, it seems probable that the spirochetecide remedies may not reach these circumscribed areas, either through the blood or lymph, but toxins may be generated within them and eliminated, causing the Wassermann test to remain positive. Then again the virus may become locked up in the inaccessible subarachnoid lymph space, or in the nerve cell layers of the cortex and not in the vicinity of the larger blood vessels.

According to Mott[5] "the spinal fluid is not lymph, but a secretion of the cells lining the choroid plexus and the arachnoid." Drugs introduced into the blood stream, or absorbed into the blood, finally pass into the lymph spaces, where also the antibodies are formed, but as the cerebrospinal fluid is not lymph, these antiluetic principles cannot destroy the inaccessible spirocheta. Flexner[6] states that "we are just learning that in tabes, and shall probably learn that in paresis also, it is the special localization of *Spirochæta pallida* in the central nervous system tissues, in situations accessible to the craniospinal fluid rather than to the blood, that has so largely determined the failure of almost every effort to combat these now established syphilitic affections by the usual antisyphilitic remedies." Again, possibly as a result of treatment with specific drugs or in the developing processes of immunity, the treponema may acquire a state of resistance to the accustomed curative agents, and become no longer subject to their influence, inducing a condition of "fastness" which would result in troublesome and serious relapses within the host, and probably a continued positive Wassermann test.

Certain it is that after the development of the tertiary symptoms, the disease enters into a stage in which the complete destruction of every treponema is increasingly difficult. Clinically the virus may remain quiescent for many years, the Wassermann test may be negative, yet when all too late parasyphilis ensues. Probably the only absolute proof of cure is the possibility of reinfection, as apparently occurred with the patient I am reporting. This shows that his tissues had returned to their normal degree of vulnerability, which could not happen if spirocheta were still present in his body. Real immunity to protozoal disease is short lived. As yet but one variety of the *Treponema pallidum* has been demonstrated. In consequence, we have to consider that my patient was no longer immune to this organism. However, in this connection it is well to bear in mind that according to Pasteur there is no such thing as absolute immunity, because if the infection is large enough and virulent enough even an immune individual will again contract the disease.

In the past we had no absolute knowledge as to cure, except our own judgment that the proper amount of mercury had been consumed during three or four years, and the fact that the patient had remained free from symptoms for a comparatively long time. That we were in error and that most of the patients, however well treated, still harbored latent syphilis, is proved by the fact that reinfection with syphilis was so very rare. Since the advent of salvarsan into the treatment, cases of reinfection have occurred frequently and usually within a short time, showing that recovery is positively and quickly accomplished.

A few years ago errors in diagnosis and treatment were due to pardonable ignorance, but today, with modern serological tests and laboratory methods for determining the presence of the pathogenic organism—a parasite which has fulfilled the three requirements of Koch's postulates — diagnosis should be made promptly, treatment instituted early, and, if managed properly, so-called parasyphilis which is really a late stage of actual syphilis should be avoided. A properly performed Wassermann test not only tells us that the patient has syphilis, but the degree of constitutional infection, or amount of natural resistance. For this reason a uniformity in technique and a standardization of reagents should be adopted by serologists. A standard method for reporting the degree of infection or resistance should be adopted, allowing for comparison with previous examinations, as an index of the result and as a guide to us in our treatments.

The dictum of a few years ago, "Wait for the appearance of secondaries, then treat the patient for two or three years with mercury and then potassium iodide; hope for a cure of most cases, but expect parasyphilis in a few and relapses in some" should be revised, as should many chapters in the older text books. However, it is pleasing to note that such a keen observer and eminent authority as the late Dr. Robert W. Taylor, from his study of a vast number of cases, concludes in his excellent monograph on syphilis[7] that "there is no doubt whatever in my mind that a mercurial treatment covering the first six months of the disease is more salutary and effective than a course extending over a year or more instituted later on. It is important, therefore, that the initial course should be active and prolonged."

And even so today, as soon as the diagnosis is established, intensive treatment should be instituted. When the infection is regional and not markedly systemic, or when the parasites are widely disseminated throughout the body, but accessible, the curative drugs assert their curative power with far less difficulty and far more certainty than when the germs are hidden away within an organ, or when encapsulated, or in the interior of a cavity. Salvarsan, or neosalvarsan, should be given intravenously every week or ten days for at least six injections, and between the treatments mercury in some form should be given, preferably by deep intramuscular injection. Inunctions cannot well be employed outside of a suitable institution, and I have seen patients who have been treated with mercury pills for as long as six years show positive Wassermann tests, and even active lesions of the skin and mucous membrane. Salvarsan and mercury are synergistic drugs, and together are most effective in treating syphilis. If the disease is malignant in form and particularly virulent, or if the patient is unusually asthenic, it is sometimes well to administer a few injections of mercury before beginning a course of salvarsan, and by so doing prevent a cerebrospinal toxemia due to lysis of the many protozoa destroyed by the assault of the more powerful drug, salvarsan.

After this course of medication in the case reported, I suspended treatment for a month, and then found the Wassermann test negative. However, desiring to give the patient the benefit of any doubt, I repeated the entire course of treatment, and since then, with treatment suspended, I have found with him, as with a series of similar cases where treatment had covered a period of less than six months

duration, that the Wassermann tests have remained negative until the present, or from one and a half to two years, and I find no clinical manifestations of the disease.

It would be quite useless to draw any inference from a negative Wassermann test had it not previously been positive, as it sometimes spontaneously becomes negative in the tertiary stages.

At the end of a year, having had several negative tests during this time, I gave a provocative injection of dosage 111 neosalvarsan, and ten days later the blood was again tested and the Wassermann reaction found negative, as have several tests since. In the light of our present knowledge, I must conclude that he is cured; but time alone will determine the permanency of the cure.

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THE WASSERMANN REACTION ACCORDING TO WASSERMANN HIMSELF.

By E. PALIER, M.D.,

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The purpose of this paper is not to reveal anything new but to clarify and establish something that is comparatively old, which unfortunately has been distorted by those who cannot grasp the data as laid down by a master mind.

If one should look for an easy, comprehensible, detailed description of the Wassermann reaction, one will have a hard task to find it. Most of the articles I have seen on the subject were limited to generalities, while many of those who go into some details are wrong.

Some two years ago I had the good fortune to attend the lectures and demonstrations on this subject by Wassermann himself. The following little story told by him is instructive: Once in passing a street he noticed a sign stating that the Wassermann reaction was done inside. He was curious to know how it was done. He went inside, introduced himself and said he wished to know what was being done with his name. The man explained how he did it.

"The man did not know anything about it," said Wassermann.

Some five years ago the writer of this spoke on this subject with a recent graduate who served as an interne in some home for invalids, in New York City, and who for some reason unknown to the writer had gotten a reputation as an authority on the Wassermann reaction, so that his articles on the subject were solicited and published by the medical press, the articles in fact limiting themselves to generalities. He told me that the red corpuscles of a goat were used in this reaction! As the reagents were not yet then on the market, one can imagine how he did this reaction. I make this rather lengthy introduction to show how little this reaction is generally understood even in Germany. I will not deal separately with the preparation of the several reagents entering into this reaction, as I have mainly the clinical side in view, but will describe them briefly as we proceed.

Now, whereas the clinical part of this reaction is, according to my view, not more difficult than ordinary uranalysis, provided one grasps the idea of it and is somewhat used to laboratory manipulations, the preparation of the reagents entering into this reaction requires a laboratory expert. I will say here that these reagents are put up under the direction of Wassermann himself by the Pharmaceutic Institute of Ludwig Miller of Oberusel, a. F., Germany.

In order to perform the reaction in question it is necessary first to obtain the blood of the patient to be tested, and the several ingredients which will be described immediately. In order not to perplex the mind of the reader who may not be initiated into Ehrlich's lateral chain theory and the deviation of the complement, I shall better briefly mention the principles underlying this reaction at the end, after describing the purely technical part. The patient's blood is best obtained aseptically from the median vein of the arm. In Paris they conveniently use a simple rubber tube, like a stomach tube, which is placed around the arm, under the axilla, both ends of the tube being grasped by an artery forceps. By making the patient close and open his hand the vein stands out prominently. A long needle of medium size is then introduced, and as soon as there is a flow of blood the bandage is removed from the arm and the blood is received in a sterilized test tube. A few cubic centimeter suffice. The test tube is then allowed to stand till the blood clot separates, when the clear serum is poured off into another sterilized test tube. Then it, the serum, is placed in the incubator for *half an hour* at a temperature of 56° C. When there is no incubator, a water bath with a good theremometer will do. The serum must be kept in a cool place if it is not to be tested immediately. Next we need the several reagents which we shall briefly describe:

1. Serum from a positively syphilitic patient.
2. Serum from a positively non-syphilitic patient.
3. Antigen. We shall say below a few words concerning antigen in general. The antigen for the reaction in question is the substance which forms a combination through the medium of the complement, to be described soon, with the serum of a syphilitic patient. It is prepared according to Wassermann from an alcoholic extract of a syphilitic liver from a dead congenitally-syphilitic child—I gram of finely divided syphilitic liver is macerated by frequent shaking in 50 grams of 96 per cent. alcohol. After a few hours it is centrifuged, decanted and the liquid part used. Watery extracts, also non-syphilitic liver and other substances are used by many. But this is not in accord with the Wassermann teaching.
4. The red blood corpuscles of a sheep. It is the red blood corpuscles that are used, not the whole blood, as I saw stated in a German booklet on the subject. Fresh sheep's blood is centrifuged, the serum is poured off, then physiological salt solution, *i.e.* 0.85 per cent. salt solution, is added, so as to make up the same volume as before, and centrifuged. This washing of the corpuscles, as it is called, is repeated several times with the salt solution, always

adding it up to the same mark. Five parts of these washed corpuscles are added to 95 parts of physiological salt solution for use.

5. The amboceptor. We shall say a few words about it soon. In this case it is prepared by injecting red blood corpuscles treated in the way stated above into a rabbit intraperitoneally; 20 c.c. of the above 5 per cent. suspension, which will amount to 1 c.c. of a concentrated suspension of blood corpuscles, are injected into a rabbit a few times at intervals of about 7 days. Then the blood from the rabbit is obtained and the serum prepared and kept the same as was described for preparing the patient's serum.

6. Complement. Whereas the above named reagents do not quickly deteriorate on keeping, the complement must not be older than 24 hours. In a frozen state it can be kept a little longer. When one does not live within easy reach of a reliable laboratory, he himself will have to prepare the complement, while he can get the other reagents from any distant place. The complement is obtained from the blood of a guinea pig. When only a small quantity is necessary, blood can be obtained from the heart by inserting a needle, or from an ear vein. The latter method is by far easier. A large quantity is obtained by bleeding the animal to death by cutting through the large vessels of the neck. The blood is then centrifuged for about 10 minutes and the pure serum, devoid of corpuscles, is used.

One c.c. of the serum is diluted with 10 c.c. of physiological salt solution, that is 10 per cent., and 0.5 c.c. is used for a test. It is $^1/_2$ c.c. that should be taken and not 1 c.c. as done by many.

In order to make the test, take 4 test tubes and mark each by a number or letter, let us say A, B, C, D. I mark them here by letters, because the reagents described above were marked by numbers, so there should be no confusion. We write down the numbers or letters in a notebook, and mark opposite each the reagent we are going to put in. Thus, opposite test tube A, we state: Serum of Mr. Smith to be tested, etc. Then we take a fine pipette, preferably graduated in hundredths of a cubic centimeter, and put into test tube A 0.2 c.c. of patient's serum to be tested; into test tube B we put 0.2 c.c. of the positively syphilitic serum, and into test tube C we put 0.2 c.c. of the positively non-syphilitic serum. Then we add to each of the three test tubes an exactly equal quantity of the antigen described under 3. If the antigen is prepared according to Wassermann's directions, the quantity of it to be added to each test tube is also 0.2 c.c. But the strength of the antigen may vary, and it is best to add the quantity stated in the directions of the laboratory which supplies the reagents. Next we add to each test tube, including also test tube D, which had so far received nothing, 0.5 c.c. of the complement described under 6. Then add to each test tube a little physiological salt solution, so as to bring the quantity in each to about 1 c.c.

The 4 test tubes after gentle shaking are then put for an hour or two into the incubator at 37° C. When there is no incubator, any warm place having about the same temperature will do. But it must not be too warm. At the end of an hour or two hours we add to each of the 4 test tubes 0.2 c.c. of the blood corpuscles described under 4, and an equal quantity of the amboceptor described under 5.

The strength of the amboceptor, however, may also vary, therefore the directions of the particular laboratory must here also be followed.

The pipette must be well blown out, then washed out after each reagent, and when dry the point is passed over a gentle bunsen burner or alcoholic lamp flame. Do not flame a wet pipette, as it will crack.

When all the reagents have been put in, add to each test tube enough physiological salt solution to make up 2 c.c. According to Wassermann the quantity in each test tube must be 2 c.c. and not 5 c.c. as stated in text books. Previous dilution of all the reagents with salt solution, as described by many, simply complicates matters, and is not advisable.

The test tubes are gently shaken up and put away again in a warm place where they can be left *undisturbed* over night. In the morning we look at the test tubes. If test tube D, which contains the so-called hemolytic system, of which we shall say a few words soon, and test tube C, which contains the positively nonsyphilitic serum, contain a clear, red wine-colored fluid without any sediment at all, and test tube B, which has the positively syphilitic serum, contains a yellowish turbid mixture with a sediment, it shows that the reaction has been properly carried out. Then we see what took place in test tube A containing the serum to be tested. If, however, there is *not* a clear red wine-colored solution either in test tube C or D or in both of them, but a yellowish turbid mixture, or if there is a clear red wine-colored solution in test tube B, instead of a yellow turbid mixture, there is something wrong about the reaction, and it is not good.

If, however, the reaction has turned out properly, as said before, then we look at test tube A. If it contains a yellowish turbid mixture, with undissolved blood corpuscles on the bottom, as in test tube B, the reaction is called positive, *i.e.* the patient has syphilis; if, on the contrary, it contains a clear red wine-colored fluid like test tubes C and D, the reaction is said to be negative, *i.e.* the patient has not syphilis.

It may happen, however, that the corpuscles in A are only partially or slightly dissolved as compared with the control test tubes. Call this reaction doubtful and make another examination later. Wassermann ridicules the use of plus and minus signs to indicate the reaction. It is, of course, silly. Now I limited the number of test tubes for the reaction to 4 because Wassermann thinks it is sufficient. There is no necessity to use 6 or 7 test tubes for more controls as recommended by some. This uselessly complicates the matter, especially when one tests several sera at the same time, which is very practical to do. Do not be a greater royalist than the king; do not be more painstaking and accurate than the master himself, for in laboratory work Wassermann is certainly a master.

Now the performing of the Wassermann reaction the way it is described above is a very simple thing. For what can be simpler than putting measured, equal quantities of a few reagents into a few test tubes, put the latter away for an hour in a warm place, then add two more reagents in equal quantities to all of them, then putting them away again and looking at them?

Of course, if you will hear or see the thing described by persons who themselves know very little about it, the matter appears too complicated and difficult. As to the various modifications of the reaction, Wassermann condemns them all, including the Noguchi modification. Indeed, Noguchi's claim

that human blood may contain so many units of amboceptors (the unit-amboceptor in itself is simply an arbitrary unit and is mere guesswork) for the blood corpuscles of a sheep, and that this interferes with the reaction appears to be devoid of foundation. An excess of amboceptors, if it be true that the normal human blood contains them, does not interfere with the reaction. The amboceptor must always be in excess of the blood corpuscles. Thus, before marking the dose of the amboceptor, described under 5, to be taken for the reaction, it is tested. If, for instance, it is found that 0.1 c.c. of amboceptor is the minimum quantity necessary to combine with 0.2 c.c. of blood corpuscles, a double or a triple quantity of the amboceptor is indicated for the reaction, *i.e.* 0.2 or 0.3 of the amboceptor, in order to be sure that all the corpuscles can be combined, otherwise they may remain undissolved and may mislead us. The amboceptor is, of course, invisible, its presence is detected only by the effect it produces by combining with an antigen, like red blood corpuscles. (These are the antigen of the hemolytic system, which will be briefly dealt with immediately.)

We shall now say a few words concerning the theory underlying this reaction. Professor Ficker of the Berlin University once said humorously that it requires a period of incubation before one can grasp that theory. Indeed, at first it appears very hazy and incomprehensible, but after some study and reflection it becomes clear and comprehensible. The principles underlying the Wassermann reaction are those of Ehrlich's side-chain theory and of the deviation of the complement of Bordet and Gengou.

Ehrlich's Side-Chain Theory.—Certain substances when introduced into the animal body, *i.e.* circulation, produce by a reaction, other, opposite, substances. The substances thus introduced are called *antigen*, and those produced in the system are called antibodies. The antibodies thus produced are divided by Ehrlich into three groups. The antibodies of the first group are very simple, those of the second group more complex, and those of the third still more so. Example of antibodies of the first group: When diphtheria bacilli or their toxins are introduced into a susceptible animal they—the toxins—find there in the cells, owing to their peculiar form, bodies or hooks to which they can anchor themselves, and exert their toxic effect. In nonsusceptible animals no such bodies or hooks exist and the toxins remain inert. But in susceptible animals, when the toxins are gradually introduced or are in moderate quantity, more of those bodies are proliferated than the toxins need to combine with. This excess of bodies detach themselves from the cells and float freely in the blood. They are called receptors. When the serum of animals containing those receptors is brought in contact either *in vitro* or *in vivo* with diphtheria toxins (*in vivo* this injection must be made before the toxins get anchored) they combine together; the toxins, in this way, get a hold of an artificial prey, they are satiated, taken up, and cannot combine with or injure the cells of the animal any more. Such as this is diphtheria antitoxin, also tetanus antitoxin. We omit here the discussion of the toxophore and haptophore groups, also intra- and extracellular toxins, as not being material to the subject.

With other microbes the antibody production is unfortunately more complicated and hence the difficulty of producing a good serum with these microbes.

Second Group.—This group consists of antibodies produced in the system by an antigen, which antibodies can combine with it, agglutinate it, or precipitate it. This is illustrated by the agglutination test of Widal in typhoid fever. We shall not dwell on it.

Third Group.—This is the most complicated one and concerns the Wassermann reaction. Certain antigens, like typhoid bacilli or red blood corpuscles from another species, when introduced into the animal do not produce antibodies like the receptors in the case of diphtheria toxins, but they produce antibodies called amboceptors. Whereas the receptors combine easily with the specific toxins that produced them, without any help, the amboceptor combines with the specific antigen only through the intermediary of a third substance called the complement. It must be borne in mind that receptors as well as amboceptors combine only with the particular antigen that produced them and with no other. Thus when red blood corpuscles of a sheep have been injected into a rabbit the amboceptors thus formed will combine only with the corpuscles of a sheep. Furthermore, the amboceptors do not naturally appear in the animal body, but are produced by the introduction of an antigen. The complement, on the other hand, is not a specific production, but exists in the blood of every healthy animal. When the complement alone is needed, it is best obtained from a guinea pig.

The amboceptor is called thermostabile, *i.e.* it is not destroyed by moderate heat, whereas the complement is thermolabile—it is destroyed when exposed to a temperature of 56° C. for half an hour. It also soon deteriorates on keeping.

The fresh serum of an animal containing an amboceptor naturally also contains the complement, for it exists, as we said, in every healthy animal. But when we obtain the serum of an animal containing an amboceptor, the serum of a rabbit for instance, which has been treated with the red blood corpuscles of a sheep—we heat that serum immediately in order to destroy the complement, as it does not keep anyhow, and furthermore we do not know the quantity there is. We obtain better the complement fresh from a guinea pig, when we wish to make the reaction.

The Deviation of the Complement.—When we put into a test tube the red blood corpuscles of a sheep, the serum of a rabbit into which they have been injected, and some fresh serum of a guinea pig containing the complement (this being called the hemolytic system) a combination of the three occurs in the test tube, the corpuscles are dissolved, and there is a clear red solution. If there is no complement added or if the complement is absorbed by another antigen with its corresponding amboceptor, the red corpuscles of the sheep cannot then combine with their corresponding amboceptor contained in the rabbit's serum; the corpuscles are not then dissolved, and there is a turbid yellowish mixture.

Hence the Wassermann reaction. If we bring together the extract of a syphilitic liver (the antigen), with the serum of a syphilitic patient, which naturally contains corresponding amboceptors, and fresh serum from a guinea pig (the complement), there is a union among the three, and the complement is absorbed. When we then add to the same test tube red blood corpuscles from a sheep and the

serum of a rabbit treated with them, *i.e.* their corresponding amboceptors, they cannot unite because there is no more complement, and the corpuscles are not dissolved. If the blood is from a non-syphilitic patient it contains no syphilitic amboceptors, there can be no union with the syphilitic antigen, the complement is not absorbed, then there is union of the hemolytic system, and the corpuscles are dissolved. This is, in short, the idea of the Wassermann reaction.

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THE CONSERVATIVE TREATMENT OF ENLARGED (TUBERCULOUS) GLANDS OF THE NECK.

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THIS paper embodies the conclusions formed as to the best method of treating tuberculous glands of the neck from a careful study of a large number of cases treated by me during the past ten years. It is in no sense controversial. I am well aware from both personal knowledge and from a review of the literature that there are many surgeons who oppose any temporizing in this condition, either because they have seen such poor results from non-operative treatment, or because they consider any tuberculous focus a source of great danger and prefer, when possible, to remove it radically.

At the outset it may be stated that these glands, the scrofulous glands of our fathers, are not invariably tuberculous, though considered so by many. They frequently are simply inflammatory glandular enlargements, such as one finds anywhere in the body in glands which happen to be in the path of lymphatic drainage of an infection.

The condition is extremely common, being found in the majority of children of school age. Several German writers have reported it as existing in 90 per cent. of children between the ages of seven and twelve. The Division of Child Hygiene of the Boston Board of Health in their 1911-1912 survey, reported 13,711 cases of enlarged cervical glands among 118,781 school children, or about 12 per cent. The most important part of this report, however, was the statement that all but 2 per cent. of these subsided without operation.

Before outlining a treatment for any condition it is important to have a clear understanding of the cause; if that cause be an infective agent, not only the character of the agent but the portal of entry is important. In the condition we are considering, the tubercle bacillus is probably the most frequent infective agent, though by no means the invariable one; but whatever the agent, the portal of entry is most commonly the mouth, usually the tonsils or nasopharynx, occasionally the teeth; sometimes all three. While the tonsil usually shows gross evidence of disease, there are many cases in which a buried tonsil that does not look diseased is a constant source of infection. At this point it may be just as well to state that purulent otitis media and a variety of scalp conditions (not forgetting pediculosis) are at times responsible for cervical glandular enlargement, but as they are a relatively infrequent cause, they will not be referred to again. It is of course understood that when present they must receive appropriate treatment.

We all see any number of cases in which there is present either a number of small deforming scars in the neck (the legacy of ruptured or incised gland abscesses) or a large scar due to the more or less complete removal of cervical glands. Frequently under the scar evidence is present of a recurrence of the condition, or what is more probable, of incomplete removal. Most important, however, is the fact that in a very large number of these cases a careful examination of the mouth and nasopharynx reveals enlarged, diseased tonsils or adenoids, or decayed teeth, or all three conditions, evidence of the fact that effects only were treated while the cause was neglected.

It is my opinion that no case of enlarged glands of the neck (tuberculous or otherwise, and in a large percentage of cases a differential diagnosis is impossible without the removal of a specimen) should be operated upon radically, without at the same time, or better previously, correcting all pathological conditions in the mouth and nasopharynx which might act as a source of infection. Unless this procedure is followed, the subject of a thoroughly radical operation is theoretically left without protection against systemic invasion by a cause still active, and if the operation is less radical and only the enlarged and most superficial glands are removed, the remaining glands will almost surely become infected by the original causative agent. The patient is thus worse off than if he had had no operation at all.

In handling these cases it is advisable to increase the patient's resistance against tuberculous infection and to remove the cause of the trouble as far as possible. Long before the surgeon sees them, attempts have usually been made along lines calculated to improve the general condition by giving tonics such as iron and cod-liver oil, and by advice as to diet, hygienic surroundings, life in the open air, etc., and at times by employing tuberculin, usually but not always with benefit; but it is remarkable how often all these measures are taken without any attention being given to a possible cause. In all these patients the first procedure should be the removal of diseased tonsils and adenoids, and the proper treatment of bad teeth, thereby placing the mouth in a thoroughly clean condition; then, if the various hygienic and tonic measures are given a chance, a large majority will never need surgical treatment. Where, however, the process has advanced a little further, and in spite of this routine, some enlarged glands, not yet broken down, remain (and these cases are very few), various methods of treatment applied to the glands themselves should be tried. Among such should be mentioned the injection of 5 per cent. iodoform emulsion in oil or of a 2 to 4 per cent. solution of formalin in glycerin, the use of Bier's hyperemia of tuberculin and more recently of the *x*-ray and high frequency current. Whichever of these methods is employed (and all should be if necessary) there are very few patients who do not respond to treatment satisfactorily and recover without radical operation, provided (and this is of prime importance) we have the cooperation of the patient and there is at his disposal sufficient means to buy proper food and to live under proper hygienic conditions, and sufficient means and time if need be, to spend several months or even a year in the mountains or at the seashore. In other words, for the ideal handling of the condition, after the removal of the cause, we are in the presence of the same problem, though in

a lesser degree, as are those treating pulmonary tuberculosis. But even among the poorest, the complete removal of all possible sources of infection is frequently followed by complete cure.

Those cases seen for the first time after the development of a glandular abscess or after the formation of sinuses due to the opening of these abscesses should be treated with the utmost care, so as to minimize the disfiguring scars which might easily occur. Where only a sinus or sinuses exist, leading down to enlarged glands, the treatment at first is exactly the same as when none are present. Appropriate treatment of the mouth is frequently followed by healing of the sinuses and retrogression of the enlarged glands without any special local treatment. When, however, this does not occur, a little assistance with the curette, stimulation with tincture of iodine, or the use of Beck's paste, together with one or more of the methods suggested, when discussing the treatment of enlarged glands which had not broken down, will usually suffice. Where an abscess exists, the treatment should be extremely conservative. Under no circumstances should it be treated by large incision and drainage. The time for healing under such treatment is interminable, and the scar is unnecessarily large and unsightly. Usually it is advisable to wait until the caseated gland has broken down completely. This, however, is not absolutely necessary and should not be carried to the extreme of permitting the entire side of the neck to become a large abscess. Whenever pus is present, it should be aseptically removed in the same way that we would remove it from a psoas abscess, and after its removal a sterile dressing (preferably wet) to prevent a mixed infection is to be applied. Whether we remove the pus by aspiration, or make a very small incision with a narrow knife and insert a grooved director permitting the pus to flow out, is immaterial. I have obtained good results by both methods with or without a subsequent injection of tincture of iodine. It is important to remember that the process must be repeated every few days until no more secretion is present, and extreme care must be taken not to get a mixed infection. Abscesses treated in this way will heal with pin-point, practically invisible scars. After the abscess is healed, the case is to be handled as is the one that has not progressed so far.

The statement is frequently made that, as these glands are tuberculous, they should be promptly and completely removed, because the patient is in constant danger of a general infection. This statement is inaccurate, for the glands are not always tuberculous. The percentage of enlargements that are tuberculous, as given by different writers, varies from thirty to sixty, and even those that are tuberculous do not necessarily require removal. We do not remove tuberculous bronchial, mesenteric, or retroperitoneal lymph nodes, and yet many patients with these get well. In fact, a large proportion of humanity has a healed glandular tuberculosis somewhere in the body. For the cure of tuberculosis, radical removal is not absolutely necessary, nor is it frequently resorted to even in those cases where its accomplishment is relatively easy. We do not nowadays resect tuberculous joints with quite the same freedom as formerly. It is further not to be forgotten that a radical operation on a tuberculous focus may be followed by a general infection. This is emphasized by Dr. Robert T. Morris, in an article in which is reported the death of a patient from acute general miliary tuberculosis immediately following a radical removal of tuberculous cervical glands.

In conclusion, while I believe in and recommend a more conservative attitude in the treatment of tuberculous glands of the neck, I do not preach a *laissez faire* doctrine. These patients need active treatment, each according to the condition of the glands and his response to the methods employed, which is simply another way of saying that we must individualize and treat patients, not cases.

Some few there are for whom, in spite of everything we do, we cannot accomplish the complete disappearance of these glands. We get improvement up to a certain point only. For these patients an operation is necessary, but only to the extent of removing those glands that are enlarged. The extensive block dissection removing every bit of gland tissue, fat, and fascia in front of, under, and behind the sternocleidomastoid muscle, as if we were dealing with a malignant growth, is unnecessarily harsh, for if we have removed the source of infection in the mouth, those glands in the neck, so slightly involved as not to be enlarged, can be taken care of by the protective bodies of the individual, and need not be removed.

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CONTRAINDICATIONS TO THE INTRAABDOMINAL USE OF OIL.

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EXPERIMENTATION with and the further use in abdominal surgery of neutral mineral oil have shown the important, if limited, field where it may be advantageously employed and likewise contraindications to its use. The original animal experiments performed by the writer proved that pure mineral oil could be poured into the peritoneal cavity of a normal animal in large amounts without causing irritation, leading to infection, accumulation of peritoneal fluid, or other deleterious effect, and that it was only slowly and in part taken up and removed by the lymphatics. Upon opening the abdominal cavities of animals thus treated, absence of adhesions was noted and the oil was observed in all parts of the abdomen in a partially emulsified state. Microscopically the oil showed no indications of having caused a peritoneal exudate and there was an obvious absence of leucocytes. With the use of impure oil or in the presence of marked infection, however, the oil became lumpy and thicker, tending to accumulate in various parts of the cavity and to be walled off by adhesions. Microscopically large numbers of leucocytes were then to be seen. It has been shown (Sweet, Chaney, and Willson, *Annals of Surgery*, March, 1913) that these leucocytes have decreased phagocytic action

and thereby lessen the power of the subject to overcome infection.

The writer first used the oil in the human being in a case of acute intestinal obstruction, due to extensive adhesions in the absence of infection. The adhesions were broken up, kinks in the bowel eliminated, and five ounces of liquid petrolatum were left in the abdominal cavity to coat the considerable denuded peritoneal surfaces of the intestines. The results justified the procedure since, although previously fecal vomiting was present, the patient made an uninterrupted recovery without nausea or vomiting, and was entirely relieved of constipation and abdominal distress, which had previously long existed. This led to further studies in the fields of habitual constipation, intestinal stasis, and alimentary toxemia, in which such radical and unnecessary operations as colectomy and intestinal anastomosis or short circuiting of the bowel had been resorted to. In his cases, following division of adhesions, elimination of kinks, and gastropexy or colopexy, as indicated, mineral oil poured into the abdominal cavity proved a safe and valuable adjuvant.

However, since my two former papers upon this subject* did not emphasize the conditions in which oil should not be used, intraabdominally it is necessary, in view of wider use, to recognize fully its contraindications. At the outset it was apparent from animal experimentation that oil was not an aid to the normal defense of the peritoneum in the presence of infection, and by preventing adhesions, and thereby the plastic walling off of infected areas, dissemination of bacteria, if present, would occur. Therefore, the first and most important contraindication to the intraabdominal employment of oil is infection, whether this be present previous to, or occur during operation. After a clean appendectomy or in similar cases where slight soiling of the peritoneum may have occurred, oil may be safely used, but with the amount of infection which necessarily accompanies an intestinal anastomosis it is contraindicated. In gall-bladder surgery, likewise, where a rapid formation of adhesions prevents leakage, oil is positively contraindicated.

Pure, neutral mineral oil, preventing peritoneal adhesions, likewise interferes with the uniting of other tissues to some, but not to the same extent. In the former instance there is a constant movement of the intestinal loops and frequently simply injury, not extensive destruction of the single layer of peritoneal epithelium. However in operations such as cecopexy, gastropexy, sigmoidopexy, hysteripexy, or other precedure demanding firm peritoneal union, oil should not be introduced until the surfaces it is intended should adhere have been carefully placed in contact and sutured.

The use of oil intraabdominally should not be the means for avoiding the after-effects of crude or careless surgery. Rather the careful operator will obviate the necessity for using oil on account of anticipating excessive postoperative adhesions and intestinal stasis resulting from undue peritoneal traumatism by a good technique. However, in those cases demanding operative intervention on account of intestinal adhesions, kinks, angulations, or ptosis, where bowel irregularity, toxemia, nervous and physical debility exist and have resisted medicinal forms of treatment, and where infection is absent, conservative surgery is indicated and oil will frequently be found useful.

In short, it may be stated that infection is the one important and serious contraindication to the intraabdominal use of oil, and moreover that its use under proper conditions is a conservative procedure, which, employed in the unusual case, may obviate the radical operation, today, it would appear, so generally thought necessary.

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*"Postoperative Intestinal Stasis, etc.," Medical Record, Nov. 1, 1913; "The Cure of Habitual Constipation by the Intraabdominal Use of Oil," Medical Record, April 11, 1914.

Medicolegal Notes.

Practising without License — Treatment — Domestic Family Remedies—Chinese Herbs.—The Utah statute against the practice of medicine without a license excepts the sale or administration of "domestic family remedies." In a prosecution for violation of the statute it appeared that the defendant, calling himself a Chinese Herb Doctor, advertising that he could cure all ills, enumerating some, from consumption to pimples, "and any other affliction;" that "Yee Foo Lun, C. H. D.'s ancestors in China for centuries have been famous as expert herbalists, and in addition to his more modern scientific learning he possesses the precious secrets of the curative powers of the Chinese herbs. These secrets are never written, but are handed down from father to son from generation to generation." He asked a patient who called on him what he thought was the matter with him. The patient said he thought he had rheumatism as he had a pain in his shoulder. After feeling his pulse, the defendant told him he was on the verge of a partial paralysis, that he would give him seven treatments a week for $10, and that a cure might be effected in three or four months. A chemist's analysis of the packages given the patient showed in solution a mixture of drugs without definite active principles, but the odor and taste strongly suggested, among other drugs, the presence of ginseng, cinnamon, licorice, sarsaparilla, etc. The defendant testified that he did not diagnose diseases, but asked the patient what the last doctor who had treated him said he had and treated him for that, or asked him what he thought he had himself; that the packages sold to the patient contained about fourteen different kinds of herbs, most of which grew only in China, could be obtained only in a Chinese store in San Francisco, and he could tell their names only by reference to a catalogue in Latin, Chinese, and English. He contended that they were domestic family remedies. It was held that the concoction could neither in law nor in fact be regarded as a domestic family remedy. The fact that it was harmless was not a controlling factor. "Such a compound or concoction," said the court, "is not something commonly kept by unprofessional persons in their homes, or of which they have general knowledge. Instead of calling it a domestic family remedy, it is better to call it by its right name—a subterfuge to deceive the credulous and the afflicted. When the question is looked at from the defendant's evidence the matter is still worse. A mixture of fourteen different herbs, equally efficacious for rheumatism, paralysis, appendicitis, piles and pimples, and which are so well known that to properly name and describe them requires the use of three languages; their curative power so familiar as to be understood only by Chinese expert herbalists, who acquired knowledge "of the precious secrets" only through tradition and by scientific learning so modern as to have been handed down generation after generation by Chinese herbalists and ancestors of the defendant, and which are so general and so common as to be had only at a Chinese store in San Francisco, or at a Chinese Institute conducted by a Chinese Expert Herbalist, can in no sense be regarded as a domestic family remedy. It is anything but that."

It was also held that his claim that he charged only for the herbs and nothing for diagnosis, consultation, or treatment was, like his concoction, a mere pretense, and an attempt to exculpate himself by bookkeeping. As well say any one charged nothing for an operation, but charged $100 only for bandages and antiseptics. The conviction was sustained.—State v. Yee Foo Lun, Utah Supreme Court, 147 Vac. 488.

MEDICAL RECORD.

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THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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New York, July 10, 1915.

THE SITTING POSTURE IN THE TREATMENT OF PNEUMONIA.

THIS unusual method was proposed over one year ago by C. Widmer of Zofingen, Switzerland, on the basis of the good results obtained thereby in the treatment of over fifty patients in whom the nervous symptoms were particularly pronounced. The method consists in sitting the patient up on a couch for from four to six hours daily after the prostrating effects of the initial chill have worn off and before the onset of delirium. This mode of treatment is said to be adapted for young subjects, for alcoholics, and also for those in whom the condition of the heart may cause some concern. The results of the treatment are said to be a lowering of the temperature, a diminution in the frequency of respiration and of the heart beat, an increase in blood pressure, and a general improvement in the sense of well being.

Mlle. E. Cottin has essayed this method in the Medical Clinic of Professor Bard of Geneva and reports her results in the *Revue Médicale de la Suisse Romande*, May 20, 1915. She chose twenty patients among those severely ill, the youngest being 20 and the oldest 80 years of age. The treatment was instituted one to several days after their admission to the hospital, their temperature at the time being in the neighborhood of 40 deg. C. Generally in the afternoon they were taken from bed, clad in a dressing gown, and seated on a couch near the bed. All of the patients stated that they felt better when sitting up; their respiration was less labored, the sputum was brought up with greater ease, and the sweating was less profuse. The objective sign showed a slighter degree of cyanosis, a diminution in the frequency and amplitude of the respiratory movements, and a slowing of the heart to the extent of ten to twenty pulsations. The temperature dropped several tenths of a degree, and in one instance, one degree and a half C., following the assumption of the sitting posture. In no instance was weakness of the heart or any other weakness observed.

The rationale of this treatment, as explained by Mlle. Cottin, is a simple one. The sitting posture relieves the pulmonary circulation and the right heart by causing a large volume of blood to accumulate in the veins of the lower extremities, the effect being the same as that of a copious venesection. Moreover, the movements of the diaphragm are facilitated by the sitting posture, percussion of the healthy side of the chest showing that this posture enables the lung to expand in the downward direction to the extent of three and a half centimeters greater than the recumbent posture.

SPINA BIFIDA.

DR. H. H. TROUT reports in *Surgery, Gynecology, and Obstetrics* for May, 1915, a case that is most interesting and instructive and one which may possibly mark the beginning of a new era in the treatment of this unfortunate malformation.

The patient was a girl, eight months of age, and said to be practically normal except for a rather large spina bifida in the lumbosacral region, although the reflexes, trophic changes, etc., were uncertain and the lower extremities were so weak that the baby moved them infrequently and then only slightly. The age and weakness of the child made it almost impossible to ascertain correctly concerning sphincter control. The defect was closed with a bone graft from the tibia of the father. The technique of operation was as follows: An incision was made over the crest of the father's tibia and a rectangular piece of bone about 6 cm. long, 4 cm. wide, and 2 mm. thick was removed with its periosteum and placed in warm saline solution until the field for implantation was prepared. After the child was etherized, a transverse elliptical incision was made over the tumor, the sac was exposed, and the dissection was quickly carried down to the spinal cleft. This cleft was found to be about 2 cm. wide and 5 cm. long. An opening was then made in the fundus of the tumor, allowing about 300 c.c. of clear fluid to escape. This exposure showed the various nerve elements radiating over most of the sac, especially on its dorsomedian aspect. Since every attempt to dissect the nerve elements free was accompanied by alarming reflex symptoms, the sac was simply sutured with plain catgut and was tucked into the cleft. The bone graft was then anchored over it by chromic sutures. These sutures were passed through the periosteum of the graft, the cartilage of the transverse and spinous processes, and any other firm structures that the curved needle would grasp. In order to prevent too much pressure on the collapsed sac the graft was bent like a bow and held in this position by the sutures. A Roentgen picture, four months later, showed rather extensive bone growth and the clinical result was extremely satisfactory.

In a search of over 400 case reports in the Surgeon General's Library, Trout failed to find any case similarly treated; and from his experience in this case he is convinced that the method is safer, quicker, and simpler than any other type of spina bifida operation that has been employed, and he believes it worthy of further trial in those cases not associated with hydrocephalus. In selected cases, and with proper modifications in the technique to suit the individual case, it is reasonable to believe that the use of the bone graft taken from the father or mother of the child will give a far larger per-

centage of satisfactory results than has been possible with the older methods of handling these spinal defects.

STRAW MEAL AS FOOD.

When this subject was originally mentioned in the daily press, there was a corresponding dearth of information thereon in medical periodicals, and the little which did appear savored of ridicule, since it had long been taught that straw was practically without nutrient value as far as mankind is concerned. There is, however, plenty of evidence that cows can be fed through the winter almost wholly on oat straw and at the same time give good milk. Certain old beliefs that straw is in one or another way dangerous as food have also been shown to be false. In famine times barks, sawdust, etc., have been of use as food, although it has been assumed that their action was a purely mechanical one, bringing about a blunting of the hunger sensations by filling the stomach.

These and many other facts were brought out by Friedenthal at a military medical evening held last spring (*Berliner klinische Wochenschrift*, April 26). This author, at first skeptical, tested a straw meal diet on himself. The meal was baked into bread, and when oat straw was used the latter was more palatable than ordinary war bread. The milling was purposely coarse, as the writer wished to test its utilizability *per se*. The nutrient value was small, but there was no sign of intestinal irritation. An addition of 33 per cent of straw meal to war bread greatly improved the latter in looks and palatability. The nutrient value is, therefore, not wholly material. A palatable, digestible, and nutritious bread can be eaten in any desirable quantity. As straw meal can be supplied in practically unlimited quantities thousands of tons of potatoes can thereby be released for separate consumption, the potato addition in war bread having proved unsatisfactory in several respects.

Agglutination in Syphilis.

It is something over two years since we had occasion to call attention to the work of Touraine, who demonstrated a specific agglutination when the serum of a syphilitic was brought into contact with a number of spirochetes. At that time the difficulties of the work were very great. He obtained his organisms from condylomata and experienced much trouble in the endeavor to free them from the serum of the donor, nevertheless he obtained a high percentage of positive reactions in syphilitic patients. At that time it was said that the work was merely of scientific interest. In the interval, however, the *Treponoma pallidum* has been located and grown in pure culture and the use of laboratory animals has been worked out. In consequence, Zinsser and Hopkins (*Jour. Exper. Med.*, 1915, xxi, 576) have been performing agglutinations with pure spirochetal emulsions and the serum of rabbits inoculated with the organism. They observed the mixtures both microscopically and macroscopically and obtained positive reactions in dilutions as high as 1:2000. The work is obviously of great importance. The reaction may come to be of diagnostic value and theoretically would have many advantages over the Wassermann reaction. Almost certainly it will be of much aid in the identification of spirochetes. But perhaps the most important factor of the work is that it is "a demonstration of definite antibodies in the circulation of animals treated with dead emulsions of *Treponema pallidum*." The work will be continued, we hope, in the endeavor to see whether the serum of syphilitic human beings contains sufficient antibodies to make the reaction of practical value in diagnosis and the results will be awaited with interest.

Latent Malaria and Typhoid Immunization.

The claim has been made that patients with the *Plasmodium malariæ* in the blood who contract another infection sustain a disappearance of these organisms from the circulation. On the other hand, practitioners in malaria-ridden countries assert that in latent malaria a superinfection with another disease (variola, etc.) will cause an outbreak of intermittent fever. These examples of antibiosis and symbiosis do not appear calculated to discredit each other, since analogies exist in this respect in other diseases. At a meeting of the Royal Imperial Medical Society of Vienna last February (*Berliner klinische Wochenschrift*, April 19) Schlesinger reported the case of a soldier who had gone through an affection of doubtful character, resembling alike typhoid fever and malaria. The specific tests were all negative. The diagnosis was malaria. Ten days after defervescence the patient received an antityphoid inoculation and on the next day developed a pronounced tertian ague, plasmodia now being present in the blood in abundance. The malaria yielded to quinine and cacodylic acid. In this case an obscure atypical malarial affection was rendered typical by the inoculation.

News of the Week.

Committee of American Physicians for the Aid of the Belgian Profession.—Dr. F. F. Simpson, treasurer, 7048 Jenkins Arcade Building, Pittsburgh, Pa., reports the following contributions for the week ending July 3, 1915:

Stamford Medical Association, Stamford, Conn.	$25.00
Buchanan County Medical Society, St. Joseph, Mo.	27.34
Capt. W. H. Allen, M.C., U.S.A., Manila, P. I.	10.00
Yakima County Medical Society, North Yakima, Wash.	25.00
Receipts for the week ending July 3	$87.34
Previously reported receipts	7,457.00
Total receipts	$7,544.34

A New Health Commissioner for New York.—Dr. Goldwater, health commissioner of New York City, recently resigned in order to be able to resume his duties as superintendent of Mt. Sinai Hospital, and Mayor Mitchel is said to be considering several men who have been suggested to succeed him. One of them, it is announced, is Dr. W. C. Woodward, Health Commissioner of the District of Columbia, and several others are New Yorkers. Dr. Woodward has shown himself to be a very efficient officer and would no doubt do excellent work, but there are also a number of men now in the department who are fully competent and would make most capable commissioners. The promotion of one of them would seem to be more in accordance with civil service ideas.

A Doctorate of Public Health.—In accordance with a recent recommendation of the Public Health Council of the State of New York, the University

Bellevue Hospital Medical School on July 15 will open a series of courses in public health and sanitation, leading to a new degree—Doctor of Public Health. It was suggested by the Health Council that the medical schools of New York State provide courses in sanitary science in order that health officers might receive a training which would emphasize the prevention of disease rather than merely its control. Two courses will be offered. The first of these is the six week summer course, not leading to a degree, but which may be included in the second course of training, which gives the degree of Doctor of Public Health, and which extends over a period of two years. Candidates for the degree will be required to devote the first year to lecture and laboratory work, while the second year's work will consist in the preparation of a thesis on some special problem in public health. There is also the option of substituting for the shorter course a correspondence course culminating in a week of laboratory work.

Health of the Canal Zone.—The report of the health officer of the Panama Canal Zone for April states that the total number of deaths from all causes among the employees for the week was 8; of these five deaths were from disease, giving a ratio of 1.76 per thousand, as compared with 4.91 for the preceding month, and 5.53 for the corresponding month last year. The total population of the Canal Zone is 33,652, among whom there were 18 deaths; of these 16 deaths were from disease, giving a rate of 5.71 per thousand, as compared with 8.23 for the preceding month, and 11.10 for the corresponding month of last year. Of the total deaths from disease the percentage under 5 years was 69, compared with 52 in March.

The New York City Death Rate.—There were 1277 deaths and a death rate of 11.47 per thousand of the population reported during the week ending June 26 as against 1258 deaths and a rate of 11.75 in the corresponding week in 1914, an increase in the absolute number of deaths of 19 and a decrease in the rate of .28 of a point, which is equivalent to a relative decrease of 31 deaths. The only noteworthy feature of the week's mortality was the increase in the deaths from measles and bronchopneumonia. The death rate for the first twenty-six weeks of 1915 was 14.21 per thousand against the rate of 14.79 during the corresponding period of 1914, a decrease of .58 of a point.

Falling Birth Rate in Paris.—So far from there being a large output of war babies, as was predicted, the decline in the birth-rate in Paris since the beginning of the war has been very noticeable. The rate in 1914 averaged 1000 births daily, but at the beginning of 1915 the figures dropped to 850 and there has been a rapid decline since then. In the week ended June 12, the last week recorded, there were only 356 births.

Medical Library Association.—At the recent annual meeting of this association, the secretary reported that there were now 51 library members, of which 3 had joined in the last year; 44 individual members, of whom 8 had joined in the last year. Thirty-eight libraries and 41 individuals had paid for 1915. There is one library member in arrears for 1914 and under suspension. Four individual members have resigned. The association has been in existence for eighteen years and has filled a unique place among medical libraries. The work is largely altruistic, as libraries interested do all in their power to help each other. The membership fees are small and expenses are kept at the lowest possible amount consistent with the service rendered. The treasurer's report shows a substantial balance which will allow a broadening out of the work this year. The president of the association is Lieut.-Col. C. C. McCulloch, Jr., the secretary and treasurer, Dr. John Ruhräh, 1211 Cathedral street, Baltimore, Md.

Revolt at the Montefiore Home.—It is stated that 100 patients left the Montefiore Sanitarium for indigent tuberculous patients at Bedford a week or two ago because they were dissatisfied with a change in the officers of the institution which had recently been made, and with the promulgation of somewhat more stringent rules regarding absence from the sanitarium without leave.

The Bellevue Administration Praised.—The administration of Bellevue and Allied Hospitals, New York, is praised for economy in a report recently made to the Comptroller by R. B. McIntyre, chief examiner of the bureau of municipal investigation and statistics in the Finance Department. The daily cost per patient, $2.13 in the year 1913, was decreased to $1.99 in 1914. The average cost per patient for the past ten years is $2.02. The report says: "It must be conceded that the financial showing of Bellevue and Allied Hospitals for 1914 as compared with 1913 is very creditable to it; for despite the various items of increase developed by our analysis of its expense reports the fact remains that with an increase in patient days from 656,949 to 717,604, or approximately 9 per cent., the expenses of the department only increased from $1,399,142.24 to $1,431,443.66, or but about 2.3 per cent."

Dr. Frederick Tilney of Brooklyn has been appointed professor of neurology at Columbia University, succeeding Dr. M. Allen Starr recently resigned.

Professor Metchnikoff's Seventieth Birthway was lately celebrated very quietly at the Institute Pasteur. MM. Darboux and Roux, speaking respectively as representatives of the Institute of France and the Pasteur Institute, reviewed the work done by the Russian scientist. By way of reply, Professor Metchnikoff delivered an interesting address on the prolongation of life. The publication of a "Festschrift" which had been planned in his honor was necessarily abandoned.

Dr. David K. Henderson, resident physician at the Phipps Clinic of the Johns Hopkins Hospital, has resigned to accept the superintendency of the Royal Asylum of Scotland at Glasgow. Dr. Roscoe W. Hall succeeds him at the Phipps Clinic.

Dr. Moyer S. Fleisher has been appointed assistant professor of bacteriology at the St. Louis University School of Medicine.

A Good Roads Movement Among Physicians.—The Ohio County (Ky.) Medical Society organized a good roads club at a meeting held July 2.

American Medical Association Medals.—The committee on awards for scientific exhibits at the San Francisco meeting granted gold medals to the pathological departments of Stanford University and of the University of Michigan; to the Indiana State Board of Health, for its exhibit on a public health campaign; to Drs. C. C. Bass and F. M. Johns of Tulane University for their exhibit on pyorrhea alveolaris and malaria; to Drs. Claud A. Smith and J. Witherspoon, on hookworm; to the pathological laboratory of the New York Lying-in Hospital, on the demonstration of the cultivation of human tissue *in vitro;* to Dr. Martin H. Fischer of Cincin-

nati, on newer experiments in the physiology and pathology of kidney functions, and to Dr. J. T. Case of Battle Creek on lantern slides illustrating Roentgen-ray studies.

Medical Assistant, District Attorney's Office, New York City.—The New York State Civil Service Commission announces an examination on July 31 for an appointment to this position at a salary of $5,000 per annum. The duties of the position "include the examination of the dead body and of the premises where it is found for the purpose of ascertaining all facts which will aid in the elucidation of the time of and circumstances surrounding the death; the ascertainment by autopsy of such facts as may be shown relative to the cause of death; the examination of all material obtained from the body by laboratory means; assistance to the district attorney in the preparation of the case for trial; testimony as a medical witness not only as to all questions of facts as mentioned above, but also by reason of actual experience as an expert on medical subjects. The qualifications required for the position therefore are experience in the clinical branches of medicine and surgery, the accurate observation of the dead human body in regard to all facts connected with the cause of death, and the changes that take place in the dead body following death; experience in the use of laboratory means, namely, the microscope, the spectroscope, bacteriological, chemical, and serological analysis for the purpose of proving the cause of death, and the use of these methods in the examination of exhibits for the purpose of elucidating the necessary facts in connection with medical matters in assisting the district attorney in the administration of the criminal law. This necessitates that the appointee have experience including the whole subject of medical jurisprudence and such scientific subjects as are connected therewith, as clinical medicine and surgery, pathology, pathological anatomy, pathological histology, bacteriology, chemistry, serology in connection with the use of the preciptin test for the identification of human blood stains, and toxicology so far as the necessary methods of procedure are concerned; the practical work of isolation of poison is a special branch, which, with his many other duties, the medical assistant could hardly be called upon to perform. No written examination will be given, but candidates will be rated on education and experience in connection with matters indicated above. An oral examination may be held. Candidates should be particular to give full details of their experience in answer to question 20 on the application blank. Open to residents of New York County only." An application blank may be obtained by addressing the State Civil Service Commission, Albany, N. Y.

Fire in the University and Bellevue Hospital Medical College.—A fire that started from unknown causes in the basement of the college building on the evening of Wednesday, June 30, did about $2,500 damage to the building and equipment.

The "Hospital News," a magazine for hospital workers, now in its fourth year of publication, has recently been acquired by a number of physicians in Washington. The editors-in-chief are Drs. Wilfred M. Barton and Walter A. Wells, assisted by twenty-one associate editors.

Obituary Notes.—Dr. HARRY GRAY of Greenwich, Conn., died on June 19 after a long illness. He was born in Cambridge, N. Y., in 1842 and was graduated from the College of Physicians and Surgeons in this city. He came of a long line of medical practitioners, his great-grandfather having been a surgeon in the War of the Revolution.

Dr. SERAPH FRISSELL of Hinsdale, Mass., died in Dalton on June 20 at the age of 74 years. She was graduated in medicine from the University of Michigan in 1875 and began practice almost immediately in Pittsfield. She was the first woman admitted to membership in the Berkshire County (Mass.) Medical Society.

Dr. CHARLES A. MEINE died at his home in Germania, Pa., on June 7 at the age of 85 years. He was a graduate in medicine of the University of Marburg.

Dr. ALFRED MITCHELL, professor emeritus of internal medicine at the Medical School of Maine, died at his home in Brunswick on June 13, at the age of 77 years. He was a graduate of the College of Physicians and Surgeons, New York, in 1865. He was associated with the Maine Medical School nearly his entire professional life, having been appointed lecturer on pathology in 1869 and resigning with the title of professor emeritus in 1911. He was dean of the faculty from 1898 to 1911. He left four children, one of them, Dr. Alfred Mitchell, Jr., a physician of Portland.

Dr. LEON L. FRIEDRICH died at his home in Washington, D. C., on June 15 after a long illness. He was born in Washington in 1858 and was graduated in medicine from the George Washington University in 1881.

Dr. ORIN H. STUTSON of Columbus, Ohio, died June 12 of acute tuberculosis. He was born in Obz Junction and was graduated from the Starling Medical College in 1898.

Dr. WILLIAM G. HALL, formerly a practising physician in Jefferson, Mo., died at the home of his son in Kansas City on June 11 at the age of 84 years.

Correspondence.

FROM DR. DEPAGE.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR: I enclose herewith the translation of a letter which I have just received from Dr. Depage, and which he wishes to have published, in acknowledgment of the many letters which he has received from America since the tragic death of Madame Depage on the *Lusitania*.

R. H. HARTE, M.D.

PHILADELPHIA, June 30, 1915.

My dear Colleagues: I have received from a large number of you, and notably from the committees which you have formed, the most touching tributes of sympathy and of condolence for the catastrophe of the *Lusitania* in which my wife lost her life. These tributes are so numerous and so unanimous, that I wish to express to you publicly my appreciation of them. I address myself to you, my dear Colleagues, as the authorized representatives of the humanitarian sentiments which so honor the great American Nation.

You all know, as I wrote to you when my wife left for America, for what purpose she accepted the mission which the Red Cross confided to her. In the presence of the unexampled miseries of which we have been the prey, she had resolved to solicit your fraternal assistance. You gave her that largely, I should say "joyously" if the word could be pronounced in these times.

The letters my wife wrote to me in the course of her mission told me how you worked for her and revealed to me the extent and generosity of your projects for our wounded. Your hearts were open to our appeal; your country did not delay in coming to our assistance. Powerful America wished to take under her

protection our little people, tortured but always valiant.

My great sorrow does not permit me to reply as I wish I might to each one of you. Only to-day have I been able to measure—thanks to the letter of your compatriot, Dr. Houghton—the extent of the gratitude I owe, to him first for having risked his life in trying to save that of my wife, and after that to you all for your devoted help in our common work.

Under the strain of my emotion, the sentiment of thankfulness is the only one to which at this moment I am able to give expression. Permit me to do so with all my heart.

A DISCLAIMER FROM THE POLYCLINIC HOSPITAL.

To the Editor of the Medical Record:

Sir: In view of the publicity which has been given by the lay press to a method of treating inoperable cancer, and the use that has been made of the name of the Polyclinic Hospital therewith, the management of the Polyclinic desires to disclaim any connection with or responsibility for this method of treatment. The cases that have been treated in the hospital have been received as the private cases of physicians who have the privilege of sending patients to the pay wards and private rooms of the hospital.

Board of Management,
Polyclinic Hospital.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

HOSPITAL SUNDAY—NEW FUND FOR SICK AND WOUNDED—LISTER INSTITUTE—ANTITOXINS—RESEARCH—OBITUARY.

London, June 18, 1915.

The week opened with Hospital Sunday, which was observed in practically every church. In most of the pulpits special claims were urged for the year as one of exceptional strain. The King sent to the Lord Mayor a check for £100 on behalf of the fund. At St. Paul's Cathedral Canon Alexander pleaded with his hearers that the glamor of temporary help should not blind them to the permanent needs of these institutions.

At Westminster Abbey Canon Wilberforce declared that in having all that was best in medical aid at the disposal of thousands of our wounded soldiers the army had been increased by a full army corps.

At the Temple Church Bishop Carpenter said the need was increased by the strain and stress of the war, but so far the contributions had not risen, though the cost of food, drugs, and necessities had. He hoped their liberality would meet the case.

The King's Hospital Fund has the same object and pursues the same course toward its attainment as the Sunday Fund, and the efforts of both in support of our 126 hospitals and other allied institutions need to be supplemented by further voluntary contributions to carry on the work, for their small income from capital is altogether inadequate to meet the continual cost.

On Wednesday a New Mansion House Fund for the sick and wounded in the war was founded at a public meeting presided over by the Lord Mayor (Sir Ch. Johnston). It is to be administered by the Red Cross Society and the Order of St. John of Jerusalem. What was asked, said the Lord Mayor, was that the city of London should make a united effort worthy of its fame and of the cause by coming to the support of this fund for the British Red Cross and the Order of St. John. Mr. Asquith telegraphed to testify from his experience of the admirable work of these two organizations. Mr. Balfour wrote that pressure of public business prevented his presence, though expressing the warmest sympathy with the great object of the meeting. He felt nothing could appeal to the patriotism and humanity of the city more strongly than the great societies which have done so much for those who have suffered in their country's cause. Lord Lansdowne came as the successor of Lord Rothschild in the chairmanship of the Red Cross. He said that on the day of his death Lord Rothschild sent a message to the Red Cross Society showing his deep interest in the present meeting. The society was initiated by Lord Wantage, who also founded the National Aid Society for Sick and Wounded. The Order of St. John was ancient—went back to the eleventh century. The two were in close touch and at the outbreak of war formed a joint committee, and the magnitude of their task like that of the war was appalling to one's idea of humanity or civilization. Three-quarters of a million of our men at the front! and the Prime Minister stated a day or two ago that something like a quarter of a million casualties had been suffered by the British forces. They had been most fortunate in the medical department, and the best relations existed between the voluntary societies and the official surgeons. They were proud of the R. A. M. C. and ready to help in every class of their work. An agency had been established for tracing the missing, following up every clue towards their restoration to their friends. Funds had been sent from the dominions besides shiploads of stores. In closing Lord Lansdowne announced the receipt of a letter containing a check for £20,000 from Mr. Waldorf Astor—the second of this amount from that gentleman for the Red Cross.

Mr. A. Stanley, chairman of the Joint War Committee, referred to the memoir of Lord Wantage, who said however well organized an army medical service might be it never had and never would be able to cope adequately with emergencies of a sudden war over a large scale. Voluntary organizations were necessary auxiliaries. As evidence of the practical work of the joint committee, Mr. Stanley mentioned two incidents within his own knowledge. 1. Just before closing time, 6.30, one evening an order came for no less than 20,000 articles of different kinds, such as tooth brushes, etc., for immediate delivery; they were delivered the next morning. 2. One Sunday they were told that a hospital was urgently required for Calais as soon as possible. At 5.30 p. m. that same Sunday evening a special train left Victoria carrying the full personnel for a hospital of 120 beds together with a large amount of stores, two or three motors and two or three ambulances. That, his lordship claimed, proved the effective co-operation of the R. A. M. C. and the Joint Committee. Sir R. Hudson, chairman of the Finance Committee, gave some important and encouraging facts. Contributions were received on the first day amounting to the goodly sum of £87,455.

The Lister Institute has rendered the greatest service during the war to both the army and navy medical departments. At the outbreak of the conflict an ample supply of serums was provided at cost price, entailing no little extra work in the laboratories. This was eagerly engaged in by the staff and outside experts have been constantly ready to

afford any assistance that might be needed. Up to the end of March, besides numerous prophylactic preparations made and delivered wherever required, the army and navy have been supplied with 120,640 doses of tetanus antitoxin, 18,500 doses of diphtheria antitoxin, and 770,000 doses of antityphoid vaccine. The department of experimental pathology sent to the front in October Mr. S. Rowland, assistant to Dr. C. J. Martin, with the first mobile field battery. This was found so useful in the early diagnosis of infectious fevers and in the detection of carriers that three others were forwarded on request of the medical officers. The institute has been giving great assistance to the medical service in other ways. Its staff have fitted up and arranged laboratories and supplied medical officers and bacteriologists to hospitals. These, in conjunction with the Canadian staff, made a bacteriological examination of the throats of over 1400 men, among whom they detected and isolated thirty carriers. Afterwards Dr. Penfold of the institute, together with Dr. Johnston of the L. G. B. and Dr. Fison, Medical Health Officer for Salisbury, made a similar investigation into an outbreak in that city. This resulted in their finding that the serums available at the time were not effectual. Accordingly the institute set to work to immunize horses as rapidly as possible with strains of the organism from cases occurring in this outbreak. Drs. Ledingham, Penfold, and Hartley have been appointed pathologists to the new King George Hospital. Dr. Atkin and Mr. Greenwood (statistician to the institute) have been nominated in response to a request of the Royal Society to make an inquiry into swine fever. The report of the institute mentions that the exigencies of the war have greatly depleted its staff. But though this has thrown extra work on those remaining at headquarters they have been able to meet the demands of the army and navy without diminishing their other investigations.

You may remember that from time to time there has been some talk of amalgamating the institute and the Medical Research Committee. The proposal was disapproved at a meeting of members last November, although it was brought forward by the governing body, which still hopes the question may be reconsidered later on—say, after the war. The report closes with a handsome tribute to the director and his staff.

Surgeon-General George William Robertson Hay, I. M. S., died on the 26th ult. He qualified in Edinburgh in 1867 and took the M.D. there the next year, at once entering the Indian service as assistant surgeon. Passing through the several grades of the service, he reached the surgeon-generalcy in 1900 and retired at the close of 1904 as the P. M. O. Madras.

Deputy Surgeon-General Hy. Joseph Rose has died at the age of 82. He qualified at the Dublin College of Surgeons in 1855, joined the army medical department the same year and saw service in the Crimea, receiving the medal with Sebastapol clasp, also the Turkish medal. He served in the China war of 1860, for which he was awarded the medal with two clasps. In the Afghan war of 1878-80 he also obtained the medal. He retired in 1881.

Dr. Geo. Moore, late of Torquay, has died there in his 84th year. He graduated M.D., St. Andrews, in 1862, and had been for fifteen years medical superintendent at Jersey Lunatic Asylum. He was also Medical Health Officer for Hartlepool and honorary physician to the hospital.

OUR BERLIN LETTER.

(From Our Regular Correspondent.)

CONGRESS OF GERMAN MILITARY SURGEONS—SACRIFICES OF THE MEDICAL CORPS—SURGICAL INDICATIONS AT AND BEHIND THE FRONT—WOUND INFECTION—GUNSHOT WOUNDS OF THE SKULL—WOUNDS OF THE CHEST—ABDOMINAL WOUNDS—PROJECTILE FRACTURES OF THE ARM AND LEG, WOUNDS AND INFECTIONS OF JOINTS—SURGERY OF THE BLOOD VESSELS, ANEURYSMS.

BERLIN, May 15, 1915.

THE annual congresses that are usually held in Germany about Easter have, of course, been omitted this year. Nevertheless, in these trying days there has still been the opportunity of holding a surgical congress at which the newer problems presented by the war have been discussed. On April 7 about 1,000 military surgeons met at Brussels. They came from all parts of the army. This fact alone that so many medical officers could be spared should convince skeptical outsiders that conditions in Germany are not particularly bad. Yet the war has brought home to us the fact that others will not believe us. In combating this incredulity logic is futile.

The work of the congress cannot be described better than in the words of the motto of the sanitary corps: "The head for science! The heart for the army! The blood for king and country!" In fact, an almost incredible amount of scientific work has been accomplished in spite of the unfavorable outward circumstances. Above all, the striving has been to give to every soldier the best of medical aid possible at any time. That this ideal has involved unusual personal sacrifice is indicated by the large mortality of the medical officers of the army.

The presiding officers, the speakers, and those who took part in the discussions at the congress were those to whom we have been accustomed in years past. Indeed, with eyes closed we would have imagined ourselves in the Langenbeck Hall in Berlin. The light of day fell upon the gray service uniforms of the officers and upon the city of Brussels—and this ended the illusion. Space permits only a reference to the topics that came up for discussion and a brief summary of the important points presented.

The Indications for Surgical Treatment at and Behind the Front: Hemostasis; Transfusion.—Angerer presided and Garré opened the discussion. He said that in the presence of arterial bleeding the artery clamp should be applied to the injured vessel and should be left in place, being included in the dressings. Autotransfusion and the use of stimulants are superior to saline infusions in the treatment of the acute anemia following hemorrhage. Tangential wounds of the skull and intracranial hematomata require trephining as soon as possible. In gunshot wounds of the neck free use of morphine usually obviates the performance of tracheotomy. In open pneumothorax prompt operation is necessary. In the management of gunshot wounds of the abdomen one must distinguish between the following: If there is internal hemorrhage immediate operation is demanded; if there are wounds of the intestine operation should be attempted only if this is possible within the first 12 hours. In shrapnel wounds the parts should be freely laid open, carefully examined and sponged dry and all recesses should be carefully drained.

Wound Infection, Particularly Tetanus and Gas

Gangrene.—Korte presided and Kümmel opened the discussion. He said that tetanus is more prevalent in this war than in former wars, constituting 6.5 per thousand cases as against 3.5 per thousand in 1870. If the incubation period is very short the mortality is 100 per cent; if the incubation period is 7 days the mortality is 90 per cent; if 7 to 14 days, the mortality is 50 per cent; if 14 to 20 days, the mortality is 30 per cent. An early symptom is difficulty in swallowing. The results of prophylactic inoculation with 20 antitoxic units are good. The antitoxic treatment is effective only in the mildest cases, and then with the use of massive doses only. Magnesium sulphate has been most serviceable in chronic cases, but so also have the usual narcotics in large doses. Of great value also are prolonged baths. Gas gangrene is common but erysipelas is rare. In the former the bacillus of Fraenkel is easily and frequently found. The mortality is 33 per cent. Until the onset of gangrene deep incisions down to the fascia are indicated. Also if the gangrene extends only down to the fascia the incisions suffice. Similarly in cases without general infection amputation may thus be avoided.

Gunshot Wounds of the Skull.—Müller presided and Tilmann and Enderlen opened the discussion. Tilmann said that the operative treatment of gunshot wounds of the skull is to be carefully undertaken, and then only by experienced surgeons and under aseptic conditions. That wounds in which the projectile has completely traversed the skull frequently heal without any farther intervention. Tangential shot wounds should be operated upon. Splinters of bone can often be detected by the finger. Wounds resulting from rebounding bullets are also to be opened. In meningitis lumbar puncture should be performed. In encephalitis, in spite of the doubtful prognosis, an abscess should be sought for and if found emptied. Enderlen said that every wound of the skull should be examined with the *x*-ray. Only superficially-lying projectiles should be removed immediately. Further operation is permissible only if the patient can be kept in one place for four weeks. Plastic operations in the dura and skull should be avoided. Of the author's 311 cases of gunshot wounds of the skull 149 died.

Wounds of the Chest.—Garré presided at this symposium, which was opened by Sauerbruch and Borchardt. The former said that among 22,145 wounded there were 836 instances of projectile wound of the chest, of course not counting the dead upon the battlefield. Gunshot wounds of the chest wall are harmless, but shrapnel wounds are more unfavorable and are to be treated very carefully. In these it is often necessary to suture the lung. In projectile wounds of the lung secondary hemorrhage and infection frequently occur as late as the third or fourth week. Indeed, infection from the lungs plays the greatest rôle in these cases. The mortality is 12 per cent, but with fractured ribs and foreign bodies in addition to wounds of the lung the mortality is 24 per cent. Frequently a second rise of temperature on the sixth or seventh day is an indication of inflammation and not of resorption. If there is an infected hemothorax the indication for treatment is aspiration and not resection of rib. In shrapnel wounds of the lung the prognosis is bad. Borchardt stated that of the fatal cases 5 per cent were to be attributed to hemorrhage and over 60 per cent to infection. If the hemothorax does not diminish in eight or nine days aspiration is indicated. The wounded should not be transported before the end of fourteen days and preferably not before the end of three or four weeks.

Wounds of the Abdomen.—Kümmell presided and Körte and Schmieden opened the discussion. Körte reported the results in 312 cases, of which 38 died at the clearing hospital and 146 in the base hospital —a total of 53 per cent. Twenty-seven were operated upon. On the whole, with this plan of expectant treatment there were 40 per cent of recoveries. Operation when indicated is feasible only if not more than 12 hours have elapsed since the infliction of the wound, if the general condition of the patient is good, and if asepsis and quiet can be secured. Schmieden is in favor of immediate operation in these cases on the battlefield—otherwise, not; rapidity and simple technique are necessary.

Projectile Fractures of Arm and Leg; Wounds and Infections of Joints.—Bier presided and Payr and Goldhammer opened the discussion. Payr said that shrapnel wounds became infected in 70 to 80 per cent and shell wounds in 90 to 95 per cent of the cases. If the injured skin and tissues are excised within the first 12 hours good results may be expected. In the treatment of fractures of the femur the best results are obtained with traction on the semiflexed limb kept in suspension or with traction clamps applied. Hemarthrosis is very common in wounds of the joints. Traction is contraindicated in these cases. Operative procedures are indicated if there are disordered function, threatened ankylosis, great pain, and symptoms of tissue incarceration. More unfavorable in their outcome than empyema of the joint are the phlegmons of the joint capsule which by their rupture often cause widespread para-articular suppurations. Goldhammer is opposed to the use of plaster of paris as the first dressing for these cases on the field. Only in the hospital is the risk of traction appartus applicable.

Surgery of the Blood Vessels, Aneurysms.—Hildebrand presided and Bier opened the symposium. He said that there came to operation 102 cases of aneurysm that had existed for from eight days to five months. The operative mortality was nearly 8 per cent. Arterial suture was performed 74 times, and suture of the wall 38 times. Both procedures are not difficult, the suture of the wall being the simpler. Operation on the sac is to be rejected. Only infection and the smallness of the artery contraindicate suture. Momburg's method of artificially emptying the vessel operated upon simplifies the operative technique.

Progress of Medical Science.

Boston Medical and Surgical Journal.

June 24, 1915.

1. Water Drinking. When Shall We Drink Water? May We Take It with Meals? E. G. Cutler.
2. The Starvation Method Versus Gradual Carbohydrate Reduction as a Time Saver in the Treatment of Diabetes. H. A. Christian.
3. Psychopathic Hospitals and Prophylaxis. F. E. Williams.
4. Program and Directions for the Mental Examination of Asocial, Psychopathic, and Doubtful Subjects. R. S. Hardwick.

1. Water Drinking.—E. G. Cutler cites the experiments of Fowler and Hawk, who found that the daily drinking of three liters of water *with meals*, for a period of five days, by a man twenty-two years of age, who was in a condition of nitrogen equilibrium through the ingestion of a uniform diet, produced the following findings: (1) An increase in

body weight, aggregating two pounds in five days. (2) An increased secretion of urinary nitrogen; the excess nitrogen being mainly in the form of urea, ammonia, and creatine. (3) A decreased excretion of creatinine and the coincident appearance of creatine in the urine. The decreased creatinine output is believed to indicate that the copious water drinking has stimulated protein catabolism. Hawk found that copious water drinking facilitates the digestion and absorption of fat for the following reasons: There is an increased secretion of gastric juice and independently of pancreatic juice as a result of the stimulating action of water. The increased acidity of the chyme brings about a more active secretion of pancreatic juice and bile. There is an increased peristalsis, due to the larger volume of material in the intestine and an increased blood pressure due to the rapidly absorbed water. There is a more complete hydrolysis of the fats by lipase, due to the increased dilution of the medium and the consequent more rapid absorption. The ingestion of large amounts of water with meals not only does not inhibit the normal flow of digestive juices, but acts as an excitant to their flow. The digestive juices are not rendered less efficient by dilution, but on the contrary, enzyme action is more complete, within limits, the greater the dilution. Even if the food were washed into the intestine more rapidly than usual, contrary to Cohnheim's belief, the greater efficiency and greater amount of the digestive juices would outbalance this. The author concludes as the result of clinical observation, supported by laboratory research, that it is advisable for people in ordinary health to drink water as desired with meals, or to the extent of from two to four or more tumblers at each repast, and that we may expect a continuance of good health in so doing, or an improvement even, provided that the food taken be first thoroughly masticated and insalivated and then swallowed and that the water be then ingested.

2. **The Starvation Treatment of Diabetes.** — H. A. Christian finds that the starvation method of Allen for rendering a diabetic sugar-free, in addition to being a safe method, has shortened very materially the time required to get a patient with diabetes sugar-free, and so permits of a large part of the patient's stay in the hospital being devoted to building up the patient's tolerance for carbohydrates. To put it another way, the method saves for the patient and for the hospital one or two weeks of time.

3. **Psychopathic Hospitals.**—F. E. Williams believes that a psychopathic hospital in addition to its other functions should serve as a prophylactic and educational station to which may come for advice and counsel those suffering from psychoneuroses and the early stages of mental disease as easily and freely, and with as little prejudice as those suffering from the early stages of tuberculosis seek out a hospital for tuberculosis; a center to which can be brought for diagnosis the supposedly backward child, before further social damage has been done; a center to which parents aware of the neurotic inheritance of their children can come for advice in their children's upbringing and protection. From its lecture platform adults should receive instruction which would lead them to a better understanding of their own complex emotions, sensations, and impulsions, and practising physicians should be instructed in the significance of certain early manifestations of mental disease, that they may be as capable in diagnosing and protecting these patients as they are those manifesting the early signs and symptoms of tuberculosis or cancer. Prophylaxis is but one of the many functions of a psychopathic hospital, but its possibilities in this direction should not be overlooked.

New York Medical Journal.

June 26, 1915.

1. The Work of the American Medical Association. W. L. Rodman.
2. The Prognostic Significance of Tuberculous Cavities in the Lungs. M. Fishberg.
3. Empyema of the Nasal Accessory Sinuses. H. Smith.
4. Secretin and Its Therapeutic Possibilities. J. W. Beveridge.
5. Foreign Body in Esophagus. A. Jablons, M.D., and M. M. Banowitch.
6. Liver Abscess of Doubtful Etiology. J. G. Townsend.
7. First Aid Kits for Factories. G. M. Price.
8. Some Disorders of the Foot Simulating Weak Foot. E. S. Geist.
9. Cerebral Trauma and Acute Dilatation of the Stomach. H. A. Haubold.
10. The Parathyroids and Tetany. E. L. Hanes.
11. Benzol in the Treatment of Myelogenous Leucemia. O. H. Petty.

1. The American Medical Association. — By W. L. Rodman. (See MEDICAL RECORD, June 26, 1915, page 1087.)

2. Prognostic Significance of Tuberculous Cavities. —M. Fishberg states that in very acute forms of tuberculosis cavitation is exceedingly rare and the prognosis is gloomy. In adults such cases are rare, but in infants rapid cavity formation is seen at times and the termination is almost invariably fatal. In subacute forms of phthisis, in which cavities are apt to form very rapidly, the prognosis is unfavorable unless the cavity is small. In the latter case the disease may be attenuated and subsequently pursue a chronic course with the sequestration of the affected area. Excavation is the first step toward a diminution of the acuteness of the tuberculous process in the lung. The general symptoms may be ameliorated as after the evacuation of an abscess. In chronic phthisis, cavities even when extensive are compatible with a long and efficient life. These are surrounded by a more or less dense fibrous capsule which limits their extension and are drained through a fistulous tract communicating with a bronchus. As long as the secretions are eliminated by expectoration, the patients may feel quite comfortable for years. Because they expectorate large numbers of tubercle bacilli they are often sources of infection to a greater extent than many patients without excavations. Pulmonary cavities may heal. When small, they may be obliterated by granulations or by calcification of their contents. Larger cavities may shrink, or even when remaining of large dimensions, they may become altogether benign after the necrotic tissue has been expelled. They are, however, a constant source of danger with respect to metastatic autoinfection. On the whole, cavities are an indication of chronicity of the tuberculous process in the lung, showing that the resisting forces are active and as such are less dangerous than many cases considered incipient and curable.

10. The Parathyroids and Tetany. — E. L. Hanes, summing up an analysis of the literature on the parathyroids and tetany, states that the relationship between the two is most intimate; and that in large numbers of instances the tetanies of childhood and of the puerperium, those of certain nutritional diseases, and those following operative removal of the parathyroid glands are due to the loss of or interference with the functions of these organs. It is not yet clear in what manner the parathyroids are implicated in the so-called epidemic and endemic tetanies of Frankl-Hochwart, or why certain occupations predispose to this reaction in contrast to other allied forms of labor.

Journal of the American Medical Association.

June 26, 1915.

1. Work of the American Medical Association. W. L. Rodman.
2. The Nature and Treatment of Bronchial Asthma. R. H. Babcock.
3. The Treatment of Infantile Paralysis. Preliminary Re-

port, Based on a Study of the Vermont Epidemic of 1914. R. W. Lovett.
4. Experimental Studies of Various Antiseptic Substances for Use in Treatment of Wounds, Based on the Work of Sir W. Watson Cheyne. R. A. Keilty and J. E. Packer.
5. Thorium—A New Agent for Pyelography. Preliminary Report. J. E. Burns.
6. Short Circuit of the Vas Deferens. C. M. McKenna.
7. A Practical Method of Applying the Wax-Tipped Catheter in the Diagnosis of Ureteral Stone in the Male. F. Hinman.
8. A New Lid Everter. S. Israel.
9. Improved Form of Brain Explorer. H. Gifford.
10. A Combined Staining Method for Malarial Parasites and Blood Smears. F. E. Russell.
11. Apparatus for Fractured Bones. W. E. Schroeder.

2. Nature and Treatment of Bronchial Asthma.—R. H. Babcock states that if asthma is to be explained on the hypothesis of protein sensitization, then one must assume the existence of a focus in the body from which the foreign protein is absorbed or that at some period, perhaps in childhood, protein sensitization occurred, or that sensitiveness to a special protein was inherited. It may be asked why one person shows this by asthma while another does not, but instead may develop urticaria. One cannot account for this without assuming a neurosis or possibly an inherited sensitization. On the other hand, experiments with autogenous vaccines seem to indicate that the anerobic bacillus found in a case cited by the author and in all his other cases up to date is really the cause. Various foci may be the source whence protein is absorbed. Nasal polypi are not uncommon in nasal asthmatics and have been considered responsible, and the author cites a case in which the focus seemed to be a foreign bacterial poison in the gall-bladder. The first step in the treatment is the discovery and removal of the primary focus when this exists in the patient. While the vaccines are being prepared or the study of the case is not yet complete, one may use some of the old, tried remedies. Ten minims of a 1:1000 solution of suprarenal extract are in many cases highly efficacious against the paroxysm, but no line of management gives as much promise as the administration of autogenous vaccines in addition to the discovery and removal of the source of the protein infection.

3. The Treatment of Poliomyelitis.—R. W. Lovett states that infantile paralysis has been heretofore regarded as a haphazard affection of muscles, most frequent in the leg, and in the cord lesion it appears to have a purely accidental distribution, most marked in the lumbar enlargement. Possibly, however, there are other factors than the cord lesion which determine the ultimate condition of the affected muscles. An analysis made as to the frequency and severity of the paralysis shows that in cases months after the attack there are apparently existing conditions not easily to be explained by the cord lesion alone, but suggesting that function, and especially the function of maintaining the upright position, may have something to do with determining the ultimate distribution. The affection is an acute one, and treated in the early stage by rest, because paralysis is generally present in the limbs, making activity impossible, and because the patients are generally sensitive and movement and handling are painful. It seems rational not to attempt to stimulate by massage, electricity, or handling the peripheral connections of seriously disordered nerve centers, and the best accepted usage is to let such cases alone, only striving to prevent contractions until sensitiveness has disappeared, and to allow the process of repair to go on undisturbed. It is the custom to prescribe hexamethylenamine in the early stage; in the Vermont series, however, there was an interesting and suggestive case, in which a child had been taking 5 grains of hexamethylenamine for three or four days before coming down with a typical attack of infantile paralysis. With the disappearance of tenderness the time for active treatment has begun, though in severe cases it may be well to wait at least four weeks. Electricity has been overused and its value overestimated, but muscle training has a sound basis as possibly stimulating the brain centers to act on the muscles. Apparatus is needed and is not liable to promote muscle atrophy, as disuse is dangerous. If fixed deformity exists it must be corrected before active treatment can be satisfactory.

The Lancet.

June 19, 1915.

1. Cervical Gland Tuberculosis. A. S. Griffith.
2. Notes on Rheumatism in Children. M. H. Williams.
3. A Case of Tetragenus Septicemia. H. Robinson.
4. Nasal Flap and Modified Langenbeck Operations for Cleft Palate. G. S. Thompson.
5. Complete Heart-block with Higher Ventricular than Auricular Rate. E. Lea.
6. A Case of War Wound Infection by an Anthracoid Bacillus, the Wound Being Caused by a Shattered Trigger-guard. A. W. Sheen. With Pathological Report by B. G. Klein.

1. Cervical Gland Tuberculosis.—A. Stanley Griffith states that his investigation of cervical gland tuberculosis was undertaken as a result of the isolation of atypical strains of human and bovine tubercle bacilli from cases of lupus which had developed in the skin of the neck after excision or ulceration of tuberculous cervical glands. The object of the investigation was to ascertain whether or not tubercle bacilli raised from tuberculous cervical glands ever diverged from the standard in the same way as the lupus tubercle bacilli. In glandular tuberculosis there is marked tendency to spontaneous cure. In the author's series of the sets of glands showing definite tuberculous lesions, 29 per cent. gave negative results in culture and in animal experiment. This tendency to spontaneous arrest of glandular tuberculosis should be remembered when estimating the therapeutic effect of specific remedies. In each case the macroscopical appearances of the glands on section have been recorded with the object eventually of determining whether or not these presented differences corresponding to the type of infection. Careful comparison has not revealed any macroscopical character which is peculiar to one type of infection. On the other hand, microscopical examination would appear sometimes to yield evidence indicating the type of infection. When there are numerous short well-stained tubercle bacilli the probability is that a bovine infection is being dealt with. The proportion of bovine infections in cervical gland tuberculosis in England, while less than that in Scotland, is higher than it is in other countries. Of the four countries for which there are separate data Germany gives the lowest percentages of bovine infections. There is not much difference between the English and American percentage figures (respectively 55.5 and 51.7) for persons under 15 years of age, but for persons over 15 years of age the proportion of cases in which the infection was "bovine" is considerably lower in America than in England.

5. Complete Heart-Block.—E. Lea reports a case of complete heart-block of organic nature which showed: a persistent high idioventricular rate of 60; a period of sinal slowing to 51, during which time the auricular rate exceeded the ventricular; an unusual auricular tachycardia following atropine, to 200 per minute; and synchronous auricular and ventricular contractions during an apparent 3-1 block, such synchronism being maintained even when some degree of ventricular arrhythmia was present. Digitalis seemed to have no effect upon the rhythm or rate. Consideration of the hitherto reported cases of high idioventricular rate, relatively few in number, shows that the great pre-

ponderance of such instances is due to digitalis, whether or not the auricles are acting normally. Even when the rate is unaffected digitalis may influence the type of ventricular complex.

British Medical Journal.

June 19, 1915.

1. Fatigue Dyspepsia. G. Rankin.
2. Prognosis in Heart Disease. E. E. Lea.
3. An Investigation of the Best Methods of Destroying Lice and other Body Vermin. J. P. Kinloch.
4. The Wassermann Test: A Method not Necessitating the Use of Guinea-pigs as the Source of Complement. O Heath.
5. Arteriovenous Aneurysm of Femoral Artery Successfully Treated by Operation. G. G. Gillon.

1. Fatigue Dyspepsia.—G. Rankin points out that the essential etiological factor in fatigue dyspepsia is a depraved innervation of the gastrointestinal tract. The disorder therefore occurs either in persons born with a "shoddy" nervous system, or in those who have called upon a normal nervous system for efforts greater than it has been able to undertake. The end is the same in both instances—a breakdown, more or less complete, of nerve stability—with the incidence falling in the first instance and for the most part on the digestive apparatus. Every case of fatigue dyspepsia is accompanied by the same underlying phenomena of neurasthenia—loss of weight, dream-disturbed and broken sleep, capricious appetite, a constant sense of physical fatigue, failing powers of mental concentration, loss of memory, irritability, introspective uncertainty, depression of spirits, restlessness, and a firmly established conviction that the world is "out of joint."

3. Destruction of Lice.—J. P. Kinloch notes that the paraffin bodies are actively insecticidal, and of these gasolene is the most effective. Lice and their eggs are destroyed by immersion in gasolene for one minute, and may be killed by exposure to its vapor for half an hour. Powerful fatty solvents other than the paraffins are actively insecticidal. Benzene, toluene, and acetone are as toxic to lice as gasolene. Certain chlorine derivatives of methane, ethane, and ethylene are more lethal to lice than any other substances, and have the important merit of being non-inflammable. Immersion in the chlorine derivatives of ethane and ethylene immediately destroys all lice and nits, and exposure to the vapor of these substances for five minutes is equally destructive. Even soap solutions containing 2 per cent. of trichlorethylene or 10 per cent. of tetrachlorethane are capable of killing in half an hour at ordinary temperatures all lice and nits. A 25 per cent. solution of dichlorethylene or trichlorethylene in vaseline when applied to the human body has been found capable of exerting its insecticidal action for hours. The action of a 25 per cent. solution of gasolene in vaseline is of shorter duration, but is also effective for some hours. The common phenol disinfectants in their usual degrees of dilution for disinfectant purposes and at ordinary temperature fail to kill lice or nits, even after steeping for half an hour, but become efficient as insecticides if the temperature of the steeping tank is maintained at 65° C.

Berliner klinische Wochenschrift.

May 17, 1915.

Vagotonia.—Lublinski first refers to the long-known antagonism between the vagus and sympathetic nerves. Organs supplied by both must be normally in a condition of physiological equilibrium. Should vagus innervation predominate we have vagotony; should sympathetic innervation predominate, we have sympathicotony. The former is believed to be the more common. The author, adopting the conceptions of Eppinger and Hess, has studied vagotony in association with laryngospasm, asthma, and complaints of the heart and respiration. The individuals who presented this syndrome were mostly relatively youthful, often of lymphatic appearance, with slight enlargement of the lymphnodes of the neck and throat, enlarged tonsils, and at times enlarged pharyngeal tonsils, and thymus. The thyroid was somewhat enlarged in many of the female patients. There is something in the very look of vagotonia patients which suggests this condition, such as rapid change of color in the cheeks, which assume a red or blue-red tint for a brief interval; sudden outbreaks of perspiration; moist, bluish, cool hands. There are further a peculiar narrowing of the palpebral fissure, small pupils, lusterless eye, and drooping angles of the mouth. The subject swallows frequently and owing to his increased secretion of saliva must frequently wipe his lips. Not all of these symptoms are necessarily present in one subject. Further investigation shows the presence on the trunk of a very fugacious mascular eruption. A pronounced type of dermographism can be induced. As a further result of the vagus stimulation is to be noted slowing of the heart's action, often with brief intermittence. The patient feels very weak and has pain in the cardiac area. Pressure on the Adam's apple may give rise to slowing of the heart's action. To produce this (Aschner's) phenomenon the patient must have taken deep breaths, and the pressure on the larynx must be uniform. In favorable cases the pulse rate will be lowered to fifty per minute, and occasionally the heart may intermit for several seconds. When the pressure is removed and the pulse increases in frequency, there is an outbreak of sweating. The heart, however, remains slow for a variable time, and only by degrees does it regain its normal frequency. Another type of slowing of the pulse is seen when the patient lies down. When he rises the pulse bounds suddenly upward in frequency and then slowly regains its equilibrium. A third form is seen when patient squats or bends forward. The pulse in these positions may sink slowly to sixty or seventy beats. When the patient straightens up his normal rate reappears. The same slowing also occurs when the subject repeatedly flexes his knees while holding his breath. Arrhythmia from extrasystole is prone to disturb a vagotonic subject, who at the same time feels giddy and faint. This may occur while the patient is recumbent, after the slowing of the pulse. The auscultatory evidences in extrasystole show considerable variation. In order to determine whether the phenomenon is due to vagotonia or a lesion of the myocardium the atropin test is of value, as it tends to benefit the vagotonic form. Peculiarities of the respiratory rhythm also occur, expressed as laryngospasm and bronchial asthma. The bronchial asthma of young subjects is also an indication of vagotonia. The picture of the latter may be set up in some sensitive individuals by giving them pilocarpin. Entirely opposite is the condition of sympathecotonia as produced in some individuals by adrenalin. The Adam's apple stands out, the pupils are dilated, the skin and mucosæ are dry, the pulse is rapid and of high tension, the urine is abundant, and there may be glycosuria. There should be in the body a hormone, the activity of which resembles pilocarpin, the overaction of which results in vagotonia, but as yet it has not been discovered. We have, however, in atropin a natural corrective of vagotonia. The use of arsenic is also recommended as a nerve tonic.

Münchener medizinische Wochenschrift.

May 18, 1915.

Heart Disease and Warfare.—This number of the *Wochenschrift* with its military supplement contains

no less than six articles on this subject. Romberg's experience has been limited to soldiers in hospitals and private patients. Many of the latter were suffering at the time from various affections and consulted the author because of a burdensome palpitation, nocturnal oppression, or dyspnea following exertion. In such cases the heart's action was excited and accelerated, pulse small and soft, and there were functional murmurs. In not one such case was any organic lesion found. These patients were placed at rest and given sedatives and hypnotics. They responded to this treatment so well that they soon became able to rejoin their commands. This kind of cardiac mischief was to be ascribed to various febrile conditions which had originally led to invalidism, and was also associated with convalescence from any affection. In the remainder of the cases the soldiers had simply become worn out. These hearts closely simulated those which are the seat of organic mischief, and as dilatation and angina pectoris, but all signs and symptoms vanished when dilated stomachs had been remedied and omental fat removed. In but two cases was there alcoholic abuse, but overindulgence in tobacco played a notable rôle in certain patients. Neurasthenic subjects often suffered from nervous cardiac disorders as a result of war experience. Schott of Nauheim, who is now consulting physician for heart diseases in a Reserve Hospital, mentions the double implication of the circulatory and nervous systems as a consequence of warfare. Few cases of endocarditis develop in the campaigns, hence recent valvular lesions are very seldom encountered. Affections of the myocardium which were common could be attributed both to physical overexertion and psychical excitement. Hypertrophy of the left ventricle was for the most part attended by a systolic apex murmur, at times heard over the entire heart. Rapidly growing youths with narrow thorax showed under the *x*-rays the so-called drop heart and narrow aorta—this, whether they were wounded or intact, and this type of young soldier was of course very numerous. Older men, with well developed chests, however, presented the same clinical picture. The causes of the hypertrophy were to be seen in the mixture of overwork and privation, as a result of which the circulatory system becomes labile, as shown by numerous experimental tests. In excited states of the heart Schott believes in digitalis and strophanthus as well as sedatives and hypnotics. Ehret of the Marine Hospital service, who sees both soldiers and marines, finds in each arm of the service about the same percentage of cardiac affections (6 to 7). These comprise nervous palpitation, myasthenia cordis, organic affections of the myocardium, and valvular lesions. The first-named may be purely psychogenic or toxigenic (thyroidism). In direct contrast with Romberg, he finds thyreotoxic heart to be very common among the troops. Even the mildest type of this affection disqualifies for garrison duty and the graver types render the subject incapable of any military duty. Myasthenia cordis occurs in young, poorly developed subjects. Both skeleton and general musculature are subdeveloped. Physical excitement causes palpitation, and at times extrasystole. The condition appears to be psychogenic and a neurotic component may be present. The physical signs are for the most part normal. But the condition is essentially one of the heart muscle. The strain upon these weak hearts causes a condition comparable to athletic heart in the normal subject. In peace times these poorly developed youths instinctively favor themselves and the heart behavior is normal, but the soldier's life reveals the weakness of the organ. Most of these men can be patched up and placed on garrison duty. By actual disease of the myocardium the author refers chiefly to hypertrophy, and to the damage which results from acute infectious diseases, including anginas and influenza. During convalescence it is noted that these hearts are very sensitive to the action of alcohol and tobacco. Palpitation and dyspnea develop on very slight exertion. A frequent, small soft pulse is present and a permanent pulse of 120 is not uncommon. Actual chronic myocarditis is rare and due to rheumatism, syphilis, or alcohol. Aschenheim confines himself to disturbances of cardiac activity and finds that a certain constitution (unconnected with neurasthenia) is a very marked predisposing factor. The subjects are slender, delicate, somewhat excitable, lordotic, with wing-like scapulæ. Stiller's rib, deficient pileous development, small testicles, enlarged thyroid, and vague symptoms of hyperthyroidism. There is further an overdevelopment of lymphoid structures. Not all patients can be classed as having hyperthyroidism, else the genesis of the cardiac disorders would be very simple. In perhaps half of them there is only the habitus asthenicus, lymphatism, etc. The author thinks it possible, however, that disturbances of internal secretion may be at the bottom of the poor development. Drasch calls attention to the presence of cutaneous hyperesthesia in cardiac neuroses and its relation to Head's zones. Merkel in a general article states that war disorders of the heart can be treated successfully without digitalis or strophanthus, although the latter are almost universally employed.

Suppurative Arthritis in Cerebrospinal Meningitis.—Netter and Durand report the observation of this complication in 11 out of 200 cases of cerebrospinal meningitis. In most instances the larger joints were affected. In five of the cases the pus aspirated from the joints was sterile. The intraspinal injection of the antimeningococcus serum produced a speedy absorption of the pus. Suppurative arthritis of the small joints of the fingers and toes has been observed in the course of subacute meningitis with purpura in young infants.—*Presse Médicale.*

Directions for Cancer Patients.—The following are published by the New York Skin and Cancer Hospital: (1) Cancer is a serious disease which should receive constant medical care from the time it is first suspected. (2) "Cancer specialists" who advertise should be avoided. (3) Cancer is not contagious, and there is no danger of communicating the disease to others. (4) Cancer is not a disgraceful disease, and there is no reason for being ashamed of it or hiding it. (5) As soon as cancer is suspected, whether there be a lump, or sore, or other symptoms, it should be at once cared for by a competent medical man, as the earlier it is treated the more prospect there is of its being cured. (6) Anything suspected to be cancer should not be handled or squeezed, but should be kept from all irritation, as all this spreads the trouble and renders the cure more difficult. (7) When it is decided that a surgical operation is necessary this should be done completely at the earliest possible moment; delay is dangerous. (8) The proper medical treatment of cancer should never be neglected, both at the very beginning and also after an operation has been performed. (9) It is not necessary to operate on every cancer, *x*-ray and radium are often of value, and the disease may disappear and remain absent under proper dietetic and medical treatment. (10) This treatment consists in an absolutely vegetarian diet, with continuous proper medication, for a long time. (11) To get favorable results this treatment should be kept up strictly until discontinued by the physician.

Insurance Medicine.

THE GENERAL FACTORS DETERMINING MEDICAL SELECTION.

FROM "ALLGEMEINE LEBENSVERSICHERUNGSMEDIZIN," BY PROF. DR. GEORG FLORSCHÜTZ OF GOTHA.

(*Continued from Vol.* 87, p. 1082.)

Certainly beer does possess these fattening qualities, for according to the proverb "where there is a brewery there is no need for a bakery," and the absolute amount of nutritious constituents taken up with large consumption of beer, is in fact very considerable. If we proceed with the supposition that a beer drinker takes ordinarily 2 liters of beer daily, we find that this amount contains about 90 grams of carbohydrate and 14 grams protein, *i.e.*, the drinker obtains from beer of the first named one-sixth, and of the latter one-eighth of the total daily adult requirement of these substances. To this it must be added that most of the alcohol contained in the beer is oxidized, as a result of which certain constituents of the body, notably the fats, are protected from consumption, or in other words, spared. Hence the nutrient value of beer is actually to be estimated as high. Norton, however, deprives the fat man who is a beer drinker of every prospect of a long life, for to his corpulence must be added the toxic action of the alcohol, which subjects we shall later discuss more in detail.

If it is the superfluous nutriment which is responsible for the corpulence, one can judge it less harshly; but we must not forget that it is not free from danger. Why does corpulence become dangerous? Quite generally expressed, it is because it entails greater demands on the vascular system. In 57 dissections of corpulent subjects Chambers found the heart normal in but 7. Thirteen had died of dropsy, 11 of apoplexy, and 15 of chronic nephritis.

Moses, who tabulated the death material of the Victoria Life Insurance Company during the period 1899-1905, found the chief causes of death in the corpulent to be diseases of the heart and kidneys and apoplexy.

An interesting study of obesity and its significance for life insurance has been published by the Assicurarconi Generali of Trieste. It has, indeed, like the investigations of Moses, only relative value, for it is based only on the deaths and does not consider living risks. Nevertheless, aside from this, it is carried out so completely that the results merit full attention as serviceable hints. The total number of deaths was 6840, grouped according to the constitution on admission and to the later causes of death, and the following table shows in percentages which part the several constitutions—spare, medium and fat—played in the causes of death:

Causes of Death	Spare	Medium	Stout
Tuberculosis	25.7	13.1	4.1
Apoplexy	4.9	9.2	12.3
Diseases of circulatory apparatus	9.4	14.8	22.7
Pneumonia	11.7	10.3	7.7
Malignant neoplasms	6.4	8.3	7.1
Infectious diseases	5.4	4.6	4.1
Diseases of the central nervous system	10.6	9.8	6.6
Suicide	4.7	5.1	4.1
Miscellaneous	21.1	24.8	30.5

We will only refer in passing to the cumulation of tuberculosis cases in the spare, for what interests us here particularly is the rotable supermortality from diseases of the circulatory organs in the corpulent. A more intimate study of the figures shows that 18.25 per cent. of the corpulent individuals died of heart disease alone, and 8.61 per cent. of chronic nephritis—figures which confirm the statements of Moses that the principal causes of death in the corpulent are diseases of the heart and kidneys and apoplexy.

For this reason a very careful investigation of the vascular system is the most important requirement in the medical examination of the corpulent, and the chief factor in the prognosis. First, we have to deal always with the insurability of the corpulent in general, and then, when all factors seem to be favorable, with the enrollment of the individual in the group of insured which corresponds to the hazard. For the really corpulent subject is always a substandard risk. The Gotha Life Insurance Bank has found in the case of corpulent subjects that, despite the selection, the supermortality amounted to 26 per cent.

It now becomes more intelligible why life insurance places so great a value upon measurements and how difficult, though, has it been to persevere with the demand for exact body measurements—how difficult it still is at times. For the great value of body measurements is even to-day not everywhere recognized. We may leave it undecided whether the blame should rest upon the circumstance that the medical examiner does not otherwise make use of the tape, or whether in his constant bacterial-orthodox thinking, he does not lay sufficient weight upon the conception of the constitution. It is a fact that body measurements give occasion in every-day insurance practice to the most frequent delays and crossquestionings. And how little is accomplished of fundamental value in this manner? Yes, but this little may place the general status of the applicant on a mathematical basis, may place the subjective judgment of the examining physician by a quite objective conception, and thereby supply to the medical director the data required for the judgment of the individual case.

(*To be continued.*)

Questions in Insurance Application — Expert Evidence as to Existence of Disease Held Conclusive.—A question in the medical examination of an applicant for a benefit certificate asked if any member of the applicant's household was affected with consumption, or had been affected within the last two years. A negative answer was given. In an action on the certificate it was held that the question was not limited to living members of the applicant's family, but included as well members who had died within the two-year period, and hence the negative answer was falsified by proof of the death of a son of the applicant from tuberculosis within two years prior to the application. Two physicians testified that the insured died from pulmonary tuberculosis, and one of them testified that, as early as April 15, 1911, before the insured applied for the insurance in question, she was suffering from that disease, and that he made a culture which developed tuberculosis germs. It was held that the testimony of ordinary laymen that, during the time prior and subsequent to the date of the certificate, the insured was apparently well, was about the house doing her household work, etc., was insufficient to raise an issue on the question. In a disease of this character, the testimony of laymen could not be considered against testimony by reputable physicians.—O'Brien v. Brotherhood of American Yeomen, Michigan Supreme Court, 150 N. W. 130.

Book Reviews.

MECHANOTHERAPEUTICS IN GENERAL PRACTICE. By G. DE SIVIETCHOWSKI, M.D., M.R.C.S., Fellow of the Royal Society of Medicine; General Assistant, Electrical and Massage Department, King's College Hospital, London. Price, $1.50 net. New York: Paul B. Hoeber, 1914.

THE writer calls attention to the harvest reaped by the quack in the domain of mechanotherapy, because of the passive attitude of the profession, and remarks upon the consequent loss to the patients in a number of affections. This book should prove useful as a practical guide to massage in general practice, as there are a number of illustrations and clear descriptions of the various movements.

DIE ENTSTEHUNG UND BEHANDLUNG DER KARZINOME. Von Hofrat Dr. A. THEILHABER in München. Berlin: S. Karger, 1914.

HOFRAT THEILHABER enumerates as probable causes of cancer old age, climacterium, scars, blunt trauma, chronic inflammation of long duration, certain callings, alcoholism, the transmutation of benign tumors, cachetic states, psychic depression, parasitic irritations, syphilis, tuberculosis, and the hypofunction of the hematopoietic organs. He believes it extremely probable that the degeneration of the connective tissue cells and faulty blood supply are important causative factors. As prophylaxis, he recommends Bier's hyperemia, diathermy, and the treatment of old scars and of breasts after mastitis by suction. Two annual blood lettings of from 300 to 400 c.c. according to the weight of the body, are also suggested by the author. His treatment consists, of course, of extirpation of the tumor in operable cases. In hopeless cases there should be continual diathermic treatment and roentgenization, injection of extracts of thymus, spleen and uterus, and in some instances the roentgenization of the generative glands.

DER SALVARSANTOD, seine Ursache und seine Verhütung. Intravenöse oder intramuskuläre Salvarsaninjektion? Von Dr. CARL SCHINDLER, Spezialarzt für Hautkrankheiten in Berlin. Price, 4.80 Marks. Berlin: S. Karger, 1914.

THE author is an advocate of the intramuscular injections of undiluted salvarsan prepared analogously to "joha" which he tested with his former chief, Geheimrat A. Neisser. When the patient is carefully selected, the author believes intramuscular salvarsan injections to be harmless and efficacious when 40 per cent. salvarsan oil is used. Only from one to two of such injections are necessary for a cure. Invalids with grave organic, functional, or degenerative alterations should not be treated at all with such a highly concentrated arsenical preparation in Dr. Schindler's opinion.

A BIOGRAPHIC MEMORIAL OF GEORGE MCNAUGHTON, M.D. Edition limited to 200 numbered copies. Price, $2.00 net. Brooklyn, New York: Albert T. Huntington, 1914.

A BEAUTIFUL and fitting tribute indeed is here presented in memory of one who has already won a monument in the hearts of his colleagues, friends, and patients. As stated in the preface, "this brief composite biography is intended to fulfill a triple purpose—to serve as a slight recognition of the man and his public service; to uphold the objects and interests for which he strove; and to act as a memento for his friends, a convenient reference and something tangible to preserve." William Browning contributes a brief sketch of the life of George McNaughton, who was born at Mumford, Monroe County, N. Y., on July 4, 1856, and who died on March 17, 1914. He gained distinction in his chosen branch, gynecology, but he had already attained considerable success in the practice of intubation, of which he was the pioneer in Brooklyn. Dr. McNaughton was identified with every movement that made for civic betterment and the advancement of the profession. The McNaughton genealogy is discussed by J. M. Winfield, who also describes his work at the County Medical Society. Reminiscences are contributed by C. F. Barber; a Personal Appreciation is presented by A. M. Judd; an article on his Use of Sea Water in Internal Therapy is written by F. L. Crawford; his Work in Intubation and Abscess of the Throat is described by W. C. Braislin, and his Treatment of Sterility is discussed by D. S. MacNaughton. R. L. Dickinson contributes Remarks on the Death of George McNaughton, and a closing tribute is written by William Schroeder, Sr. The bibliography of McNaughton is appended. The volume is illustrated with eight full page plates showing birthplace, residence, instruments devised, etc. The cover is embellished with the plaid of the McNaughton clan. The entire volume is one that may serve as a type of memorial volumes of medical men who have gained and have earned distinction.

STUDENTS' MANUAL OF GYNECOLOGY. By JOHN OSBORN POLAK, M.Sc., M.D., F.A.C.S., Professor of Obstetrics and Gynecology, Long Island College Hospital; Professor of Obstetrics in the Dartmouth Medical School; Gynecologist to the Jewish Hospital; Consulting Gynecologist to the Bushwick, Coney Island Deaconess' and Williamsburg Hospitals, Brooklyn, and the Peoples Hospital, New York; Fellow American Gynecological Society, etc. Illustrated with 100 engravings and 9 colored plates. Price, $3.00. Philadelphia and New York: Lea & Febiger, 1915.

THE chief virtue of this book is its conciseness. Theoretical discussions are omitted, and the important facts in the pathology, symptomatology, and diagnosis of the diseases of women are presented in a form available for easy study and quick reference. The various gynecological operations are described and illustrated with clear drawings. The chapter on gynecological diagnosis is a particularly helpful one. Throughout the book one notes the rare element of originality combined with rich clinical experience and didactic skill. This is perceived in the admirable chapter on malignant tumors of the uterus in which are clearly and definitely presented the earlier and later symptoms of these tumors. An excellent colored plate accompanies this chapter. One is favorably impressed with the full and detailed directions for treatment which are given in this volume.

A TEXT-BOOK OF THE PRACTICE OF MEDICINE for Students and Practitioners. By HOBART AMORY HARE, B.Sc., M.D., Professor of Therapeutics, Materia Medica and Diagnosis in the Jefferson Medical College of Philadelphia; Physician to the Jefferson Medical College Hospital. Third Edition, Revised and Enlarged. Price, $6.00 net. Philadelphia and New York; Lea & Febiger, 1915.

ONE of the principal characteristics of Hare's Practice has been its practicality and this has been maintained in the new edition which has recently appeared. The progress in fields of medical endeavor has naturally made necessary numerous changes in this revision so that many of the sections have been practically rewritten. The work is thorough, complete, and attractively written, and should prove a very satisfactory text-book. The press work is of high grade and the text quite free from typographical error. One important one occurs on page 162, in which the dose in the Schick test reads 1/15 of a minimal lethal dose. It should of course be 1/50 of the m.l.d. for a 250 gm. guinea pig.

PRACTICAL SANITARY SCIENCE: A Handbook for the Public Health Laboratory. By DAVID SOMERVILLE, B.A., M.D., M.R.C.P., Lond.; D.P.H., Camb.; F.C.S. Assistant Professor of Hygiene and Public Health, with charge of the Laboratories of Hygienic Chemistry and Physics, University of London King's College; Examiner in Bacteriology and Chemistry, B.Sc., University of Glasgow; Examiner in D.P.H., University of Aberdeen; Medical Officer of Health, Harrow; Late Demonstrator of Physiology in the Medical School of St. Thomas's Hospital. Second edition. Price, $3.50 net. New York: William Wood & Co., 1915.

THIS little book gives a summary of the course of practical lecture demonstrations given to the Department of Public Health at King's College, London. It outlines the more important and reliable procedures, chemical, physical, and bacteriological, for the examination of water, soils, sewage, foods, alcoholic beverages, and disinfectants. Preference is given to methods which are practical and have proved generally reliable. This fact, together with the compactness of the volume, make it a most valuable handbook for the practical worker in a public health laboratory or as a textbook for the student of sanitation.

The second edition differs from the former one in the arrangement of the chapters, the addition of considerable new material, and in changes in the appendix, in which are outlined some of the less frequently used analytical operations.

Society Reports.

ASSOCIATION OF AMERICAN PHYSICIANS.

Thirtieth Annual Meeting, Held in Washington, D. C., May 11, 12, and 13, 1915.

(Special Report to the MEDICAL RECORD.)

(*Concluded from Vol. 87, p. 1007.*)

Thursday, May 13—Third Day.

Aleucemic Lymphadenosis.—Dr. T. B. FUTCHER of Baltimore reported this case and discussed the blood picture as well as the clinical course of the disease and the differential diagnosis.

The Occurrence of Sprue in the United States.—Dr. EDWARD J. WOOD of Wilmington, N. C., made a preliminary report in which he referred to practically all the published records of this disease occurring in the United States except those contracted in the tropics. He laid emphasis on the fact that the classical form of the disease was found in Porto Rico. It was shown that clinically there was a close resemblance between sprue and the so-called "pellagra sine pellagra." In both diseases there were stomatitis, painless diarrhea, decrease in the size of the liver, emaciation, and an unfavorable course. In pellagra it was shown that finally the nervous system would suffer while in sprue this was not usually the case. It was shown that there were some differences in the stools and tongue in the two diseases. Sprue might be confused with amebic dysentery. The lack of a definite chemical reaction in sprue feces was to be deplored. There was a growing belief in the relationship of sprue with some form of pancreatic insufficiency. The important point, however, was the confusion now existing in the South between sprue and pellagra. It was unwise to diagnose pellagra without the skin lesions or a definite history of such lesions.

Summary of Studies in Cortical Decomplication, with Remarks on the Nature of Certain Irritative Lesions.—Dr. E. E. SOUTHARD of Boston presented a paper which concerned itself especially with histological examinations of the cerebral and cerebellar cortices and pointed out that modern neuropathology was no longer so much interested in lesions of an extirpatory nature, but had become concerned with lesions in which complex tissues like the cerebral and cerebellar cortices became simplified in disease. The effect of tissue simplification were not necessarily paralytic since in many instances the decomplication left the fundamental mechanism intact and destroyed merely phylogenetically recent shunt mechanism. Important differences between the cerebral and cerebellar cortices in this connection were presented.

An Unusual Condition of the Blood in Primary Pernicious Anemia.—Dr. NATHAN E. BRILL of New York presented this paper. He said that splenectomy as a therapeutic measure was not founded on adequate knowledge of the conditions underlying the pathogenesis of Addisonian anemia. It was at best but a tentative measure, which might and probably would be discarded when the ultimate results of its influence became more fully known. It was utilized in the treatment of the following patient with disastrous results: A woman, 43 years old, mother of five children, patient non-syphilitic, presented all of the classical signs of a primary pernicious anemia, which began one year ago, insidiously, with gradually increasing sense of fatigue and later weakness with disturbed gastric symptoms, *e. g.*, vomiting for three weeks, eructations of gas. Six weeks before coming under observation weakness became extreme and the skin pale and light yellow; visual power markedly diminished; cardiac palpitation, tinnitus aurium and vertigo complained of; there had been no bleeding from the mucous membranes or into the skin. Six pounds were lost in weight during the year. Physical examination on admission to the hospital revealed a yellow skin, a slightly enlarged liver, a relatively larger spleen which could be felt over three ccm. below the costal border; tender tibiae and sternum and a blood picture of high color-index (1.5) and the associated conditions of the cells indicating the presence of an anemia gravis. A transfusion of blood was done, followed in thirty-six hours by a splenectomy; following this an absence of the usual bone-marrow reaction was noted, though there was a gradual physical improvement in the patient, to the extent that she could walk again without the distress which had previously existed. In five (5) weeks after her discharge from the hospital there was a furibund recurrence in her symptoms which brought her back to the hospital in a worse condition than at any previous time. The blood then showed a tremendous loss of red blood cells, an increased activation of the leuko-blastic and the erythro-blastic tissues of the bone-marrow, the circulating blood containing early myelocytic forms of cells, "myeloblasts or myelogones," of which a large number were phagocytic, containing one or more red cells in their cytoplasm, a myelocytosis of 21 per cent., all accompanied by a hemoglobinemia and hemoglobinuria with the final blood picture of an acute myeloid leukanemia (v. Leube) immediately before death. No autopsy could be obtained. The query was "What relationship, if any, had the splenectomy on this unusual activation of the bone-marrow?"

Spontaneous (Nontuberculous) Pneumothorax, Illustrated with Lantern Slides.—Dr. ELLSWORTH SMITH of St. Louis presented this communication and said that pneumothorax occurring in the course of other diseases, notably pulmonary tuberculosis, was not such an unusual event, but when developing suddenly in an individual apparently perfectly healthy it was quite a rare affection. Lantern slides were shown of the various diseases in which pneumothorax might develop, and its comparative frequency as a complication in these diseases. The writer also showed the entire number of cases of spontaneous pneumothorax reported from 1826 to date, and gave a brief analysis of these cases from the standpoints of sex, age, side affected and duration. He discussed the cause, symptoms, physical signs, recurrence, treatment and results. He said there were two main theories as to the cause: (1) Rupture of a latent tuberculous focus; (2) rupture of an emphasematous bleb.

A Study of Nephritis.—Dr. PHILIP KING BROWN of San Francisco, Cal., presented a paper which dealt with the incident of nephritis with high blood pressure among 7,000 cases entering the Southern Pacific Hospital for various reasons, in which the finding of albumin in the urine called attention to the kidney condition. He spoke of the occurrence of infections in all such cases and the influence of occupation and infection, especially syphilis.

The Occurrence of a Chronic Streptococcic Bacteriemia before and during the Development of Signs of Endocarditis.—Dr. JOHN A. OILLE, Dr. DUNCAN GRAHAM, and Dr. H. K. DETWEILER, introduced by Dr. A. McPHEDRON of Toronto, Canada, presented this communication. A non-hemolytic streptococcus had been recovered from fifteen cases of endocarditis during the last four or five months from patients in the Toronto General Hospital and in private practice by a method similar to Rosenow's. These results were obtained fairly readily by investigation such as time permitted of only a small proportion of the number of cases in which a bacteriemia was suspected. Most of these cases were very early and the signs much less marked than those of streptococcus viridans endocarditis described by Osler, Schottmüller, Libman and others. The cultures were obtained in one case before any sign of endocarditis was present and in three or four where signs were questionable, consisting of soft systolic murmur in the pulmonary area. In four cases in which opportunity has been had for watching the development of mitral regurgitation, the murmur was just heard in the second interspace to the left of the sternum. There was other evidence that a systolic murmur in the pulmonary areas was most often a transmitted mitral murmur most often heard over the left auricular appendage. A rise of temperature so slight that it would ordinarily escape observation unless it were taken systematically for a period of two or three weeks as for the early diagnosis of tuberculosis, *i.e.* reaching 99° or 99.5° at irregular times of the day, without evident cause, suggested endocarditis in most cases. However, three or four had a normal temperature when the cultures were obtained. In seven or eight cases the diagnosis was obscure and was cleared up by taking a blood culture. Tuberculosis, "neurasthenia," and chlorotic types were closely simulated. Nervous symptoms such as irritability, restlessness, hypersensitiveness, attacks of crying, mental depression, and "nervous breakdowns" were characteristic. Family incidence was a prominent feature. A recurrent tonsillitis was the commonest precursor of the disease. Only three of the cases had ever had acute rheumatic fever.

The Medical Cure of Gastric and Duodenal Ulcer by an Efficient Removal of Gastric Juice Corrosion.—Dr. Bertram W. Sippy of Chicago presented this communication. Favored by unusual clinical facilities, the writer said he had gradually evolved and established in practice a method of treating gastric and duodenal ulcers. The method was based on old and well-established facts of physiology and well-recognized principles underlying the healing of ulcer. Results of treatment were far beyond early expectations. After an experience of twelve years the writer was convinced that the vast majority of cases of gastric, and more particularly duodenal ulcer now treated surgically, could be readily and more quickly cured by the management advocated. The principle involved in the treatment advocated consists essentially in protecting the ulcer from gastric juice corrosion. This was accomplished by maintaining an accurate neutralization of all free hydrochloric acid, thus rendering the digestive action of the gastric juice inert during the entire time that food and its accompanying secretion were present in the stomach. Excessive night secretion, when present, was also controlled. The neutralization of hydrochloric acid was accomplished by frequent feedings, and the use of alkalies in carefully regulated, but adequate, quantities. Experience in all types of individuals under widely varying conditions had abundantly demonstrated that the corrosive action of the gastric juice could be thus practically annulled until healing of the ulcer was accomplished.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held April 15, 1915.

The President, Dr. Walter B. James, in the Chair.

This program was arranged by the Section on Obstetrics and Gynecology.

The Logical Interpretations of Menstrual Irregularities.—Dr. John G. Clark of Philadelphia read this paper, in which he stated that in the majority of uterine hemorrhages the source of the trouble usually lay in young individuals in the ovary, and in adults in the uterus. Both before and after menstruation there was a slight increase and then a decrease in the general metabolic activity, as shown in the respiratory rhythm, rise and fall in the bodily temperature, acceleration and then slowing of the pulse rate, and a greater followed by a smaller nitrogenous output. After the cessation of the flow there was a rapid return to normal and then a state of physiological equilibrium which obtained for about fourteen days. After this preparation for menstruation began again. Coincident changes in the glands of the endometrium occurred; immediately after menstruation the quiescent gland was slender and more or less straight; later the lining epithelium underwent active karyokinesis, gradually assuming the form of a columnar mucous cell, which elaborated more and more mucus until the maximum was reached just before the flow began. The activity of the ovary governed the menstrual flow. In making a diagnosis between benign and malignant growths the application of this cyclic law was of the greatest assistance. One might safely say that the initial symptoms of a myoma or a polypus never manifested themselves as an accidental spotting of the patient's linen unless a preceding period of increasing flow at the regular menstrual epoch had occurred, whereas exactly the reverse was true in carcinoma. A malignant growth was never governed or materially influenced in the production of symptoms by the cyclic law. All bleeding that did not occur synchronously with the physiological menses was to be viewed with grave suspicion until it had been proven to be benign; on the other hand, a regular periodicity of flow with intervals of complete freedom from even slight bleeding might be regarded with equanimity so far as the diagnosis of cancer was concerned. The author stated that, in making a diagnosis in a case of suspicious hemorrhage, if during a period of quiescence a slight degree of traumatism produced a flow of bright red blood malignant change was indicated, but if the bleeding was due to a myoma, a polyp, or an endometritis, this would rarely be the case. In order to apply the test the cervix was exposed with a bivalve or trivalve speculum, and its surface carefully cleansed with 1-1000 solution of mercury bichloride. The speculum was then slightly tilted and filled with the solution until the external os was submerged. A uterine sound was then gently passed, under direct vision (never by touch), through the clear pool in the speculum into the cavity of the uterus. The sound was gently rotated in all directions. After a complete circuit had been made it was gently withdrawn, and the external os closely observed for a short time. If a *thin* stream of bright red blood trickled into the pool of clear fluid this might be regarded as highly suspicious of malignancy. Such a case should at once be subjected to curettage and a microscopic examination made to ascertain the exact pathological condition. If the flow of blood did not occur the evidence was strongly against malignancy. This sign was to be regarded only as a contributory means of arriving at a diagnosis and was only to be employed with the technique described.

Dr. William L. Clark of Philadelphia said he had devised and practiced the desiccation method for the reduction of adventitious growths of the skin and accessible mucous membrane, and since its field of usefulness in anatomical locations of interest to the gynecologist had been proven by clinical experience, a presentation of facts concerning it might be of interest. His experience with desiccation in gynecology had been limited to neoplasms and some other lesions of the urethra labia, vagina, perineum, bladder, uterine cervix, anus, and rectum. Curatively desiccation was indicated for the following abnormalities: venereal warts, leucokeratoses, condylomata, moles, pigmentations, chancroids, angiomata, chondroma, pruritus of nervous and eczematous origin, lupus, fissures of the vagina and rectum, polypi, papillomata of the bladder, vagina, cervix, and rectum, erosions of the cervix, hemorrhoids, localized epitheliomata, and rodent ulcer. In applying heat he sought the point at which the effect was somewhat more than hyperemia and less than carbonization and this he called the desiccation point. This word was chosen because it described the effect upon the tissues, which was that of dehydration. Just enough heat was used to devitalize tissues without carbonizing them. The disadvantage of the desiccation method was the expensive and complicated apparatus. In the treatment of malignant disease the speaker had adopted a classification which he had formulated for personal guidance. First for cutaneous surfaces desiccation had been in his hands almost uniformly successful in localized epitheliomas and rodent ulcers of the skin. The destruction was carried beyond the diseased areas for some distance to insure thorough eradication. The blood and lymph channels were sealed on account of which there was less likelihood of metastasis. When a large area was involved a course of *x*-ray treatment following the desiccation was advisable. Desiccation would heal lesion that the *x*-ray alone would not heal. Localized lesions with metastases were usually unsatisfactory no matter by what method they were treated, and no claims were made for desiccation except in conjunction with radical operative measures, when the field might be desiccated after operation in suitable cases to seal blood vessels and lymph channels and to reach points that perhaps the scalpel did not reach. In some cases radium might be used with advantage in conjunction with desiccation and the Roentgen rays, but unless a sufficient quantity was available it had better not be used, as the speaker had seen many cases stimulated to rapid growth by using an insufficient quantity of radium. In localized cancer of the mucous membrane the results of desiccation compared favorably with those obtained in localized skin cancer. In absolutely inoperable cases of cancer, desiccation as a palliative measure had advantages over the curette and cautery, for the reason that a general anesthetic was unnecessary, there was less inflammatory reaction, and accessible diseased tissue was destroyed, sterilized, deodorized, and bleeding was stopped. The cervix when cancerous was peculiarly insensitive to desiccation and could usually be treated as radically as desired without even a local anesthetic. In postoperative recurrences desiccation had a field of usefulness. In accessible sarcoma if seen early desiccation was a good treatment. In advanced sarcoma the same general rule applied as in carcinoma.

Dr. John O. Polak of Brooklyn said that it seemed to him that only with a basic knowledge of the physiological and histological processes involved in uterine hemorrhages was it possible to properly interpret the clinical history and approach the subject of uterine bleeding with any rational understanding. Dr. Polak called attention to the fact that many of these hemorrhages were produced by varicosities of the broad ligament. These hemorrhages were of definite type, profuse and always attended with premenstrual and menstrual pain in each inguinal region, and there could

be found an explanation why the woman who had had, for instance, twin pregnancies or multiple pregnancies, or was of the ptosic type, was subject to excessive menstruation because of varicosities of the broad ligaments. In the hemorrhages that occurred when a woman approached the menopause, there was encountered a hyperplastic change in the tissues which surrounded the blood vessels; the blood vessels could not retract and go through the normal hemostatic process. If one kept in mind the congestion and involution attendant upon every menstrual period of the endometrial layer, one could understand how changes in the blood vessels, in the wall of the uterus, and in the endometrium were bound to produce pathological conditions. He thanked Dr. Clark for the suggestion that cancer was a corrosive process; this term made the difference between pathological, physiological, and malignant changes clear.

Dr. Lawrence W. Strong said he thought something should be said regarding the structural changes, something that would be more characteristic of the uterus itself in the so-called idiopathic hemorrhages. He was glad to hear Dr. Clark lay so much stress on the ovary, and to have him state that the structural changes were mostly conspicuous by their absence. The vessel changes were not characteristic in these hemorrhages. Dr. Schwarz who had been working with him in his laboratory had shown that in menorrhagic uteri such changes were not at all characteristic. Changes in the endometrium which had been regarded as characteristic had also been shown not to have any real causative relationship. Regarding idiopathic hemorrhages no structural changes had been demonstrated.

Dr. Robert Tilden Frank said Dr. Clark had given them a masterly presentation of his subject and that he had nothing to add or subtract on the clinical side of the subject. But when it came to an explanation of the cause of hemorrhages occurring in fibroids, idiopathic hemorrhages in the young, as well as those occurring at the climacteric, he agreed that the ovary was the trigger and the uterus the gun. But the smokeless powder had not been mentioned. He thought their attention ought to be turned to the chemical side of this subject. He had with him a few slides that would illustrate the fact that the uterus, both musculature and mucosa, with all their components, responded to chemical stimuli. Therefore the anatomical and morphological study of minutiae was love's labor lost. Slides of a menstruating mucosa and from a menorrhagia case which were thrown on the screen showed that neither was distinguishable from the other. Slides were shown of the uterus of rabbits. In each case the rabbits had been castrated, except for controls, and had been injected with potent placental and corpus luteum extracts. Depending upon the number of injections and the extracts used, varying degrees of hypertrophy had resulted in the muscle and mucosa. The time had arrived to direct their attention to the motive cause of the uterine changes. Whether fibroid or idiopathic hemorrhages, castration produced amenorrhea and involution. As soon as they understood the ovarian changes, the uterine would become clear, and minor variations in vessels, muscle, or mucosa would be of subsidiary importance.

The Technique of Applying Heat in the Treatment of Inoperable Uterine Carcinoma. — Dr. J. F. Percy of Galesburg, Ill., presented this paper in which he stated that the method which he would describe for the treatment of inoperable uterine cancer depended for its effectiveness upon the fact that carcinoma was destroyed when the mass was raised to a temperature of 113° F. or 45° C., while normal tissue cells were not affected until the temperature reached from 132 to 140° F., or 55 to 60° C. The purpose of the treatment was to secure a coagulation, and not a carbonization of the tissues involved. This "cold iron" method permitted not only a greater penetration of heat in the cancerous mass, but the rectum, bladder, and ureters were in much less danger of being injured by a degree of heat sufficient only to make the pathological tissues thoroughly hot. A practical method of determining the amount of heat necessary to inhibit further growth of a cancer mass was to grasp the mass in the hand, encased in a No. 11 rubber glove. The surgeon could tolerate a temperature of 115 to 120° F. without receiving a burn of the first degree. It took from ten to twenty minutes after the iron had been in the mass for an appreciable change in the temperature to take place even in small growths. If too great heat were used and a charcoal core formed, it was necessary to remove it with a curette. The curette should never be used before the heating iron even for the purpose of getting a specimen for diagnostic purposes. The heat sealed lymphatics and blood vessels, preventing the further dissemination of cancer and mixed infection. In applying the technique the patient was prepared as for a simultaneous abdominal and vaginal section, making a free incision and packing off the abdomen from the pelvis. The ovaries and tubes were removed and both internal iliac arteries were tied. If this was difficult then both the uterine arteries should be ligated. With the use of this low degree of heat hemorrhages were frequent and hence it was of advantage to tie off the blood supply. While the operator was exploring the abdomen to determine the extent of pelvic involvement, an assistant could dilate the vagina to the size desired for the introduction of the water-cooled speculum. The entire vaginal surface was painted with tincture of iodine or Harrington's solution. With the water-cooled speculum in place the heating iron could be applied to the malignant mass. If there was no evidence of cancer except at the uteri-cervical junction, it was wise nevertheless to pass the heating head to the fundus of the uterus. If the proximal end of the cervix had not been softened by the pathology it would be found difficult to reach the fundus unless a cautery knife was used. The best way of doing this was to use a cautery heat sufficient to cut through the cervical canal laterally and vertically. The heating head must not be removed from any involved structure until the part was so hot that it could not be held in the gloved hand. When carcinoma cells had invaded the vaginal walls the most practical method was to use the water-cooled speculum open at the top and the angular thermometer placed in the urethra. With this speculum and the heating iron lying on its bottom and raising the temperature in the urethra to 120° F., a sufficient degree of heat was obtained to kill carcinoma if it was maintained for ten minutes, and it would not destroy the sphincters or injure the caliber of the urethra. The author also described the technique where the base of the bladder was involved and where the rectal mucous membrane had been fixed by the cancer. For the production of heat the author preferred the electric current to the gas stove and cartridge shaped heating heads. The final after-treatment of these cases should be with the deep penetration method of the *x*-ray. Patients should report every six weeks for the first year. The patient before beginning treatment should be made to understand that the procedure might have to be employed several times. About 50 per cent. of the cases thus far treated required a reapplication of the heat. Practically all the patients thus far subjected to this form of treatment belonged to the utterly hopeless type so far as their treatment was concerned; the author felt convinced that a surprisingly large percentage of them could be transferred to the hopeful class by a technique not as formidable as a well-executed Wertheim operation.

Dr. Howard C. Taylor said he could not see the indication for the use of heat in cancer of the fundus uteri. In advanced cases with ascites and general abdominal metastasis the case would be obviously inoperable and the abdomen should not be opened. In another class of cases, at first believed to be operable, but in which, after the abdomen had been opened, metastases might be found in the liver, intestines, or elsewhere, although the uterus was freely movable, the removal of the uterus in order to relieve local bleeding and discharge would be safer and more effectual than the use of heat. In still another class of cases of carcinoma of the fundus uteri, if the case was found to be inoperable on account of direct extension of the growth from the uterus to the ovaries, intestines, etc., the removal of the uterus and also the use of heat would be contraindicated on account of the great risk and small benefit. The use of heat was therefore limited practically to cancer of the cervix. All appreciated the value of heat in some inoperable cases of cancer of the cervix uteri. These cases were sometimes so greatly benefited that the uterus became movable and the case became operable. Would Dr. Percy perform an operation in such cases or would he rely on the application of the heat?

Dr. Hermann J. Boldt said that after Dr. Percy had demonstrated his technique to him about a year ago he had come to the conclusion that the main feature in this method of treatment was the opening of the abdomen, thus enabling one to do more accurate and efficient work. In his opinion this was the only way in which such good results could be obtained. So far as

the difference between the application of high or low degrees of heat were concerned, from the clinical aspects he was not at all satisfied that the application of the low degree of heat was any better than the high, because, in his experience, the clinical results had been practically the same. Septic infection might be the cause of death when a low degree of heat was used. One of his cases had died only that day, eight days after cauterization. On the fourth day after the application of heat there was secondary sloughing and a vesical fistula developed which was quite large. With the application of the higher degree of heat he had had but one death caused by secondary hemorrhage. He could see no reason for believing that the application of a low degree of heat was more likely to cause bleeding than the high degree. They needed more definite details as to results.

Dr. George H. Mallett stated that he had assisted Dr. Percy at the Memorial Hospital that afternoon. With very few exceptions all of the cases of uterine cancer referred to that institution were considered inoperable and incurable. He had seen Dr. Byrne perform his galvanocautery operation in which there was difficulty in preventing injury to surrounding parts by heat radiation, and difficulty of keeping the platinum at a low temperature. Dr. Percy had overcome both of these difficulties and placed this valuable agent on a more scientific basis by his carefully worked out technique. In the cases treated this afternoon the uteri were fixed by infiltration in the cellular tissue and by masses in the parametria. With his hand on the uterus in the abdominal cavity, it was surprising to feel these masses oozing away through the application of heat in the cavity of the uterus and to observe how movable the uterus became. It was surprising that Dr. Percy did not apply this treatment to the early and operable cases for if it would kill the cancer cells at a distance of two or three inches from the heating iron, it would destroy all cancerous tissue in the uterus and the parametria as well, and thus avoid the necessity of a hysterectomy with its high mortality.

Dr. Le Roy Broun expressed the opinion that the technique of the application of heat for the treatment of uterine cancer as suggested by Dr. Percy was a decided improvement over other methods which they had previously used. In the former methods in which the abdomen was not opened, the cautery ends had been known to pass through the uterus and as a result patient died. For this reason the operator was careful, as a rule too conservative, and stopped short of the cauterization needed or of that which was possible. He believed that the low heat applied for a considerable length of time had a greater penetrating power than the previously used hotter dull red heat applied for a shorter time. The selection of the kind of inoperable cases in which this method should be used was of much importance. The value of the "cold iron" method consisted in its deep destructive penetration. On this value also rested the danger. Sloughing of the ureter or sloughing of the uterine artery with delayed hemorrhage might occur. Dr. Percy had related four such instances and the speaker knew of another, and also of several instances of delayed hemorrhage. With this knowledge the cases suitable for the Percy method of cauterization should be carefully selected in order to avoid as far as possible the likelihood of such complications. Personally, the speaker preferred to limit the choice of cases to those in which there was induration of the basis of one or both broad ligaments. When the involvement extended beyond the cervix there was a strong possibility of the effects of the effort to do thorough work involving the uterine artery and resulting in late arterial hemorrhage. Dr. Broun said he confessed that he dreaded the possibility of this late hemorrhage. The suggestion of tying off the anterior trunk of the internal iliacs as a preliminary step to the cauterization, Dr. Broun said he did not regard with favor since there were too many subsidiary vessels involved in ligating this vessel. The suggestion of tying off the uterine artery as a preliminary step he had never done, but this might be an addition. The only objection was the necessary dissection in order to separate it from the underlying ureter and the possibility of suppuration in the separated areas as a result of the subsequent deep cauterization. The Percy method seemed to him especially adapted to the nodular or ingrowing type of cervical cancer as opposed to the papillary or cauliflower type. At the Woman's Hospital they felt very grateful to Dr. Percy for having personally supervised the making of a set of his instruments for the hospital. His technique was now used throughout the hospital to the exclusion of the older red heat methods. For that class of cases in which the uterine disease extended beyond the cervix and in which he hesitated to use deep cauterization he still had some hope in the desiccating electrical treatment as carried out by Dr. William L. Clark of Philadelphia and in the effect of the deep penetration of the rays of the Coolidge tube.

Dr. Percy again emphasized what he had said in the first paragraph of his paper, viz., that it was extremely difficult to describe his technique. The extensive application of the heat that he made was difficult to appreciate from the mere verbal description. In reference to his statistics about which Dr. Taylor had inquired, Dr. Percy said he realized that this was the *crux* of the whole situation. He was not ready to publish his statistics for the reason that he was dealing with a class of patients with a condition in which the mortality was 100 per cent. All that he could say was that in this mass of hopelessness in which he had applied his technique, there were a respectable number that were alive months and years afterwards with no signs of recurrence of any sort. With increased experience in the application of his technique it became more effective and less difficult, and the results were becoming more encouraging. In the last two years an increasing number of surgeons were interesting themselves in his technique and the reports from their clinics were substantiating any claims he had made. The results in his earlier work were mostly palliative. He did not stop hemorrhage and pain and offensive discharge, but he had used a cauterizing temperature and thus failed to get the maximum penetration of heat which was the essential thing. Cancer of the fundus which had been referred to by Dr. Taylor was a rather rare condition, but he had had cases in which the utero-cervical junction alone was apparently involved. He had applied the heat and had had these cases return in one or two years with a recurrence in the body of the uterus. This was the type of case that would apparently justify a Wertheim or panhysterectomy in four or five months following his technique. Dr. Percy said he had reports of twelve cases from leading clinics in this country in which all the tissues thus removed had been worked up in serial sections and no evidence of carcinoma found. He was sure they would all agree that these twelve extensive operations were unnecessary ones. His personal objection to a Wertheim or a panhysterectomy was based on his experience with the recurrences that came to him after these operations had been performed. There was not enough tissue left in which to develop heat without too extensive destruction. If a Wertheim or a panhysterectomy were done, it should only be done after some months following the application of the heat by his technique. Dr. Percy said he was glad Dr. Boldt had emphasized the importance of opening the abdomen as an essential and valuable part of this procedure. But he could not agree with him that it made no difference whether one used a high or a low degree of heat. His experimental work absolutely settled the question in favor of the low degree of heat. The high degree of heat formed a charcoal core about ⅛ inch thick and ¾ inch in diameter, which was stiff as a piece of sewer pipe. This left the greater part of the gross mass of cancer in the pelvis uninfluenced by the heat, and in addition, prevented drainage, which was dangerous to the patient because of the excessive absorption of broken down cancer cells. This technique was the only one that did destroy the gross mass of cancer at one sitting. It left the patient to be treated for the small points of metastases that might be left by any of the many recognized methods of treatment, operative, *x*-ray, radium, or serums. More than all else, it permitted in the speaker's opinion, the acquired resistance which had slowly but insufficiently developed during the destructive process of the disease to assert itself. This could and did in many cases clear up the remote but small points of metastases not reached by the primary application of heat.

Paratyphus-A Infection in Infancy.—Lagane reports a case of this condition contracted by an eight-months'-old infant from its mother. The course of the disease was similar to that of typhoid fever. There were pronounced torpor and somnolence. There was moderate diarrhea and the spleen was not enlarged.—*Bulletin de la Société de Pédiatrie de Paris.*

MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Stated Meeting, Held March 15, 1915.

THE PRESIDENT, DR. THOMAS S. SOUTHWORTH, IN THE CHAIR.

The Relation of Arteriosclerosis to Ophthalmology, Neurology, and Surgery, from the Viewpoint of the Internist.—Dr. LOUIS F. BISHOP, in this paper, said that arteriosclerosis, the disease, was a process which, when neglected, uniformly resulted in hardening of the tissues; the arteries frequently being the tissues most conspicuously involved. The sclerosis was the lesion resulting from the disease, and not the disease itself. The manifestations of this met with in the fields of ophthalmology, neurology and surgery represented the various stages of a degeneration of arteries which the art of internal medicine had failed to control. The disease which led to these lesions consisted of a disturbance of metabolism, leading to a damage of the individual cells by particular proteins with which the cells were unable to deal with successfully, and such disturbance consisted of a sensitiveness of the cells resulting from some cause analogous to parenteral ingestion of a protein, and usually occurred at the time of some severe illness, acute poisoning, or great nervous strain. The essential treatment consisted of the discovery and removal of the offending protein, and the general management of the disease was hygienic, involving a strict diet depending on the food relations of the individual, well-regulated exercise, and appropriate medication. The programme for the evening pertained to the discussion of the end-results of a process which, having started, proceeded for perhaps five years without symptoms and a few years more with only obscure manifestations, and frequently was recognized only when the sudden occurrence of retinal, nasal, uterine or prostatic hemorrhage, of hemiplegia, or of gangrene imperatively attracted attention. The time to treat arteriosclerosis was at the beginning, but much more could be done for even terminal cases than was generally supposed. Free phlebotomy, strict diet, enforced exercise, the avoidance of improper drugs, and the use of proper drugs had often checked the process when no one could have ventured to promise such a consummation. In the course of the paper Dr. Bishop stated that there was an original observation which he had long had in mind, but had never formally submitted to the judgment of a medical society, and this concerned the gross appearance of the eye in arteriosclerosis. He remembered that several of the eminent clinicians who were his teachers had spokn of the "shininess of the eye" in what was then called chronic Bright's disease, and the supposition was that it was caused by an edema of the eye, although it was present in many cases in which no evidence whatever of edema elsewhere was observable. The conviction had grown on him that this change in the appearance of the eye in arteriosclerosis was a visible manifestation of the cellular irritation which he believed to be the cause of arteriosclerosis, and in the earlier stages of the disease he had in many instances noted that so long as the patient followed a strict regimen the appearance referred to was no longer to be seen, but just as soon as there was a recrudescence of the disease, it returned. The sensitization of the conjunctive to protein irritation of external origin under certain circumstances was well recognized, and was made use of by serologists; and he could see no reason why the cells of the conjunctive should not be sensitive to unfriendly proteins circulating in the blood.

Arteriosclerosis as Seen by the Ophthalmoscope.—Dr. WILBUR B. MARPLE, having stated that nowhere else in the body but in the retina was it possible to see the blood-vessels and study their peculiarities and changes, remarked that if the oculist were careful and appreciated the opportunity presented by persons consulting him on account of presbyopia, for investigating the patient's vascular apparatus, he would often discover the danger-signals pointing to beginning arteriosclerosis, and be in a position where he could be of the greatest possible service. He then described, with the aid of sketches taken from life, certain characteristic features of the normal fundus, mentioning that it was at the points of grossing of a vein by an artery that the first retinal abnormalities suggestive of arteriosclerosis were discovered. He next took up in turn the changes, in arteriosclerosis, in the calibre of the arteries, the "silver wire" appearance of the arterial twigs, the pathology of the changes, and the markedly irregular distribution of vascular disease in the retinal vessels; after which he cited, with extensive comments, several illustrative cases. Later on he remarked that while he thoroughly appreciated the importance of the sphygmomanometer, he was not at all sure that it was wise for the ophthalmologist to use it promiscuously, especially on account of the moral effect on the patient, who nowadays was apt to be so extremely apprehensive. He was convinced that it was far better, for the patient, to leave all sphygmomanometric investigations to his family physician or the internist to whom he should be referred. It might not be difficult for a novice to put on a sphygmomanometer and read off the blood-pressure, and the exhibition might impress some patients; but we all knew that it took all the skill of an expert internist to accurately measure and appreciate the exact significance of the systolic, diastolic and pulse pressures. Indeed, the ablest workers in this field were not at all agreed even among themselves in regard to many problems in blood-pressure. Personally, therefore (and he thought this should be the rule among ophthalmologists), he invariably referred these patients to their family physicians, or to an expert internist, to whom the matter of investigating the blood-pressure legitimately belonged.

The Field of Surgery in Arteriosclerosis.—Dr. JOSEPH B. BISSELL said the relation of surgery to arteriosclerosis was intimate and important. Recognizing this trouble as a disease of the tissues, and not merely a hardening of the arteries as such, the surgeon found himself of necessity concerned with all those processes which have a degenerative influence upon the tissues and which can be in any way controlled or altered by surgery. The arteriosclerotic variety of degeneration was met with extremely often, and it was a type differing from others in having as its characteristic a definite infiltrative or exudative change, rather than the simple chemical one of degeneration. Chronic appendicitis and chronic gall-stone conditions were almost invariably followed by arteriosclerosis. Vaughan had pointed out that bacteria cause harm, not because they are live organisms, but because they act as foreign proteins, and that when the system becomes sensitive to their particular protein they cause irritation to the cells, leading to destruction and sclerosis. Billings had frequently spoken of pyorrhea alveloris as the precursor of arteriosclerosis, and the same result seemed to be true of any chronic suppurative process. Hence it was our duty to urge correction, as far as possible, of such conditions, whether found in the mouth, gall bladder, intestinal tract, or elsewhere. In the presence of chronic bacterial growth the damage done was at first slight or even negligible, but a warning of approaching trouble might be obtained by an early examination of the fundus of the eye. If it were found that the arteriosclerotic process was impending, surgical attention should not be delayed. At various periods in the course of this the diseased conditions of the vessels might be more or less localized, and when the arterial fibrosis was circumscribed the question of mechanical exclusion of the involved area at once arose in the surgical mind. The indication for arteriovenous anastomosis was narrowing, occlusion or obstruction of the artery, with consequent ischemia of the part supplied by the distorted circulation. Carrel's feats in suturing blood-vessels in animals had been remarkably successful, but, unfortunately, as much could not be said of the same class of operations in humans. In many instances the immediate result had been satisfactory, but the outcome disappointing; no case of complete and lasting recovery having as yet been recorded. Halstead and Vaughan had reached the conclusion that there was but one indication for the application of arteriovenous anastomosis, *i.e.* in traumatic destruction of a principal artery where end-to-end union of the vessel was impossible. In patients suffering from arteriosclerosis, besides the possibility of arterial rupture when reducing a difficult dislocation or in performing that reprehensible procedure, the breaking up of an old contracted joint, the surgeon should recognize the danger, from a resulting thrombosis or embolism, in tight bandaging, as well as the likelihood of serious damage following the use of the Bier method of local hyperemia. Uusually these patients tolerated anesthesia fairly well, provided they had no marked cardiac or renal complication. The struggling caused during a badly administered anesthetic, or surgery performed under inadequate anesthe-

sia, was more dangerous than the anesthetic itself. In these cases secondary hemorrhage was an ever threatening danger, and the possibility of gangrene of amputation wound flaps, or of gangrene of the wound margins and of the failure of union in otherwise clean operations, was always present. Intestinal wounds were peculiarly unfavorably influenced by arteriosclerosis, and hemorrhages in various parts of the body from friable vascular structures were a usual symptom calling surgical attention to the disease. Among its earliest effects were various nutritional changes leading to the necessity for operative interference, and an important matter was the relation of blood-pressure to operation. It was requisite that whenever possible patients with very high pressure who were to be operated upon should be prepared by a period of preliminary treatment. In these cases surgical procedures called for great caution, and during operation the surgeon should be ever ready to heed the warning of a sharp fall in the blood-pressure. One of the most available measures in the treatment of patients suffering from high blood-pressure was judicious venesection. Even though high blood-pressure were only a symptom, and phlebotomy only a temporary expedient, in the speaker's experience this procedure was usually the cause of great and permanent relief. Venesection, when properly advised and adequately performed, undoubtedly prolonged life and gave the opportunity for other and perhaps more permanent measures to be employed in the successful treatment of this very prevalent and often fatal symptom complex known as arteriosclerosis.

Epistaxis in Arteriosclerosis.—Dr. CHARLES E. PERKINS said that although in the spontaneous nasal hemorrhages requiring treatment the bleeding might possibly come from any part of the nasal mucous membrane, a large majority of these were arterial and came from the anterior portion of the septum. Normally the vessels supplying this region were supported by the mucous membrane and covered with ciliated epithelium, but there was no part of the nasal mucous membrane so liable to erosion as this. Erosions here were as a rule not serious affairs and readily healed, either with treatment or in consequence of a change in atmospheric conditions, but with increased blood-pressure the vessels in this area, having lost their support, perhaps also part of their wall, gave way. When hemorrhage took place from one of the small arteries of the part it was sometimes startling to see how free it was. Some of these patients bore the loss of blood poorly; they were more liable to faint than other persons. In treating such cases, if we were called while bleeding was taking place, our first duty was to stop the hemorrhage. This was done by passing a cotton pledget soaked with adrenalin well into the anterior nares and, if necessary, making pressure against the septum with the finger upon the ala. Reapplication of the pledget might or might not be required, and as soon as it remained dry on removal the point from which the blood had flowed was cauterized, preferably with a bead of fused silver nitrate. If the artery were seen running up to this point, the silver bead might be applied at one or more points along its course, in order to obliterate it. The patient was then to be supplied with adrenalin and instructed how to apply the pledget and make suitable pressure. In case, as occasionally happened, the bleeding point were further back, we passed our pledgets much deeper into the nares, endeavoring to exert pressure upon and bring the adrenalin in contact with the area from which the hemorrhage came. If in this way the bleeding could not be promptly arrested, and the blood-pressure were very high, remedies should be given to reduce the latter as quickly as possible. As a last resort it might be necessary to plug the posterior nares. Although this procedure was a very easy one to carry out, and was fairly certain to arrest the hemorrhage, it was not free from danger, as the blood, under pressure was liable to flow into the middle ear, maxillary antrum, or frontal sinus, and might be the cause of suppuration in any of these cavities. As to the desirability of arresting the hemorrhage in all cases, Dr. Perkins said he had always felt it his duty to stop the bleeding as soon as he could and to prevent its recurrence. He was prepared to believe that in florid types the bleeding had done no harm, but he thought that such persons had lost all the blood required for therapeutic purposes before he saw them. In the anemic cases there could be no doubt that loss of blood was undesirable in every way.

Arteriosclerosis with Relation to the Control of Uterine Hemorrhage.—Dr. WILLIAM P. HEALY said that as to the influence of arteriosclerosis upon uterine hemorrhage, he thought we must distinguish two groups of cases; first those in which arteriosclerosis was associated with changes in the heart, liver or kidneys leading to a condition of passive congestion of the pelvic organs from obstruction to the circulation, and thus inducing uterine hemorrhage indirectly; second, those in which the sclerosis was particularly marked in the uterine vessels, without special evidence elsewhere of its presence. The arteries of the uterus were subject to the same influences tending to produce sclerosis of their walls as the other arteries of the body. Moreover, there could be no doubt that menstruation, abortion, pregnancy and inflammation of the uterus were important factors leading to the development of sclerotic changes in the uterine vessels. These cases all occurred in women who had reached or passed the menopause and in whom a persistent bleeding, either menorrhagia or metrorrhagia, took place. The hemorrhage might be severe and uncontrollable except by hysterectomy, and this operation was frequently required for its arrest and to save the patient's life. Careful clinical examination of the uterus and adnexa were negative, as also were, frequently, microscopical examination of scrapings from the uterine canal, which were not apt to show the sclerosed vessels because these did not always lie in the endometrium. On microscopical examination of the removed uterus it was found that the smaller vessels in the mucosa were increased in number, while their walls were thickened by a deposition of fibrous tissue with well-stained nuclei; and the same was true of various vessels throughout the entire substance of the uterine walls, which were thus heavier and more dense than normal, with the vessels presenting themselves prominently all over the cut surface. The clinical diagnosis of this condition was extremely uncertain, and had to be made by exclusion, after careful bimanual examination and curettage had revealed no other cause for the hemorrhage. While the common form of treatment for persistent bleeding from sclerosis of the uterine vessels had been hysterectomy, the *x*-ray was now often effective, and it might be used without fear of any harmful action on the ovaries, on account of the age of these patients. Recently Kelly and Burnam had reported very excellent results in the control of such uterine hemorrhage by means of radium. It would seem advisable, therefore, that in these cases a trial should be made of radiation, either with the *x*-ray or radium, in which the danger of serious complications was practically nil, before subjecting the patient to the risk of such a severe operation as a complete vaginal or abdominal hysterectomy, which under the best conditions was apt to have a mortality of from 2 per cent to 3 per cent.

Arteriosclerosis with Relation to Prostatic Operations.—Dr. TERRY M. TOWNSEND read this paper prepared by himself and Dr. JULIUS J. VALENTINE. It was stated that while arteriosclerosis and prostatic hypertrophy might be coincidental in the same man, clinical experience had shown that the two conditions bore no causal relation to each other. As to what conditions justify the risk entailed in surgical operative procedure, and what conditions prohibited this, in a patient with obstructive prostatic hypertrophy and arteriosclerosis, the comparatively sparse literature on the subject showed a general agreement on fundamental principles, but marked disparity in clinical experience and results. When the urologic surgeon was called upon to make the decision as to whether or not he would remove the prostate in an arteriosclerotic, it was not any one factor which outweighed another, but the large composite clinical picture of those vital systems which control life, that had to be taken into account. Specifically, the heart, kidneys, and nervous and hemic systems needed the closest study, and since the operation was one of election, there could be no excuse for the omission of careful preoperative study of these essentials. The condition relative to operative procedure of the cardiovascular system, the kidneys, the nervous system, the coagulability of the blood, precocious arteriosclerosis, and the general state of nutrition and the emunctories were then discussed, together with the operative technique and postoperative care. The conclusions reached were as follows: The clinical composite making up the picture of arteriosclerosis does not contraindicate prostaectomy. If the heart functionates moderately

well, arterial hypertension is negligible, since it is amenable to reduction by preoperative preparation or automatically declines after operation. In the presence of all cardiorenal contraindications, the two-stage prostatectomy has been, and can be frequently carried to successful termination. The utmost care must be given in the preoperative and post-operative periods, and the operative technique should be certain and rapid.

Arteriosclerosis in Its Relation to Life Insurance.—Dr. HENRY F. QUACKENBOS said that the early detection of sclerosis, as revealed by abnormally high blood-pressure, had come to be regarded as of pre-eminent importance in the examination of applicants for policies, as even more significant than the presence in the urine of a few casts or a trace of albumin, which might be only transient. In other words, life insurance examiners had begun to look not only for indications of the actual existence of cardiovascular-renal disease, but for symptoms suggesting its imminence in the future. It could not be long before inquiry would be made regarding those habits of life which accounted for the appearance of such symptoms, as the conviction existed among all investigators that hypertension is the undisputable forerunner of organic complications which will shorten the life of an apparently well man. The quality of an insurance risk had to be determined by the daily habits of an applicant, inasmuch as those habits paved the way for either a premature breakdown or a green old age. It was probably no exaggeration to ascribe 50 per cent. of all deaths of insured persons to the hypertension and sclerosis consequent upon the sedentary, unhygienic kind of life lived by a majority of our population, either directly or indirectly as the proximate cause of pneumonia, bronchitis, pulmonary edema, and allied conditions. Overeating, through the immediate action on the vascular system of irritant poisons formed in the intestines, created hypertension, and this was the unambiguous cause of arteriosclerosis which might eventuate in apoplexy or, by overtaxing the heart, induce pathological myocardial conditions or lead to renal disease. The automobile habit had stolen from our business men and well-to-do women the opportunity for exercise which a necessity for walking so freely offered, and this was thus breaking down constitutions where the remoter bicycle habit had upbuilt them. It had crept into the rural districts also, and as the dwellers there were also depriving themselves of health-giving exercise by the employment of farm machinery, they were not as good risks as formerly. The increased death-rate in this country during the past twenty years (from 27 to 38 per 10,000), which was rightly attracting the attention of life insurance companies, could not be laid to general causes, but rather to habits of living which had developed with the refinements of civilization—notably the excessive consumption of alcohol, tobacco, and proteid fare, and the lack of active exercise to oxidize the food and carry off the accumulated poisons. Dr. Rogers, chief medical director of the New York Life Insurance Company, had stated that there were numerous cases which would formerly have been regarded as normal insurable lives which were now rejected by reason of high blood-pressure, and that in his experience the underlying cause of hypertension in 50 per cent. of the cases was intestinal toxemia, and in most of the remaining 50 per cent., habitual overeating. Now as intestinal poisoning was due to erroneous diet, it was fair to assume that over and improper indulgence at table explained the abnormally high arterial tension in the majority of these applicants. In addition to the questions now appearing in the examiner's certificate, "Do you use malt or spirituous liquors in any form? Daily quantity? Do you use tobacco in any form? Daily quantity?" the speaker predicted that within a few years would be put the equally important inquiries, "What do you eat, and how much?" and, "What are your habits of exercise?" Cases of blood-pressure exceeding the probable safe limit, when kept under observation, had been found sooner or later to show albumin and casts, and likely to terminate in Bright's disease or apoplexy. It was to be remembered, however, that many cases of arteriosclerosis have a normal, or even subnormal blood-pressure. Low blood-pressure was less significant from the life insurance viewpoint, though an adult pressure under 105 was regarded as suspicious. It was interpreted as implying diminished powers of resistance, and in persons belonging to tuberculous families or living amongst unhygienic surroundings as intimating quiescent tuberculosis. The appalling strain to which human beings were subjected in our modern civilization might perhaps be evolving a stronger race, one better adapted to endure it, but a life insurance company was without prescience, and could not intelligently select from the ranks of those who were playing with fire the few who would not be burnt.

Dr. REYNOLD WEBB WILCOX said that in arteriosclerosis it was necessary to recognize the interdependence between the general condition and the local condition; the former might be slight, the latter marked. For this reason, in his book, he had designated the affection usually known as chronic interstitial nephritis as chronic arterial nephritis. In some instances the general condition, arteriosclerosis, was marked, and in others, not, and this should be kept in mind in order that the best therapeutic results might be obtained. High blood-pressure and arteriosclerosis were by no means synonymous or coextensive, and high blood-pressure was not necessarily an accompaniment of advanced life. It was quite possible to have a low blood-pressure in association with arteriosclerosis, as was shown by an investigation of 1,200 patients whose ages ranged from 66 to 98 years. Whether or not we accepted Dr. Bishop's theory of the reaction of the body cells which become sensitized against certain proteins, we would all probably follow out the dictates of our palates and appetities. Personally, he was convinced that the matter of sugar tolerance was quite as important as the sensitization of the proteins, if not more so. The sphygmomanometer must be recognized as an instrument of precision, and it bore the same relation to therapeutics as the clinical thermometer. He could not but believe that the passing of high-blood pressure as a fetish would be looked upon by the physician with considerable regret, but by the scientific internist with much satisfaction.

Dr. BEVERLEY ROBINSON said that while the case for very great consideration for high blood-pressure and hardened arteries (arteriosclerosis) had been admirably presented to-night, he felt somewhat tired of everywhere hearing about these things nowadays. Like the exaggerated call to operate in appendicitis and the furore as to the dangers of tuberculosis, was this latest obsession in the popular mind. He was one of those who greeted with enthusiasm all real advances in medical science, provided common sense and humanity governed their use and popularity; but when, in this present medical fashion, he saw the sphygmomanometer applied to the poor victim's arm in season and out of season, he felt called upon to protest. This was an instrument that must be used with skill to be of any value, and must be considered from a broad standpoint in order to obtain a proper appreciation of its findings in relation to diagnosis, prognosis, and indications for treatment. Yet too often it was applied in a haphazard way and to the same patient under such opposite conditions as to render it worse than useless. After deploring the present over-specialism in the profession, and expressing the opinion that no man should become a specialist until he had laid a secure foundation by arduous general work, the speaker referred to the matter of treatment. As to what could be done here, we could, he said, change bad habits; we could try to put a veto upon excessive eating and drinking and to get the patient to stop worrying, and we could cry a halt to overwork. We should not, however, be in too great a hurry to change radically the habits of a lifetime, though we could limit the number of drinks, cigars, and courses at meals. We could also say emphatically, "Go to bed early; take a rest. You must occasionally go on a trip and live in the open—in the woods or at the seashore, as you prefer." As to drugs, we might give them—the iodides and the nitrites—for a time, and while unpleasant or threatening symptoms prevailed; but if, after a while, blood-pressure still remained high despite all that we could do advisedly, we should then stop the drugs and regard the hardened arteries and high blood-pressure as nature's protection to the individual. Otherwise we would find a lowered heart impulse, a feeble, wavering pulse, a loss of spirits, and an introspective preoccupation which boded no good.

Dr. THEODORE K. TUTHILL said that, from clinical observation and physiological study, he was more and more inclined to accept the following five propositions as a working basis for the care and treatment of cases of arteriosclerosis: First, that arteriosclerosis

was a result of and secondary to increased blood-pressure. Second, that blood-pressure increase was due to a toxin or toxins. Third, that blood-pressure increase was a physiological process, conservative in character and necessary to conserve physiological function when toxins were present. Fourth, that blood pressure per increase *per se* called for no treatment, except rarely in the presence of a threatened crisis, and then only temporarily. Fifth, that elimination of the existing toxins, as far as possible, through the body drainage system, and correction of faulty nutrition by an adjusted dietary, constituted the best treatment. The first proposition he knew would raise the question, Why do we find arteriosclerosis associated at times with low blood-pressure? To this he would answer that when such was the case the patient had reached the secondary stage of the disease, which was characterized by low blood-pressure, and was in the greatest danger.

Dr. Richard Cole Newton, of Montclair, N. J., said he believed that all persons were more or less toxic, and that Dr. Bishop's anaphylaxis theory was correct. There was no reason why people should not keep fit, for, as Parkes had said, training was only an expression of a proper method of life. Overeating, he thought, was more responsible for general ill health than drinking wine or spirits. In the country, living conditions were more favorable than in the city. Not only was there more fresh air, but the people ate less rich food, and led a generally simpler life. Personally, he had for some years been a vegetarian, but he had now modified this practice, and felt much better off for a little meat. For most persons he thought that a certain amount of meat was desirable.

Dr. Victor A. Robertson said he had had the opportunity of seeing several cases of arteriosclerosis affecting the uterus, and in none of them was there evidence of this condition in other parts of the body. All were characterized by profuse hemorrhage, which did not yield to drug treatment, and only temporarily to curettage. In two instances it had been necessary to resort to hysterectomy and an examination of the removed organ showed marked degeneration of the muscular tissue and increase of connective tissue, in the shape of bands running through the uterine walls, while the walls of the arteries, the lumen of which was diminished, were much thickened, with the muscular coat largely replaced by connective tissue. In all the cases the uterus was found, on bimanual examination, to be moderately and symmetrically enlarged and of firmer consistency than normal, and the diagnosis had to be made by a process of exclusion.

Dr. Edward E. Cornwall said he was not in sympathy with the tendency shown by some of the speakers to belittle the importance of arteriosclerosis and of careful examination of patients for its signs and symptoms. While no doubt too much was often made of some of the latter, he thought the morbid condition in question was one which merited the gravest consideration. In speaking of this condition generally he preferred to use the term cardiovascular disease, because that of arteriosclerosis pointed to only one of the three principal pathological foci around which the clinical manifestations of the condition clustered, so to speak; the other two being chronic myocardial degeneration and chronic nephritis. Cardiovascular disease, in spite of the extent and diversity of its pathology and clinical symptoms, possessed a distinct unity, which appeared particularly in the etiology and the interrelationships of its different manifestations. Looked at broadly, the disease consisted of a wearing out, as a whole or in parts, of the great apparatus for supply to the tissues material for their metabolism and carrying away waste products. Its causation was to be found in heredity, physical and mental overstrain, and exposure to effect of poisons, namely, those of the infectious diseases, those directly introduced into the body, and those manufactured in the body itself. The general treatment of the disease was prophylactic and palliative. Those born with a cardiovascular apparatus of inferior material should early recognize the fact and live in such a manner as to subject this apparatus to less than the ordinary amount of strain and of toxemic irritation; and everyone, if he would insure himself against this disease, should take similar prophylactic measures. After the disease was established the necessity for the careful life and an "easy" diet was, of course, apparent. Probably the most effective element in the treatment was the regulation of the diet, namely, by limiting the amount of food to the actual needs of the body and by selecting articles easy of digestion, comparatively free from purins, and comparatively insusceptible to injurious fermentative and putrefactive changes in the alimentary canal.

Dr. William R. Broughton said that in his practice he observed two classes of cases. In the first the patient came for distinct symptoms of arteriosclerosis which affected the vision, such as retinal hemorrhage, and these cases were already known to the patient's physician. In the second the disease was in its incipiency, and the cases usually appeared in patients who came to have their eyes examined for glasses and who had no suspicion of any such trouble as arteriosclerosis. In these cases, where there was any suspicion of arterial change, he employed the sphygmomanometer without unnecessarily alarming the patient, and if the amount of blood-pressure appeared to confirm the diagnosis of arteriosclerosis he immediately communicated with the family physician. As almost every person over 50 had to come to the ophthalmologist to have the eyes examined for glasses, his responsibility in this matter was very great, and a routine examination of the fundus should be made.

Dr. J. J. Connellen, after referring to the unreliability of renal function tests and urea nitrogen estimation, said as regards bacterial toxins as the cause of arteriosclerosis, he was convinced that the different sugars bore an all-important relationship, and that where the different toxin-producing types of bacteria were present the best results in their elimination could be obtained by cutting out such foods as those on which they prospered. No real or scientific method of dieting could be advocated, however, until we had separated the different types of bacteria in the intestine in relationship to their growing in different sugar bases. All kidney diseases, with the exception of those due to calculus or to colon or tuberculous infection, he believed to be of toxic origin, either following an infectious disease or long-continued absorption of toxins from the intestine. He had frequently noticed in a so-called renal irritation of marked type, showing casts and albumin, with or without a few red blood-cells, that when the intestines had been thoroughly cleaned out the renal irritation ceased to exist.

Cultivation of Tissues in Vitro.—D. Thomson concludes that the tissue of various animals, including mammals and man, can be cultivated *in vitro* in a medium composed of fowl plasma one part, plus extract of chicken embryo one part. It would appear that all proliferating cells tend to elongate and throw out processes in a solid plasma medium, whereas in a fluid medium they retain their original shape and appearance. The cells of different tissues however retain certain distinguishing characteristics in the plasma medium, so that these cells evidently have some inherent points of difference from each other which remain with them regardless of the medium of environment. Complete uninjured portions of chick embryonic tissue grow to some extent *in vitro* under somatic control. The chick spleen is embryonic life at least is capable of producing red corpuscles as well as various forms of leucocytes. The extract of one species of animal tissue appears in certain cases to stimulate the growth of tissue from an animal of different species, whereas in other cases the converse seems to hold good. Extracts of certain tissues deposit stars of crystals resembling tyrosine when kept in the incubator for a period of two weeks and upwards.—*Proceedings of the Royal Society of Medicine.*

Follicular Odontoma and Three Dental Cysts.—F. St. J. Steadman reports the case of a woman aged 34, who presented when first seen five months ago, a fairly large, fluctuating, non-inflammatory swelling in the right upper premolar and molar region. There was a retained deciduous canine on this side. The permanent canine had not erupted. The skiagram showed this swelling to be apparently a follicular odontoma in connection with this unerupted tooth. No fewer than three small dental cysts were then noticed in connection with three buried stumps. A few septic teeth and stumps were removed, and the mouth allowed to heal. The odontoma was then removed in the usual way. The removal of the sac presented no difficulty. During the operation it was found that the tumor actually penetrated the bony floor of the antrum. The canine was lying behind the root of the lateral incisor. It was found necessary to remove the latter tooth in order to reach it.—*Proceedings of the Royal Society of Medicine.*

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THE BACTERIAL FLORA OF TREES AND MEN.*

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In the hope of making my subject interesting, I have taken advantage of the fact that the maker of the annual address in medicine is allowed some privileges of speculation and of order of statement that would not be desirable in strictly scientific discussion. Nevertheless, no deductions herein recorded are without bases of experimental support.

For the purpose of keeping the motif and nomenclature of this address clear and uninvolved, I wish you to consider all bacterial life as divided into spore-bearing bacilli, non-spore-bearing bacilli, cocci, and a fourth class to include yeasts, molds and the higher forms. As to this fourth class I will have very little to say to-day.

In the test tube when a spore-bearing bacillus reaches the limit of its power of vegetative growth, either because it has covered the surface of the hard medium on which it has been planted, or because it has produced a sufficient amount of toxins in liquid media to inhibit its further development, each little rod transforms itself into ovoidal or round shapes sometimes thicker than the original rods and sometimes less thick. These shapes, the spores, are the resting stage of the bacillus. They undergo no further change as they grow older except to thicken their outer capsule, and to become somewhat more resistant to such harmful influences as heat and acid. Of course as soon as they are transplanted to a favorable environment they grow again into rod shapes and multiply as rods.

In nature when the spore-bearing bacillus finds its life threatened by cold or by starvation, or by poisoning from its own secretion, it becomes a spore or two spores. When its environment is merely difficult, not threatening, the bacillus lengthens out into filaments or develops internal coccal granules.

The only spore-bearing bacilli that cause disease are the bacillus of anthrax and the bacillus of tetanus and the gas bacillus. Considerable attention has been everywhere paid to these three spore-bearing bacilli as well as to cocci and yeasts and non-spore-bearing bacilli, because they so frequently produce disease. But the harmless spore-bearing bacilli that we often drink with our milk and that we always eat with our salad, have received very scant attention indeed from medical text-books, or medical teachers, or medical research workers. The argument for neglecting them is that no disease comes from them. My argument for the need of studying them is, that all germs that cause disease come from them. That is a pretty strong statement, but I hope to be able to stagger your incredulity without bewildering you with too many technical details. And if I succeed in convincing you, or even interesting you, I will give you a new power for grappling with many of the difficult problems of medicine and hygiene.

Where Spore-Bearers Exist Alone.—For the purpose of this address it is important to learn if there are any places in nature where only spore-bearing bacilli grow. While on a mid-winter visit to a medical friend in the Adirondack Mountains some years ago, he and I debated the question, is there any bacterial life in this cold mountain air? My friend's view and the belief of all the scientific men thereabouts was that this glorious dry air, 10° to 50° below zero, was germ free. To decide the matter we made many interesting experiments during the next week with the following results:

Spore-bearing bacilli in pure cultures grew on all petri plates of agar exposed out of doors before snowfalls, during snowfalls, or after snowfalls. Spore-bearing bacilli, pure except for an occasional mould from the thicker twigs, grew from the foliage of all the evergreen trees in the mountain forest, whether near to the village or distant. Of course all the technique of getting the leaves was as careful as alcohol lamps, sterile jars, and freshly flamed instruments could make it.

I have repeatedly exposed agar plates to outdoor air in New Haven in winter and in summer. After rain storms in summer and after snow storms in winter, and sometimes during snow storms in winter, the incubated plates have yielded only columns of spore-bearing bacilli. At all other times outdoors, and at all times in-doors, the colonies of spore-bearing bacilli have been mixed with colonies of various kinds of cocci, non-spore bearing bacilli, and moulds. Plantings of blades of grass have invariably given me only pure cultures of spore-bearing bacilli, provided the blades were secured a few yards from the road.

At my request, Dr. P. M. Carrington of the United States Public Health Service, sent to me from Fort Stanton, New Mexico, a splendid assortment of the foliage of the grasses and stunted trees that grow with some difficulty on the dry plateau on which the national reservation is situated. The collection included specimens of alfalfa, loco-weed, scrub oak, cedar, salt-grass, blue-grass, blue gramma-grass, cottonwood and holly. The specimens were gathered with sterile instruments and expressed to me in sterile sealed tubes. From all of the grasses and foliage, only spore-bearing bacilli of various kinds grew. From the roots of several of the grasses to which bits of soil adhered, colonies

*Presidential Address to the Connecticut State Medical Society; delivered at the annual meeting in Hartford, May 20, 1915.

of cocci grew in greater numbers than colonies of spore bacilli. Plantings of various kinds of sea grasses growing on the shores of both sides of Long Island Sound, gave only spore-bearing bacilli if the specimens were gathered from clean rocks or sand, and gave admixtures of coccal colonies if the specimens came from plants that were muddied or that were submerged at high tide. Some beautiful specimens, gathered on the Long Island shore at a spot where they grew always under water on a clean white beach, gave only pure cultures of spore-bearing bacilli.

Where Spore-Bearing Bacilli Are Not Found.—For the purpose of my argument it is also important to know whether there are places in nature entirely free of spore-bearing bacilli. I intend to claim now that there are such places. Of course, I admit immediately that in most places of the earth there is a mixture of spore-bearing bacilli and the other forms of bacterial life. These mixtures occur in the soil, in water, in all decaying vegetable matter, in milk and other exposed albuminous or sweet fluids, in street dust and in house dust.

Where, then, are they not found? During the past twenty years I have examined, microscopically, many thousand specimens of human sputum. Except in the cases of a few patients who were sleeping out of doors among pines and firs in the coldest week of an Adirondack winter, I have never found spores in a specimen of sputum. Strange to say—and important to note—in one batch of specimens raised by these pine-wood patients after the coldest night of the year, when the temperature had been between 40 and 50 deg. below zero, I was able to grow from two specimens, a spore-bearing bacillus of the same general character as the spore-bearing bacillus that grew from the green needles on the neighboring trees. And, occasionally, in cases of chronic bronchitis I have grown from the sputum a large yeastoid bacillus, having many of the cultural characteristics of *Bacillus anthracis*. I have never seen a case of "wool sorter's disease." Of course, in that disease, *Bacillus anthracis* is found in the air passages. But with these exceptions, I have never seen a spore in human sputum, tuberculous or not, and, in spite of many hundreds of cultures made from all kinds of human sputum, I have never been able to grow from sputum spore-bearing bacilli in any kind of culture media, solid or fluid.

My experience, therefore, and it has been considerable, seems to justify me in saying that spore-bearing bacilli are not found in the healthy human air passages, and only very, very exceptionally found in diseased air passages.

No Spore-Bearing Bacilli on Healthy Human Skin.—During the last fifteen years I have had occasion to make bacterial cultures from various parts of the body, from all sorts of people. I have never been able to find a spore-bearing bacillus on the surface of the skin nor to grow any spore-bearers from the skin, from cerumen, from smegma, from the oral or nasal mucous membrane, nor—and I say this with hesitation—nor, from the human hair. In the food tract, however, the spore-bearers persist, and they can be easily grown from the contents of the bowels.

The facility with which cultures of cocci can be made from the skin and the mucous membranes of the upper air passages, and from sputum and from purulent discharges of all kinds, makes this absence of all spore-bearing bacilli from the human skin worthy of attention. Certainly every wind that blows, whether dust-laden or not, sprinkles the human skin with spore-bearing bacilli. What happens to these hardiest of bacteria that are continually deposited on the human skin? Of course, bacterial forms, other than cocci, are found on the human skin and in human sputum in health and in disease, but even they fit readily into the theory that they came originally from the spore-bearing bacilli. These are the diphtheroid and the acid-fast bacilli that are found in smegma and cerumen, in the accumulated oily sweat of arm-pits and groins, and in ozenal crusts. They are evidently transition forms; they do not preserve their acid-fast character, and frequently not their bacillary form on subculture. Very instructive also are the bacteria I have found in severe cases of chronic psoriasis. Some of them were perfectly acid-fast and resembled thick granular tubercle bacilli, but like some of the growths in smegma, they varied in acid resistance. Some of the rods had none at all, and mixed with them were cocci of the same size and staining as the coccal granules in the bacilli. Attempts at culturing these psoriasis bacteria resulted only in growths of cocci.

Now it was only at last year's meeting of this society that I exhibited pure cultures of acid-fast bacilli simulating tubercle bacilli, that I developed from old acid-fast spores of the hay bacillus—*Bacillus subtilis*. And in the hair the bacteria that I have found have been diphtheroid bacilli and cocci, sometimes in short chains.

Of course, I don't even insinuate that the partly acid-fast bacilli cause psoriasis any more than I would claim that smegma bacilli cause smegma, or that the acid-fasts of the oily secretion of an axilla caused the oily secretion. The simple explanation is that the cells of the skin, though increased in number, were so weakened with disease that they could not finish the breaking up of the bacilli or their spores, and the bacilli and spores therefore grew on the skin in this transitional form.

That the smegma bacillus may have an importance not usually ascribed to it, I have indicated in a little paper published by the *Lancet* in November, 1913, in which I told of a case of pulmonary tuberculosis following an infection by smegma bacilli. The histories of women patients at the State tuberculosis sanatoria reveal a surprisingly large number of cases of consumption, whose first symptoms were in the uterus, tubes, or ovaries.

I have noted that it is with hesitation that I speak of the human hair as being free from spore-bearing bacilli. I can only say that such has been the result of my experiments, but my experiments have been too few and have been mostly with tuberculous patients, and I do not feel that I have the same right to speak with certainty on this matter as I have concerning the flora of the air passages and the skin. But even if further experiment only shows that very rarely are spore-bearing bacilli found in the hair, what a tremendous digesting or transforming power the hair must have! And the cells of the intact human skin, and the mucous membrane of the air passages, do they digest or transform the spore-bearing bacilli? Or are the cocci that abound on skin the result of an action similar to Pfeiffer's reaction in which cholera vibrios and typhoid bacilli are transformed into coccal forms in the peritoneal fluid of injected guinea pigs?

Can Bacteria Change Form?—Because this is an annual address and is therefore protected from the critical discussion that perhaps many of my hearers feel it deserves, I will abstain from going deeply into this fascinating subject of the varying morphology of bacteria. But at least I may refer to my papers on this subject before the International Tuberculosis Conferences of Philadelphia, Brussels, (MEDICAL RECORD, Nov. 12, 1910), and Berlin (MEDICAL RECORD, Dec. 27, 1913), in which I tell (1) of breaking up spores of the subtilis into cocci by culturing them in various strengths of salt water, and (2) of forcing even tubercle bacilli to elongate, become granular, and finally extrude these granules as culturable cocci.

I must be permitted also to refer to Much's demonstration of a coccal prebacillary form of the tubercle bacillus, to Noguchi's making bacillus bifidus alternately spore-bearing and non-spore-bearing by changing its culturable environment. Of course, it is very remarkable to note the fixed characters that so many of the bacterial cultures in our laboratories preserve, and it is pleasant and restful to think that in nature they also always retain these characters, but the conditions in the laboratory test tube, and the conditions in nature are widely different. In the test tube the bacillus grows within a carefully regulated temperature range on a specially favored medium from which all other bacterial life has been rigidly excluded. In nature, it is needless to say, these conditions are impossible to find. Every breeze that blows makes a hopeless mixing of the bacterial forms within its reach, and changes the gaseous environment even of those forms that it does not move.

Is the Subject Important?—Perhaps you feel like asking where does all this lead to? What difference does it make to the Connecticut Medical Society whether or not the harmless spore-bearing bacillus is the only form of bacterial life in the clean places of the earth? What difference does it make to us that there are to be found no innocent spore-bearing bacilli on our skin or in our lungs? What difference does it make to us whether the spore-bearing bacilli that we inhale or that fall on our skin, die of fright and melt away, or are broken up into cocci by our defensive epithelium? What difference does it make to us whether smegma bacilli come from *Bacillus subtilis* or not; or whether smegma bacilli may become pathogenic, and after some period of incubation in the cells of the human being, acquire the power to cause tuberculosis in the lungs or elsewhere?

Well, you will find your own answer to some of these questions if you take stock for a moment of what your present bacterial faith is. Is it not this? "The unicellular vegetable organisms called bacteria consist of many thousands of species, some harmless to man and some harmful. These species, like the species of fish that swim in the sea, are distinct in character and origin. The staphylococcus must have come from another staphylococcus, the streptococcus from another streptococcus, the diphtheria bacillus from another diphtheria bacillus, the plague bacillus from another plague bacillus, the tubercle bacillus from another tubercle bacillus, and so on to the end."

It is on this conception of the origin of bacteria that all modern hygienic efforts are based. It is because of this conception of bacterial life that so many enthusiastic tuberculosis workers promise, by segregation, to rid their communities of the disease within a specified number of years, sometimes ten, sometimes fifty. But what becomes of your old faith if the innocent *Bacillus subtilis* may on greasy human skin become the harmless smegma bacillus, and if the harmless smegma bacillus may learn to live in human cells and later to destroy them and cause tuberculosis?

How false is the hope you give to the public about eradicating tuberculosis if you bend all your energies and theirs toward isolating the sick. Of course, the most stupid fruit dealer knows that he must remove the spoiled apples in a barrel in order to save the others. But the real apple problem, as our Mr. Hale and the other scientific orcharists have shown, is to learn how to grow and market all our apples sound.

Ten years ago when I began to claim that by changing the degree of saltiness or sweetness of culture media I could profoundly alter the characteristics of various bacteria, it was difficult to get a hearing, but now no such difficulty is encountered. The general principle is accepted and forms the incentive of research work everywhere. To-day, however, I want to keep your attention fixed on conditions that exist in nature, not on those of the laboratory. And to return to the problem of the disappearance of spore-bearing bacilli from the human skin, it ought in fairness to be said that the text-book explanation of this disappearance would be that as the spore-bearing bacilli did not find a suitable environment on the skin or in the throat or lungs, they died promptly and vanished. This explanation will not hold because spore-bearing bacilli are the most resistant germs of which we have knowledge, and because if they did die, they could not vanish unless you attribute a tremendous digestive power to the superficial epithelial cells. And if you concede such a faculty to these cells, you make simple the other explanation that these cells dissolve the shell of the spore-bearing bacilli and release as cocci their contained vital granules.

If this possibility be granted, it makes doubly interesting the recent researches showing that tuberculosis is a family disease. The tubercle bacillus is very sensitive to its environment. I have some strains that formerly grew well on glycerin-agar and on blood serum but after growing luxuriantly for one or more years on glycerin-broth-potato, they cannot now be induced to grow in their former favorite media of glycerin-agar or blood serum. It is easy to understand, therefore, that the tubercle bacilli that have been evolved from smegma bacilli in a father or mother after long struggles with the weakening lytic power of that father's or mother's cells, would be much more dangerous to the children of that father or mother, than to the children of any other father or mother, even though living in the same intimacy.

Such a theory would also explain the surprising immunity of so many husbands and wives of consumptives. At the New England Conference on Tuberculosis last October I asked whether any of the distinguished authorities present knew of a case in which they had been convinced from personal investigation that a negro man or woman had taken tuberculosis from a white man or woman; or of a case of a white man or woman that had taken tuberculosis from a negro man or woman; or of a case in which a parent had taken tuberculosis from its young child. There was considerable surprise at the asking of the question, but there were no

affirmative answers. I don't say that such cases may not occur, but I know of none and I think they must be very rare.

The Origin of the Pneumococcus.—Let us go back to the always-present cocci of the skin and air passages: if they are derived from the harmless spore-bearing bacilli of the air and leaves, is it not easy to understand why they are harmless on the intact skin, but become harmful when they have lived for a few generations, or seventy-two hours, in the broken cells and effused blood of an injured arm or leg? And does not this conception afford a new and inviting lead into the mysterious problem of pneumonia—traumatic pneumonia, epidemic pneumonia, and tuberculous pneumonia? For what is the cause of pneumonia? It's usually a coccus that is found frequently in the mouth vegetating harmlessly, but that from the beginning to the end of cold weather is our most dangerous foe.

In warm weather, the atmospheric conditions are so favorable that the spore-bearing bacillus grows readily in nature in its bacillary form, and when taken into the air passages, it is easily and quickly broken into its coccal granules. These resulting cocci inherit from their mother rod only a very thin shell which is easily dissolved by the cells and fluids of the air passages. They are incapable of penetrating even the weakest epithelium. In summer men have injuries to the chest; they get chilled in the water of the river or ocean, but unless they are very old or have tuberculosis, they seldom have pneumonia.

Now what happens in winter in the pneumonia months? The spore-bearing bacilli of the street dust and even of the bare trees have long ago lost their vegetative bacillary form and have all turned to spores and the capsules of these spores have become thicker and more resistant and often acid-fast. When the snow is on them, no matter how cold the weather is, there is little pneumonia in the community, but if the streets and the fields are bare and the weather cold, and the winds high, in other words, if it is a green Christmas, the hardy spores of subtilis or some of its kindred spore-bearers are inhaled with every breath by young and old. The cells and secretions of the air passages break up the spores as they did the rods in the summer, but the resulting cocci inherit now a thick capsule like the shell of the tubercle bacillus, and this is not easily dissolved even by the most vigorous epithelium. And in the weak and the aged and even in the young and strong who have by exposure, or by over-eating, or over-drinking, or excesses of any kind, caused a little congestion of the blood vessels of the air passages, these capsuled cocci gain access to the circulation and in a few hours there is another case of pneumonia.

In tuberculous pneumonia the development of the acute process may be explained in the same way except that the pneumococcus could come from the disintegrating tubercle bacillus. A few winters ago I had a very severe epidemic of pneumonia in the Home for the Aged in New Haven. Every day for a couple of weeks, on the women's side of the institution, one or two new cases of pneumonia broke out. And the cases were very severe. And all this while there were no cases of pneumonia on the men's side of the institution. At about the tenth day, I discovered that one fussy old lady who coughed but said she was not sick, had a chronic tuberculous process of the lungs. It was against the rule of the institution to harbor tuberculous patients. She was isolated and, after a few days, sent home. Not another case of pneumonia occurred. We found then that all the first cases were the women who were her chums, or who sat with her at table, or who slept beside her in the dormitory. Her sputum injected into a rabbit killed it promptly and filled its blood with pneumococci. She herself died in a few weeks rather suddenly.

A Tree and a Man.—In conclusion, in order to visualize quickly some of the points I have tried to make in this address, imagine what would happen to a young germ-free man and a young germ-free tree suddenly placed on the germ-free soil of a mountain top. The winds from the neighboring mountains or valleys would sprinkle both the man and the tree with spore-bearing bacilli. On the tree these spore-bearing bacilli would continue to grow as spore-bearing bacilli. On the skin of the man they would be promptly changed to cocci. Both tree and man would thrive. The leaves that fell to the ground would die. The spore-bearing bacilli would at first become spores. As the leaves accumulated the tendency to spore formation would slacken and soon, in the moist center of the heaps of leaves, only granular, non-spore-bearing bacilli would be found. As the leaves were ground into the soil, and the conflict between the tendency to spore formation and the tendency to normal vegetation became acute, the leaves would give off to the soil various kinds of cocci, and in places where the soggy earth covered some of the leaves and prevented access of air, some of the bacilli would be found that grew as rods, but with unripe spores at one end. These would be dangerous for the man for they would be the bacilli of tetanus. But like all the other derivatives of the original spore-bearing bacilli, they would be of benefit to the soil of the mountain top.

On the man the coccal forms would help in the exfoliation of the dead cells of his skin and mucous surfaces. They would pass into his food tract, produce acid, and assist in breaking up difficult food in his intestines. If the young man took no care to remove from his skin the matter that gathered there as the result of perspiration, there would appear in many parts of his skin, particularly on those parts where the exudation was heaviest and most oily, in addition to the always-present cocci, many short granular rods of which a certain proportion would be acid-fast, and would look like tubercle bacilli.

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THE AUTONOMOUS NERVOUS SYSTEM AND THE GASTROENTERIC FUNCTIONS.

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Whereas a schematization of autonomic nervous phenomena may beg for justification in the strictest physiological and pharmacological sense, an attempt toward such seems warranted in the light of recent developments. Common observation and experience amply teach that certain influences are at work producing fairly well-defined groups of gastric diseases. As in other special fields, gastroenteric cases follow certain tendencies among given peoples or communities, and that these tendencies are shaped by causes more or less inherent for these people, there can be no further doubt. There is sufficient clinical evidence to justify this assumption. These tendencies

deal with the fundamental etiological relationship of a great majority of our common dyspeptic disturbances. In the past, gastrological experiment and observation have dealt largely with final products. This concentration of attentive energy at one end of the line has resulted in a false etiological perspective, in that it has imposed undue emphasis upon a single phase of the whole subject. It has led to an enhancement of values of local conditions, oftentimes undue exaggeration of immediate defects, which, could they have been viewed in the light of an illuminating whole, would never have occurred. In this respect, gastrological science has suffered with all other newly developed fields. Had a proper appreciation of this entire department in its broadest biological aspects been possible earlier, many of the eccentricities of conception or superfluous manipulation would never have occurred. Any effort, then, however crude, which offers for its objective a philosophical reconstruction of this subject, should be beneficial, even if it is necessary for the accomplishment of such purpose to resort to a certain amount of strictly physiological and pharmacological liberal interpretation. Sufficient evidence has been produced to show that the autonomous nervous system plays a most important rôle, not only in inducing and instituting local gastroenteric functional defect, but also in controlling and shaping the course of such defect up to the point of profound organic change. Hence, it becomes almost imperative that a practical working knowledge of the anatomy, physiology, and pharmacology of this system should form part of the equipment of every intelligent gastrologist, not in the sense of a satisfying theoretical interest, but as an integral element in customary methodological practice.

For this purpose a certain anatomical visualization is not only desirable, but essential. Broadly stated, the anatomical plan of the autonomous nervous system is simpler than that of its antagonist, the sympathetic proper. It is demonstrably more intimately connected with the cerebrospinal system, its centers in the latter are more sharply defined, the course of its fibers more direct and continuous. Not only are the centers of the sympathetic proper in the cerebrospinal system still matters of speculation, but the course of the fibers themselves forms such a complicated network and their ending in the viscera is still so indefinite, that animal experimentation is forced to theorizing in regard to the results obtained. The interruption of the course of the fibers from central station to terminal station by two sets of ganglia further complicates the interpretation of the effects of stimulation, rendering them inconclusive in many instances. The autonomous system presents fewer difficulties in this regard. Here the centers in the cerebrospinal system are more clearly defined, the course of the fibers follows that of the latter, and no interruption in this course obscures the results obtained by the various tests. In this system the stations are located at the ends of the line, that is, in the central nervous system and in or near the viscera supplied. It is for this reason that experimental work has yielded more satisfactory results and given a much clearer conception of the condition known as vagotonia than corresponding work done upon the sympathetic proper. Whereas vagotonia appears to be justified as a clinical entity, sympathicotonia can only be regarded as highly probable by deduction. As interest in the present discussion is confined mainly to the gastrointestinal tract, only that portion of the autonomous system will be given which deals directly with the digestive functions.

The central stations for the autonomous system are located at the extreme ends of the spinal cord, those at the upper end being located in the floors of the third and fourth ventricles, and those at the lower end in the lumbosacral segment of the cord. From these centers the fibers pass by comparatively few routes to the terminal stations in or near the organs served. In the case of the digestive tract these are represented by the plexuses of Auerbach and Meissner, which latter have been dignified by Langley into a separate system, called the enteric system on account of their more or less well established autonomy. Hence, impulses originating in the central stations pass by direct routes to the organs and their effects upon these organs will depend upon the inherent receptivity of these organs or the plexuses located immediately within their structures. This is a matter of some practical importance, as will be seen later.

Practical gastroenterology is interested mainly in those nerves supplying the alimentary tract, those to the salivary glands, those to esophagus, stomach, and small intestines, and those to the colon and rectum. The salivary glands are served by the chorda tympani and autonomous fibers accompanying the facial and glossopharyngeal nerves. The chorda tympani arises in the medulla, close to the vagus center, and supplies the submaxillary and sublingual glands, passing by way of the facial and lingual nerves. It also regulates the vasodilator structures of the oral cavity. The parotid gland is supplied by autonomous fibers accompanying the auriculotemporal branch of the fifth nerve through Jacobson's nerve into the glossopharyngeal nerve. These fibers, dilator in effect, further supply the mucous membrane of the nose and pharynx.

The second and principal pair of autonomous nerves comprises the vagus system. They arise in their known centers in the medulla and supply the lower esophagus, stomach, with sphincters, small intestines, pancreas and liver with ducts, and kidneys. The vast amount of experimental work done upon this system with regard to gastrointestinal secretion and motility has served well to inculcate this as a universal conception. Its relation to these functions is fully described in all textbooks. On account of the vastness of the territory covered and the intricacy of interorganic connection, the possibility for reflex phenomena are enormous, and in this regard it should be intimately understood. For this purpose, it is pointed out and emphasized that the centers for the chorda, tympani, facialis, glossopharyngeal, and spinal accessory nerves are closely related to those of the vagus system in the grey matter beneath the aqueduct of Sylvius where it enlarges to form the third ventricle and in the floor of the fourth ventricle. From these closely associated origins the three nerves, glossopharyngeal, spinal accessory, and vagus, pass through the jugular foramen, to be distributed to the various structures. In passing through this opening the vagus presents an enlargement called the root ganglion. This ganglion receives fibers from the accessory portion of the spinal accessory and from the glossopharyngeal nerves, and is connected with the facial and superior cervical sympathetic ganglion by means of an ascending filament. Immediately after emerging from the jugular foramen the vagus presents another ganglion, the trunk ganglion, which receives filaments from the hypoglossal nerve

and the superior cervical ganglion. From here on the fibers of the vagus pursue a comparatively uninterrupted course to the viscera. On account of the possibility for reflex, certain of these fibers possess special interest for the gastrologist. These are the cardiac and pulmonary and gastric fibers. Reference need only be made to the frequency of dyspeptic asthma, cardiac irregularities, and the occasional attacks of so-called acute indigestion with fatal termination. The right vagus supplies the posterior portion of the esophagus, the posterior surface of the stomach, and joins with the cardiac plexus of the sympathetic proper. The left vagus supplies the anterior portion of the esophagus, the anterior surface of the stomach with its lesser curvature, and joins with the hepatic sympathetic plexus. The final stations for the vagus lie in the viscera themselves. Here the fibers are split into those going to the serosa, forming a network upon its surface and those penetrating the structures to terminate in the plexus of Auerbach and Meissner. The influence of the vagus system decreases from oral cavity downward. In the lower abdomen its functions are taken over by the pelvic nerve. This arises in the sacral segment of the spinal cord, passes without interruption to the pelvic ganglion, from which it supplies the colon, sigmoid flexure, rectum, and anus.

This comparatively simple anatomical plan of the autonomous system renders its visualization for practical purposes fairly clear. It is possible to carry the picture in mind without special effort of memory or imagination. There is a possible grouping which may be convenient, namely, that of chorda tympani and glossopharyngeals for the oral structures, vagi for the alimentary tract from pharynx to colon, pelvic nerves for the lower abdominal viscera. The vago-glossopharyngeal-spinal accessory anastomotic complex at the jugular foramen is specially important. Not a day's work passes in gastrology but signs or symptoms of reflex involvement of this network of fibers present themselves, the only explanation for which may be found in the interplay made possible at this point. With the knowledge to hand impulses passing between the digestive organs and other structures may be traced with a fair degree of accuracy. Many obscure phenomena may be made to fit into the general scheme of a given case.

It must be remembered that such schematization as here presented rests entirely upon the anatomical conceptions of Langley. That these do not entirely agree with the pharmacological conceptions of Eppinger and Hess or Heubner is well known. Whichever may prove the correct ones in the course of time, there are sufficient observational data to warrant the assumption of a definite delimitation between autonomous and sympathetic systems, which can be employed for very practical purposes and which should be regarded as an important part of gastrological teaching.

The physiological effect of excessive autonomous control is manifested in innumerable signs and symptoms encountered in ordinary clinical work. Were it possible to have a condition in which this system, unopposed by sympathetic counteraction, gained complete mastery of function, the resulting activity would pass far beyond the necessities for life. With regard to the digestive tract, this excess would be apparent from mouth to anal ring. Whereas the sympathetic system proper is the great inhibitor, the autonomous system constitutes the general exciter of all the processes relied upon for nutritional reduction. In short, there would result universal hypersecretion, hypermotility, and hypersensitiveness. Practically, these conditions may present any modification as to regularity, continuity, or periodicity, but the principle is the same in all. Beginning with the mouth, every salivary gland would produce an excess of secretion, evidenced clinically by salivation, with or without ptyalin activity and easily influenced by sight, odor, or touch of food. There would further be present an irritability of the pharynx with tendency to excessive gag reflex and nausea, faucial hyperesthesia with constriction, spasm, and globus. The esophagus would exhibit a condition of resistance to passage of food or the tube, with sensations of tension and pressure behind the sternum. The cardiac orifice of the stomach would be in a state of continuous or remittent spasm resulting in obstruction with esophageal dilatation, deceptive sensation of fictitious gas accumulation in stomach, with difficult eructation and danger of acquired aërophagic habit, and attacks of acute cardialgia. The clinical possibilities of the stomach itself loom large. With the enforced excess of acid they would include the whole range of the variously described pathological, hypersecretory states, permanent, temporary, periodic, capricious, alimentary, or larvated, the specific nature of each being determined by fortuitous circumstances, either local or general, existent at the time. There would exist the same possibility for diversity in the motor sphere, including simple hypermotility, either direct or reverse, tonic contractions exhibited as cardiospasm, gastrospasm, or pylorospasm, insufficient relaxation after food intake, producing sensations of fictitious fullness, painful contractions due to premature emptiness. The etiological importance of these activities for later organic defects is obvious. Especially is this true of the continuous or frequent spasm of the sphincters. Such spasm may extend to the gall ducts simulating hepatic colic or resulting in temporary retentive icterus.

Both the secretory and motor activity of the small intestines would be increased. This would result in painful hyperperistalsis, intestinal unrest with excessive borborygmus, visceral hyperemia with depressing postprandial drowsiness, serous diarrhea, occurring at times with great suddenness, usually however, immediately after meals or in the early morning. The signs of autonomous hyperactivity are especially marked in the large intestine. As secretory disturbances there would be intense antiperistalsis in the ascending colon, diarrhea, with rapid fermentation, mucous colitis. The motor activities are manifested principally in the descending colon and rectum. There would be a frequent desire for stool, rectal pressure, pencil formation of excreta or small, unsatisfactory movements, spastic constipation, proctospasm. As the vasomotor structures of the abdominal viscera are under the control of the sympathetic proper, any disturbances in this field accredited to autonomic influence, must be largely relative. Here autonomic hyperstimulation postulates sympathetic depression. Hence, if sympathetic hyperactivity produces vasoconstriction, vagotonus must cause the opposite effect or vasodilatation, and we should have all the various evidences of abdominal plethora, hemorrhoidal fullness, portal and hepatic congestion, etc.

Not the least interesting or important feature in connection with autonomic hyperactivity is the facility with which the reflex interplay between the various abdominal organs is rendered possible. From a practical standpoint, a knowledge of this action

often becomes a matter of serious diagnostic concern. The comparatively simple anatomical plan of the autonomous system lends itself very readily to such organic interaction, and renders such action more readily comprehensible. The secretory function of the stomach appears to be especially prone to this influence. Distant abnormal states of the colon, genitals, appendix, hepatic or renal calculi, ptoses of all degrees and kinds reflect themselves in secretory gastric disturbances, the immediate nature of which depends upon local receptivity, susceptibility, or defect. That in the majority of cases there should be exhibited an excess of functional activity, resulting in the various hyperacidities, may be due in large measure to the guiding autonomous control itself. Given, a normal stomach, any reflex delivered through the vagus must result in excess of functional, secretory activity, not only upon strictly anatomical or physiological grounds, but also, it may be due to a general biological, inherent tendency. This latter offers a problem for considerable interesting speculation and deduction, which is also not without a certain practical bearing. The acid secretion of the stomach is in the last biological analysis—a defensive and self-sustaining reaction resulting from the evolutionary development of the original cell. The original cell digested its enemies. Hence, the oxyntic cell unit in the gastric mucosa responds to irritation by secretion of its digestive defence reagent, hydrochloric acid. Zoology offers many examples of such defensive secretions. Being a product of cell decomposition, these secretions are usually self limiting in the sense that such decomposition products react as poisons upon the producing cells themselves. The yeast plant will produce alcohol only up to a certain concentration. The same principle holds true for the gastric secretion, except that here the coexistent hypermotility, also of autonomous origin, sweeps away the excess acid, and it is not until an interfering duodenal reflex, resulting in pyloric spasm, blocks the passage,—that all the various retentive disturbances begin. Thus is presented an anomalous physiological activity, namely, hypermotility to distribute the acid excess and, due to the same influence, pyloric spasm to block its passage. Hence, the two states, hyperacidity and hypermotility, bear a very definite physiological, anatomical and biological relation to each other, which must be given due consideration in the judgment of these conditions. This can be done many times by a thorough investigation of the autonomous, nervous control regulating the functions themselves. Given such knowledge, many cases will yield to treatment directed not against the local manifestations, but against the guiding influence inducing these manifestations.

The stomach may not only be the receptor for reflex influences; it may also originate and pass on such influences to other organs. It must again be noted in this connection that the vagus influence gradually diminishes from the mouth downward, and that the direction of increasing force of impulse is always toward the central station. Hence, as a receptor of reflex influences, the stomach is mostly concerned with the structures near or below it. As an originator of such influences, it passes them on to the structures nearer the centre, in this case the thorax. The vagus distribution to mouth, neck, thorax, and stomach is close. Not only are the centres for the glossopharyngeal, spinal accessory, and vagus intimately associated in the floor of the fourth ventricle, but the latter nerve in passing through the jugular foramen receives filaments from these nerves and also from the hypoglossal, facial, and superior cervical sympathetic. It is for this reason that thorax-complicatory symptoms so often accompany organic gastric conditions. Here belong bradycardia, cardiac arrythmia, dyspeptic asthma, vertigo, false angina, constriction of fauces, and dyspnea. These conditions may not only be annoying, but oftentimes they are misleading and dangerous. They are deceptive, in that many times there exists no quantitative relation between the gastric lesion and the induced reflex. The severity of the latter may obscure the producing cause, which may even be of minor degree. This discrepancy between local change and the distant reflex intensity, is due many times to an exaggerated reactibility of the autonomous system, and it is only by a careful investigation of the latter that misconceptions may be avoided.

The clinical importance of autonomous influence upon the gastroenteric motor functions, has been emphasized and delevoped by von Bergmann and his associates. By a happy combination of pharmacology, Roentgen rays, and abdominal fenestration, these observers have been able to demonstrate, beyond reasonable doubt, the very decided effects of exaggerated or diminished control of this system. They have indicated the etiological importance of this control for possible future organic changes. Their work deals largely with the ultimate results of cardiospasm, gastro-spasm, and pylorospasm. These are final states. Before they are reached, however, there are always minor evidences of exaggerated autonomic control which indicate the tendency of the individual disposition, and the end toward which he is progressing. These lesser evils are the common property of an innumerable number of dyspeptics, and their importance for diagnostic survey is usually neglected. Whereas cardiospasm and pylorospasm are comparatively rare, these apparently unimportant local discomforts are so common, that they fail to impress on account of this very character. Daily routine clinical work encounters individuals with fleeting gastralgias, facile epigastric shock, insufficient local relaxation following food ingestion, rapid satiety, oppression in epigastrium suggesting gas accumulation, feeling of constriction around waist, emptiness shortly after meals, annoying gastric or intestinal unrest, excessive postprandial drowsiness. If, in such cases, the chemical and physical examinations reveal certain functional dyscrasias, the natural tendency would be to concentrate attention upon these, when in truth, the cause for the whole condition lies in a constitutional defect, which, if not realized or counteracted, may lead on to the graver forms of local changes. Careful and comprehensive etiological inquiry into the previous histories of such final states as the Reichman syndrome, benign obstructions wherever located, many gastric or duodenal ulcers, would develop the conviction that the tendencies to these conditions were inherent in the individual from the beginning, as evidenced by the continuous presence of one or more of the minor disturbances of digestive comfort stated. As Rössle very properly remarks, "It is the disposition which counts," and it is in the determination of this disposition that a correct valuation placed upon the always present and usually neglected dyspeptic commonplaces counts for much. The usual habit has been to regard these ordinary symptoms as indications of local changes, when in reality, many of

them existed long before any local changes were manifested. Viewed in this light, the latter would constitute what Rössle again calls the second disease (zweitekrankheit), giving, as it were, two fairly well-defined aspects to every chronic gastroenteric problem,—the constitutional aspect or primary disease, and the local aspect or secondary disease. In order to place upon the former an intelligent estimate, and to give it a practical bearing upon any given case, a keen analysis of the reactional vegetative nervous trend of the individual is demanded, for whatever may be the various controversial questions of anatomical or pharmacological differentiation, or the undecided problems of specific drug reaction connected with the vegetative system, clinical experience demonstrates that many individuals, under the ordinary conditions of modern life, do exhibit a disordered state of equilibrium between sympathetic and autonomous activity. The habit to investigate these systems should form a customary procedure in every case, for without the knowledge thus acquired, any conception must be incomplete.

Whereas the evidences of excessive sympathetic control may be said to indicate a general apathism, those of excessive autonomic control would represent a condition of erythism. For the practical purpose of rapid, clinical orientation, the latter may be roughly divided into superficial or cutaneous and the deep or organic. Such division must of necessity be more or less arbitrary, running counter to some mooted questions of anatomy and physiology. Nevertheless, such schematization offers to the clinician certain landmarks which may serve to arouse the suspicion of the tendency of any given case. With this end in view, the attention should be arrested by such superficial signs as excessive blushing, mottling of the skin, dermographia, seborrhoea, factitious urticaria, excessive perspiration with moist and clammy hands and feet, myopia, epiphora, very bright eyes, muscular fibrillation, twitching of eyelids, very fine hair, easy loss of hair, early gray hair, early caries of teeth, excessive salivation, facile spasm of pharynx and esophagus, globus. The presence of any of these signs markedly developed, should lead to the search for others.

The deep signs of excessive automatic control may be subdivided into circulatory and organic. Among the former may be mentioned a slow or irregular pulse, deficient distal circulation, head pressure symptoms due to this, transient low blood pressure, palpitation, bradycardia. The organic signs would include temporary, defective accommodation, contracted pupil, neuromuscular spasms, pain in back of neck, morning headaches, precordial pains, transitory tendencies to icterus, asthma, gastralgias, intestinal or hepatic colics, spasmodic bladder seizures with interrupted end urination.

The elicitation of most of these signs generally is a matter of casual observation. Usually they are overlooked or at best considered apart from the principal trouble. They may be emphasized as distinct disturbances or they may appear in a certain combination. Occasionally the individual attention is directed to some one particularly annoying or distressing. If one is present, there usually are others to be found. A systematic search should be made in every case, for it is the apparent insignificance of these signs which is misleading. It may appear to be a far cry from a blush to a pyloric spasm, and yet both may be determined by the same underlying cause. A constantly present spasmodic resistance to the passage of the stomach tube might lead one to suspect that perhaps the pylorus may be acting in the same manner.

There are certain physical procedures which may help and should constitute part of every routine examination. One of these refers to dermographia or vasomotor after blushing (Polonsky). Gentle stroking of the surface of the abdomen with the finger nail will be followed in a few seconds by dilation of the cutaneous vessels, resulting in anything from simple suffusion at the point of contact to the production of actual wheals. The intensity of the reaction is indicative of the extent of the loss of normal vegetative equilibrium. It is present in both functional and organic nervous conditions, suggesting that it may be of central nervous origin. Of its value as a hint, there can be no doubt.

Another indication of autonomic irritability, especially cardiac vagus instability, is the so-called respiratory arrhythmia (Hernig-Lommel). In this phenomenon, the pulse is momentarily accelerated during full inspiration, becomes markedly slow if the breath be held, to suddenly quicken again upon expiration. To a certain degree, it is normal in all individuals, but its exaggeration is evidence of "excessive sensitiveness of the cardioinhibitory vagus centre." Section of both vagi eliminates the phenomenon, as does also atropin.

A third physical test is represented in the bulbar pressure phenomenon (Aschner). In this test gentle pressure exerted upon the eyeball produces slowing of the pulse and respiratory rate, which may extend to pronounced bradycardia. It is caused by a reflex from the first branch of the trigeminus. The test is ineffective in normal individuals, but may be prominently responded to in the neuroses and vagotonia. The same reflex may be induced from the nasal mucous membrane by tobacco fumes and ammonia. The pulse rate may be reduced to forty per minute. The positive issue is always pathological, and according to Aschner, would indicate the close biological relationship existing between the vagus and trigeminal nerves.

Further simple tests may be made by plunging one hand into ice water. In case of excessive vasomotor irritability, the other hand will respond by dilatation of its cutaneous vessels, amounting, in some instances, to cyanosis. Attention should also be directed to the tendon reflexes. These should be investigated in every case, for oftentimes they may give some hint as to general irritability of the entire nervous organization.

Having determined the reaction of the autonomous system by these simple procedures, there still remain certain of the pharmacological tests. These have been the subject of much dispute. The results obtained by experiment have never been conclusive in a strictly anatomical sense, the indications at present being that the agents employed may, under certain circumstances, be reactive for both systems. Nevertheless, enough has been accomplished to demonstrate with some assurance, that there is a distinct group of substances whose influence is preponderantly autonomous and whose effect upon this system may be employed for diagnostic purposes. This can be attested by clinical experience. If, as Fröhlich and Loewi assert, the autonomous system contains both stimulating and inhibitory fibers, the former so far outclass the latter in importance, that for practical purposes the latter can be ignored.

In the present state of knowledge the human organism contains no native "autonomin" which may be opposed to the native adrenalin of the sympa-

thetic system. All efforts to produce such a substance have failed thus far. The nearest approach to it would be an aminoacid base, the result of intestinal decomposition. Hence, experiment has dealt largely with foreign poisons. If the sympathetic system proper may be called the adrenalin system, the autonomous may be designated as the cholin system, for it is the group of chemical agents represented by the latter which directly affect this system. This group includes cholin, muscarin, and physostigmine, substances which have proved themselves too violent for ordinary use. In the drugs pilocarpine and atropine, however, we possess autonomous agents which have shown themselves of great usefulness for this purpose, both from a clinical and experimental standpoint.

According to Eppinger and Hess the hypodermic injection of 0.01 grms. of pilocarpine hydrochloride will produce in the hypersensitive autonomic disposition a group of symptoms exhibited as salivation, hyperchlorhydria, cardiac and pyloric spasms, spastic constipation, slow pulse, low blood pressure, respiratory arrythmia, asthma, epiphoria, dermographism. However true this extensive presentation may be as a whole, the clinical fact undoubtedly exists that individuals suffering from any of these symptoms or a combination of them, bear pilocarpine medication, in any form, very badly. This is especially so for the digestive system, and the drug has been to a certain extent, employed to stimulate decreased functional activity for a considerable time. That it has not been more extensively used is probably due to the disagreeable side effects, for the investigations of Katsch have demonstrated that while pilocarpine does in effect stimulate, for instance, the motor function of the intestine, it does so in an irregular, unphysiological manner, which vitiates in a large measure its therapeutic value. Where, however, the question at issue is the determination of the reactional trend of the autonomous system, the use of this agent as test may be of considerable advantage. The hypodermic is not necessary. Given by the mouth in the usual doses, its effect will soon be apparent.

The greatest service in the determination of the vagotonic disposition has been rendered by atropin. While the effect of this drug may be still questioned in point of detail, there can be no doubt that as a paralyzer of excessive autonomic activity, it stands first. In very small doses in normal individuals it may at times act as a stimulant to Auerbach's plexus, but in full doses it will always allay excessive vagus irritability. In this regard it is invaluable for diagnostic purposes, whatever may be its action under other circumstances. As Hemmeter very properly contends, there are certain dispositions which respond equally to adrenalin, pilocarpine, or atropine the only conclusion to be drawn from this being that in such individuals the whole nervous system is in a state of instability. Such cases are sufficiently numerous. In many other cases, however, exhibiting gastroenteric hyperfunctionating activities, combined with any of the various stigmata enumerated above, pilocarpine will always aggravate and atropine allay the distress. Nor does the existence of demonstrable structural lesions in the tract vitiate this, for many of these local changes would pass unnoticed oftentimes, were it not for the coexisting general disposition. It may well be that the local defects are the direct result of long-standing functional dyscrasia or to a local defect, the result of some habitual fault, may be added independently the additional burdens here mentioned. This is abundantly revealed in those postoperative cases, where, notwithstanding that the structural changes have been remedied, the symptoms continue as before.

It must be evident that the time has come when a certain practical knowledge of the operations of the vegetative nervous system is absolutely essential for the proper valuation of the various alimentary disturbances, for it is this system which serves as the connecting link between a host of foreign influences which have a very direct bearing upon digestion. As Sherrington says, the environment drives the nervous system and the nervous system drives the entire organism. It is by no fortuitous circumstance that this system has been developed as it has. From the biological standpoint, it is the result of a gradual evolutional change for purposes of defence. It is an arrangement for adjustment to the environment in the sense of survival of the fittest and the digestive processes are in this conception but a part of such a scheme. In this adjustment the autonomous system plays a most important part, in that it acts as the essential stimulator to action. The unusual simplicity of its structural scheme renders it peculiarly useful in this respect. As has already been pointed out, its fibers pursue a comparatively uninterrupted course from central stations to the organs and the location of its nuclei well within the cerebrospinal system, close to the vital centers, renders it especially liable to the influences of the environment operating through consciousness. Hence, it is not surprising that in case of the digestive organs, the primary disturbances of functional activity should be those of excess, both secretory and motor, and that many of the late more distinctly localized gastrointestinal conditions are but crystallizations of these tendencies.

The error is usually made to demand for the condition vagotonia a distinct and pronounced symptom complex, as given by Eppinger and Hess, or as contained in the vasovagal attacks of Gowers. These states are comparatively rare, and having attained to such dignity, they dominate and obscure all local conditions. More interest for the gastrologist is attached to the reactibility of the autonomous system, its power to influence and direct functional activity over long periods of time. Under ordinary conditions of life, it may not be in evidence, but given the opportunity, under conditions of strain, it will immediately respond. In most cases, it is an inherited weakness, susceptibility, irritability, and constitutes what von Bergmann terms the disposition, not in the mental conception, of the individual. It is the primary disease of Rössle, and the directing influence which may lead ordinary gastrointestinal functional disturbances to distressing organic changes. While it has been especially emphasized by the latter as an important factor in the etiology and pathogenesis of ulcer, it constitutes, when present, a directing menace in all forms of acquired digestive disease. Viewed in this light its presence is ubiquitous and constitutes a very decided factor in the vast majority of the ordinary indefinite, mixed, and undeterminable cases of ordinary gastric disturbances, common to every clinic, for it is the connecting link between inherent organic weakness and whatever evil influences may exist in the life of the individual. The careful examination of most of these cases of indeterminate, chronic dyspepsia, will reveal the fact that they cannot be attributed to anything tangible in the way of definite abuse, but that

they can be traced back to that period of life when the responsibility of existence and maintenance began to exert itself. From this time on the inherent weakness or instability of the vegetative nervous system begins to affect those organs under its control which are most receptive. Why, in many individuals, this should be the stomach has already been discussed. In many cases it is a psychological problem. That this vagotonic disposition should be so frequent is not surprising. As the stimulator of all vegetative function its activity would be the first to respond to the general exciting and irritating conditions so prevalent at the time.

It is too late in the day to deny the enormous influence upon digestive function of factors operating through consciousness and subconsciousness. This has been thoroughly tested, both clinically and experimentally. The hysterical state will produce anything from cardiospasm or pylorospasm to gastrospasm with hourglass contraction or intestinal occlusion with fecal vomiting. Attention, however, can be directed to a certain misconception as to the operation upon the gastric function of the element of fear. It is generally assumed that the effect of fear upon digestion is inhibitive. This is based upon the construction placed upon the observations of the Roentgenologists. These experimentors were dealing with the element of fright. This psychologically is something entirely different from fear. An individual may not be frightened without fear. He can fear, however, without being frightened. Fright paralyzes all voluntary motor and vegetative functional activity. Fear may very well stimulate both, and usually does. What is operative in the lives of most individuals, under present conditions, is the element anxiety which may reveal itself as concentrated attention, hope, aggressiveness, determination to succeed. The examination of the gastric contents of the insane has yielded no very definite results. Where the rational connection between psyche and environment is severed, the analytical findings seem to be entirely dependent upon local material conditions. Where, however, the rational connection is preserved, as it is in most of the ordinary forms of the anxiety neuroses, then the phobia which is common to them all, stimulates to functional activity, not least among which are the digestive functions. These unavoidable factors of consciousness can only be operative through the vegetative nervous system, and their effect upon function will depend entirely upon the inherent organization of this system.

The study of the influence exerted by the vegetative nervous system has rendered possible a much broader conception of the whole subject of gastroenterology. It has shifted the interest from the narrow observation of local changes to a more intelligent interpretation of etiological relationship. It has introduced into the subject a certain purpose and design, traceable along biological and physiological lines. It has produced a new classification, in that it has eliminated individual judgment based upon the biased understanding of local conditions. The old conception of disorders of sensation, secretion, and motility, which only tabulates, and explains nothing, will yield to a classification based upon comprehensive pathogenesis. It will be more generally recognized that there are two phases to the great majority of our digestive diseases. One of these would embrace the constitutional trend of the individual conducive to the initial disorders of function. The other would include all the local changes following upon the prolonged existence of these primary functional disorders. It is the latter which has been exhaustively exploited in the past. It is the former which is going to command the attention of the future as the "primary disease." In every case of either hypo- or hyperfunctional activity, with or without structural change, more emphasis will be placed upon the influence which conduced to these changes. In a given case of hyperacidity and hypermotility, the search for enlightenment will not be limited to the possible existence of obstruction, dilatation, retention, and ulcer,—it will be demanded whether or not there had existed in that particular individual for years a mental state, vegetative nervous hypersensitiveness, local organic susceptibility, and a maladjustment of daily life of far greater diagnostic, prognostic, and therapeutic value than the local conditions themselves. Except in the minority of cases, where the evidence of habitual abuse, inflammatory change, or direct local influence is indisputable, the majority of the gastrointestinal disorders encountered in the day's work will bear close scrutiny along the lines indicated.

Every gastrointestinal disease possesses these aspects,—the purely local, the metabolistic, and the neurological. The last can again be subdivided into the distinctly psychical and the neurophysiological. It is the study of the neurophysiological which marks a decided advance, for it can be applied in very practical form with illuminating advantage to most of our digestive disturbances. What has already been said in regard to such common funcdifficulties of diagnosis, but it seems to be an extional changes as hypersecretion and hypermotility, will apply equally well to other conditions. In every case of suspected duodenal ulcer, inquiry will be directed to the primary disease, for, with the exception of the gross appearances of mechanical obstruction or hemorrhage of the last stages, every one of the so-called typical signs and symptoms, latency, periodicity, so-called hunger pains, and the excesses of function may be an inherent part of this primary disease without structural change, and may continue thus for years. It is true that the fluoroscope has, to a certain extent, obviated some of the pensive procedure, and is of service only in those cases where much local damage has already been done, and where the evidence is so marked that as a diagnostic method it can only be confimatory. It is a fairly safe assumption to make that with a systematic inculcation of this neurophysiological aspect into routine practical application, the exceeding prevalence of duodenal ulcer would be rapidly diminished. The greatest value, however, of such a conception does not lie in diagnosis, but in prognosis. Having determined the underlying constitutional trend primarily producing these symptoms, the individual can be warned against the possible final outcome, provided the tendency is not controlled or checked. It has been said that duodenal ulcer is a disease of modern life. This may well be true, for at no previous time has there been such a strain placed upon the mechanism which controls the local conditions productive of this state.

There has been a tendency in recent years to cast considerable doubt upon the validity of the average chemical findings in gastric analysis. To a very large extent this is justified. To jump to a diagnostic conclusion from the simple determination of the percentage composition of the gastric juice, or its volume, will oftentimes lead to error. The value

of the actual figures of an analysis will depend entirely upon the interpretation placed upon them. Such interpretation will, in turn, depend upon the comprehensive physiological, neurological, and psychological knowledge of the investigator. What constitutes a hyperchlorhydria for one individual may well be the normal acidity for another. There are no rules to determine this. It is an entirely individual matter. Nowhere is a more practical application of a comprehensive grasp of the reactional trends of the individual as evidenced in sympathetic or autonomous nervous phenomena, more possible than right here. In order to demonstrate the difficulties which the judgment of any given case of hypo- or hyperfunctional activity may encounter, it is only necessary to remember that such diversions from the normal mean may be dependent upon either purely local conditions, perverted or abnormal metabolism, or constitutional reactional trends. As a rule, the first two present no special difficulties. They are easily determined. When it comes to the last the situation becomes more complicated. Here it must be determined whether the fault lies in the irritability of the organic constitution of the nervous system or whether the psychic development is involved. Both require the keenest inspection. The simple diagnosis of neurasthenia or hysteria is not sufficient in this regard. The methods for the examination of the organic nervous control have been given. Where the psyche is contributing its share, the examination must be directed toward ferreting out the particular element in the mental life of the individual which is reacting upon the organic processes. This is oftentimes a matter of some difficulty, and may meet with opposition. Nevertheless, its elucidation at times becomes imperative.

From the foregoing, it is conceivable that any judgment of disturbed functional activity of the digestive tract, based upon simple analytical figures, must be exercised with considerable care. The conventional test meals are of service only in so far as they may be indicative of the actual power for secretion inherent in the local structures themselves, that is, the individual cells. They take no cognizance whatever of the influences at work directing these cells. Hence, these tests hold true only where the disfunctioning is the result of either immediate local structural changes or a weakness due to a general metabolistic process. Where, however, the local hypo- or hyperactivity is but a reflection of the influences exerted in the third category, the very artificial nature of the tests precludes their usefulness many times. In the latter case, it is far safer to accept the results obtained by analysis with a certain reserve, and with a view to orientation, and then when the individual has become thoroughly accustomed to the necessary manipulations, to base final judgment upon the effects produced by a meal of his own selection, corresponding as much as possible to routine daily habits in this regard. In this manner, many disturbing and disagreeable influences are eliminated, and a true insight is gained into the operation of the functions under conditions natural to the individual for his station in life. The divergence of results will often be surprising, and treatment based thereon most satisfactory.

These advantages accruing to the investigator of gastroenterological disturbances, of a practical conception of the operation of the vegetative nervous system, can be extended to include any question of diagnosis or prognosis which does not involve actual mechanical interference. The examples cited are typical. With such knowledge many abuses and fads would either be modified or eradicated. Not least among these would be the subject of autointoxication, that melting pot of insoluble problems. Before drawing precipitate conclusions in such cases, the reactionable tendency of this system should be definitely determined, not as to immediate instability, but as to its permanent constitution as an inherent part of the individuality. A certain quantity of noxious poison is developed in the course of all normal proteid digestion. To a certain degree this is always absorbed and successfully combated by the organism. Given, however, an irritable and susceptible sympathetic system, it may well be that even this unavoidable quantity will act as an irritant, producing the various well known effects usually ascribed to this condition. To diagnose such a state as autointoxication is manifestly an error, and to treat it as such by undue attention to the local conditions, can lead to no permanent relief. In all cases of this nature it becomes especially important to compare the extent of the local fermentative processes with the permanent and preexisting condition of the system first affected. If the latter be found to be defective in the constitutional sense, the diagnosis of autointoxication would become relatively insecure, and should receive only secondary consideration, for it may well be that whatever fermentation exists, would be well supported by an organism which was normal in tone and power of resistance. It is pretty safe to assume that were this aspect of the subject properly considered, the autointoxication fad would rapidly vanish.

Much importance in recent years has been attached to the power of reflex action. In abdominal diseases enthusiasm in this direction has run riot. Judged by the standards here given, this tendency would also be curbed, for it should be remembered in this connection that the possibility for reflex action to a distant part depends in the last analysis upon the conductibility of the connecting structures. If these are easily influenced, it is to be assumed that the organs, whose functions they control, would also be easily affected and a reflex action be initiated in the organ most inherently receptive for the individual. That, in most cases, this should be the stomach is not surprising. If, however, the conducting structures upon examination exhibit absolutely normal tone and reaction, the diagnosis of a reflex effect should be accepted with considerable reserve. Close inspection in most cases of this nature will usually reveal sufficient local reason for whatever disability may exist. Certain individuals are especially liable to reflexes of all kinds. They react excessively and many times by circuitous routes, to any exceptional influence of their environment. These individuals always possess defective sympathetic systems, and in every such case where the question of reflex action arises, this phase should be thoroughly investigated. This applies not only to the direct or unconditional reflexes, but very pertinently to what have been called by Pawlow, in his most recent work, the "conditional reflexes," those instituted by factors apparently entirely foreign to the particular function affected. These so-called conditional reflexes have received very scant clinical attention in gastroenterology, but that they play a most important part in the causation of digestive disturbances, future investigation will probably develop.

It would appear at first sight that emphasis such

as this, placed upon the practical investigation of the vegetative nervous system in all cases of gastro-intestinal disease, would be to attach undue and exaggerated importance to nervous phenomena in general. While such conditions do exercise an enormous influence in this class of cases, it is fully recognized that there is some danger that recourse to them for purposes of diagnosis may be overdone, especially in obscure conditions. This is especially true of the influence exhibited by the emotions. It is exactly to impose a curb upon such speculations and to place upon the effects produced a proper valuation, that a certain applicable knowledge of the structure and operation of the vegetative nervous system becomes eminently desirable. For this purpose some sort of schematization is necessary, even though compelled at times to make assumptions which are not entirely warranted by secure physiological and anatomical data. Whatever may be the changes in the details to be made necessary by future investigation, enough has been done to make a comprehensive and systematic conception of the whole possible. This tendency toward systematization is the last word of modern medicine, has largely eliminated the grab-bag of empiricism, and has raised the whole subject to the dignity of the exacter sciences. No average mind can master all the details of immunity, or the internal secretions, or the more recent physicistic conception of the circulation, but it can acquire a certain schematic grasp of these problems and employ them in whatever philosophical bearing they may have upon its own immediate work. This constitutes the intelligent practice of the day.

It is in this spirit that the whole plan of the vegetative nervous system should be conceived. In gastroenterology it enlarges the field of vision and delivers the subject from the narrow limits of immediacy. There is pretty good evidence that the local soil is becoming barren. To a certain extent this is an advantage and will serve to turn attention to the broader aspects involved. The opportunities here are enormous, for it can be repeated again with emphasis that the great majority of digestive disturbances encountered in ordinary practice are due to conditions which are apparently foreign to the immediate digestive function. They may and do require special methods of investigation, but when it comes to an interpretation of the results obtained, too great specialization can well obscure the issue. Here is required a far greater breadth of vision than ordinary gastrological teaching has heretofore supplied. The prevailing opinion that the ability of the gastrologist is limited to astute detection of certain local conditions is the result of the popular demand for things tangible and mechanical. The intelligent gastrologist is the one who has the broad knowledge required to properly interpret the chemical and physical data obtained by special methods, in the light of biological, physiological, and sociological acquirements.

It is becoming more and more apparent that the operation of fortuitous discovery in gastrological observation is rapidly reaching its limit, and that whatever progress is to be made in the future must be accomplished by those whose special training in physiology and biology renders them competent to proceed along strictly scientific lines. In this regard, three directions suggest themselves: The physiological chemical, the internal secretions, and the neurological. It is the latter which is of especial importance to actual practice, for it enables the clinician to place upon abnormal functional activity its proper valuation. An inclusive knowledge of the constitution and operation of the vegetative nervous system will help much in this direction. Such knowledge will act either as a stimulus or curb. It certainly will balance judgment. It will humanize the whole subject of gastrology, and emancipate it from the narrow, materialistic conceptions into which too assiduous localism has plunged it.

There is far more to the subject of gastroenterology than intense specialism is apt to admit. There is a certain restricted field of immediate structural relationship, but the vast majority of our ordinary dyspeptic diseases extend far beyond the alimentary canal. Among other things, they are intimately related to personality. In no part of the human organism do psyche and soma meet upon such common ground. This imposes upon every gastrologist a certain philosophy. A comprehensive conception of the subject cannot be acquired by use of the microscope, fathomed in the depths of a test-tube, or mastered in the constrained atmosphere of the consulting room. For this, is required a sympathetic understanding of the fads and foibles, the hopes, fears, and ambitions of men—in short, their general outlook upon life. Any assumption of artificial dignity or superiority handicaps at the start. The intelligent gastrologist should be the unprejudiced philosopher, the "synoptic man, one who sees the verities of life in their true relations, properly coördinated or subordinated, and who, in particular pursuits, however absorbing, does not ignore the unity of the whole, nor overlook the universal aspect even of the commonplaces of life." (Hibben). As some one has very properly remarked, "it is probably no accident that organs which are for the preservation of the species and the continuity of life, possess a modeling influence upon the individual bearer of life."

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NOTE.

This literature is a continuation of that which appeared in the MEDICAL RECORD, Jan. 23, 1915. As there stated, it is intended to furnish a nucleus of reference for those whose interest in the neurological and psychological aspects of gastroenterology is sufficient to prompt them to pursue this important subject further

144 EAST THIRTY-EIGHTH STREET.

THE INTERNAL ASPECTS OF PROSTATIC SUPPURATION.*

A PROBLEM IN DIAGNOSIS.

BY HARLOW BROOKS, M.D.,

NEW YORK.

(From the Second Medical Division of the City Hospital.)

IT has often been said that an important part of the education of an internist lies in a wide experience in general practice and there certainly is no branch of medicine nor of science in general which is not directly useful to him who wished to qualify as a competent practitioner and especially as a diagnostician in the field of general medicine.

While this as a general statement would, I think, arouse very little adverse criticism, it is quite possible that many of us underrate the desirability of an intimate knowledge of the disorders of the genital tract as of particular moment to the internist. This is in large part due to the fact that general medical men as a rule have not thoroughly considered these problems in their systemic bearing, leaving them rather to the care of a specialist in these lines to whom quite naturally the internal aspects do not appeal.

The very direct bearing of genital disease on internal problems is well illustrated in the numerous metabolic, neurotic, and vasomotor disturbances which arise at the times of puberty or of the menopause. Chlorosis, hyperthyroidism, myxedema, dispituitarism, and many gastrointestinal disturbances, for example, are so closely interwoven with abnormal function of the genital glands that they require but illustrative mention here.

While this dependency is now more frequent and striking in female diseases than in those of the male, it is highly probable that this is largely because these problems have been studied less in men than in women.

It has fallen to my lot during the past few years to see several cases in which general symptoms of a very striking and confusing character have developed as a result of prostatic disease, and I wish to call your attention this evening to certain of the aspects of prostatic suppuration.

Naturally, suppurative prostatitis most frequently originates from a urethritis in which infection of the prostatic portion has taken place. It is therefore a frequent condition in the course of gonorrheal urethritis. It is a curious fact, generally recognized however by genitourinary specialists, that when such a prostatic infection takes place in the course of a urethritis, even when it is an actively suppurative process, there is a cessation, though perhaps very transitory, of the urethral discharge. Hence it is that cases of this manner of origin may present themselves before the internist with the urethritis no longer apparent or active. The patient may thus entirely mislead the physician as to the cause of the disturbance perhaps quite innocently, since the indications of local disturbance may have been at the worst very few.

Suppurative prostatitis may also arise as a result of direct infection from the presence of prostatic calculi, particularly such as cause a rather high grade of local irritation. It may and not infrequently does occur as a result of a proctitis and is even more common in cystitis, orchitis, or vesiculitis, either of which conditions may exist in suf-

*Read before the Bronx Medical Society, April 7, 1915.

ficient degree to cause this complication without local symptoms of sufficient moment, especially in chronic cases, to suggest clearly the point of origin.

In many instances the infection appears to be caused by a relatively innocent organism, particularly by the colon bacillus or, as I have found in several instances, by a member of the proteus group. There is considerable evidence to suggest that it may and perhaps frequently does follow hyperemia of the prostate, resulting from numerous conditions. That it may be at least invited by chronic constipation, particularly when this is associated with straining at stool or with hemorrhoids or fissures, seems highly probable. It may also develop from traumatic causes as from horseback or bicycle riding, especially if on an improperly fitted saddle. A certain number of cases develop in the course of mumps and some from metastatic foci in general infections. The common association of the condition with prostatic hypertrophy is of course obvious.

Depending somewhat on the point and type of origin the prostate becomes variously infected. The follicles alone may be involved, or the follicles and interstitium, or perhaps an isolated abscess or yet a diffuse suppurative process involving practically all parts of the gland. Though to the genitourinary surgeon, these various points of etiological and anatomical difference may be very essential, from the viewpoint of the internist it is relatively unimportant since the general aspects of the condition in either instance are practically identical.

The course of the infection may be toward either absorption or abscess formation in any instance. Where abscesses are formed they commonly sooner or later rupture either into the urethra or into the periprostatic tissues. When rupture into the urethra occurs, the condition commonly declares itself in a very evident way by the discharge of pus into the urethra and if it be of gonorrheal origin the urethra commonly responds by a recurrent attack of urethritis. When the abscess points into the periprostatic tissues its presence may be for a long time unsuspected or indeed may be diagnosticated only when it finally presents as a probable fistula *in ano*. Several such instances have given pictures suggesting coccygia, sciatica, or sacroiliac arthritis. Again these conditions are surgical propositions with which the internist has little to do aside from the question of diagnosis.

Before taking up what is to us this evening the most important side of the question, that is the symptomology, it may be well to point out certain anatomical and physiological characteristics of the prostate gland which render suppurative disease of it particularly suggestive.

Its intimate relation to the urethra is one of its chief anatomical points and accounts for the origin of most of the instances of suppurative prostatitis, since the larger number of infections originate from this tube. The prostate is made up of large acinous sacculations which through their ducts lead directly from the urethra to the deepest portions of the gland. It is almost impossible for an infection of the prostatic urethra to exist without more or less prostatitis. These acini are supported by an interstitium into the structure of which many smooth muscle fibers enter, and in the course of the physiological activity of the gland the contraction of these fibers compress the acini, driving their secretion out through the ducts into the urethra. The very dense fibrous capsule which limits the prostate externally is the reason that many extensive suppurative processes are strictly limited to the gland and also explains why most suppurations eventually rupture internally into the urethra instead of into the soft tissues surrounding the gland.

As to the physiology of the prostate, little in detail may be considered here except to point out that it is an active gland, the secretion of which is of very great importance in relation to the sexual functions. Reasoning from analogy as well as from clinical and experimental observations, it seems highly probable that the gland has also an important internal secretion which plays a very definite rôle in the general condition of the body, perhaps in the formation of hormones which may profoundly influence the psychic as well as the more purely physical functions. Its analogue in the female is the uterus, and the prostate is graphically and correctly called the uterus masculinus. This hidden function may well explain why even small and relatively insignificant disease processes of this gland may profoundly influence the whole body.

The definite symptoms which result from prostatic suppuration may be conveniently discussed under the heading of *local* and *general*. The former are of importance from our viewpoint only in that they materially assist in diagnosis and largely determine treatment. The general symptoms on the contrary are those of greatest bearing on the problem which we have set for ourselves this evening.

Where the infection extends in from the urethra, we have already mentioned the almost regularity with which urethral discharge, if any be present, ceases, at least temporarily. Pain is present in a very high percentage of cases, but it may be entirely absent or unnoticed in instances in which the infecting organisms are of very low grade of virulence, where the suppuration has been of very slow evolution, or where the involved focus is small. Suppuration of considerable severity may be frequently unnoticed, apparently due to a relatively low grade of sensitiveness of the organ, notwithstanding the fact that it is so firmly and rigidly limited by its dense capsule which in ordinary conditions would make inflammatory processes particularly painful. Tenderness is much more marked and constant than pain and in not infrequent cases as one sees it on internal services, no pain may be complained of and yet when rectal examinations are made or during defecation a considerable degree of tenderness may appear. Sometimes a certain amount of obstruction to the urinary stream exists, depending, of course, on the degree of tumor caused by the inflammation or the edema consequent upon it. In such circumstances, tenesmus, ardor urinæ, and a reflex constipation may be present. Swelling and actual prostatic tumor usually accompany such symptoms. Doubtless the most impressive and striking general manifestation of prostatitis of the suppurative type is prostration. Many genitourinary surgeons in their descriptions of the general manifestations of this condition describe them briefly as typhoid. By this term is included with the general picture of prostration, coated and tremulous tongue, fetid breath, sordes on the teeth, herpes about the lips, and abdominal inflation, commonly with constipation but occasionally with diarrhea. A degree of mental depression which in some cases amounts to somnolence approaching coma, indifference to surroundings and great physical as well as mental weakness, are very generally seen.

Temperature elevation is almost invariably present and when the case falls under observation early in the course of the disease the temperature is found to mount slowly, corresponding more or less certainly in degree with the grade of prostration. The morning remission customarily observed in ordinary suppurative processes does not appear in this disease but the temperature course preserves a steadily ascending character or remains fairly constant at a level which may be high or low. Temperature does not correspond very definitely with the degree of prostration which then seems to be an independent symptom. Even in cases where slight variations only appear in the temperature level, slight rigors are likely to develop, sometimes actual chills, not infrequently with no variation in temperature.

Profuse and drenching perspirations are very frequently present, followed of course by a period of accentuated exhaustion but often also without effect on temperature.

The pulse rate also presents a curious anomaly further simulating the picture of a true enteric fever. Proportionate to the temperature the pulse rate is low, though it varies following gradually the temperature curve. I have never observed dicrotism in suppurative prostatis, but the pulse is customarily full, easily compressible, and with a slow rise and rather deliberate fall. The blood pressure in the cases that I have studied as to this condition is either normal or subnormal. Later in the course of the condition the temperature chart may take on the aspects of a typical sepsis, with the characteristic morning rise and evening fall. As a rule, however, by this time the definite local signs of abscess formation are present so that this sign commonly appears too late to be of real aid in the early diagnosis of the condition. With discharge of the pus, either automatically through the urethra or elsewhere or from operative interference, a prompt fall in the temperature takes place and at the same time the evidences of toxemia diminish or entirely disappear.

The blood picture is further confusing. In every case that I have examined as to this feature there has been either a normal total or a hypoleucocyte count. The differential count instead of showing a relative polynuclear increase generally shows a relative increase in the mononuclear elements, especially of the large lymphocytes. Blood cultures in all the instances which I have studied have been negative.

Throughout the entire course of the process until the pus finds escape, the chief clinical characteristic of the disease is the prostration which in many if not most instances exactly approximates that of a true typhoid fever. A very astonishing feature of the disease may be the lack of localizing symptoms. In several instances no local complaints whatever have been made by the patient and the condition has been discovered only when pus appeared in the urine, when a perineal abscess pointed, or when as a matter of clinical routine a rectal examination disclosed the origin of the disease picture. Inquiry among my friends has convinced me that I have not been by any means the only clinician who has frequently mistaken the condition for a typical typhoid or paratyphoid fever.

The chief points in early differential diagnosis are mostly those of laboratory detail. The Widal reaction is, of course, always absent, though, as in most febrile conditions, it may be simulated at times. Blood and urine cultures are negative as to typhoid and paratyphoid bacilli. It is highly probable that the urine cultures may in some cases show the presence of other organisms, such as the colon bacillus or proteus bacillus, which I have found on a few occasions, or of the gonococcus or other pyogenic organisms. These, however, I have never looked for until pus appeared in the urine and when found, if their real condition is unsuspected, their presence is usually accounted for as a technical or laboratory contamination.

With all absolute laboratory tests constantly negative, of course one sooner or later excludes typhoid fever, but for a long time thereafter the possibility of a paratyphoid infection exists and the diagnosis of a miliary tuberculosis of the typhoid type comes to be seriously considered. The exclusion of this possibility also depends upon laboratory tests, though, of course, when the case has been studied for several weeks the lack of rapid progression and the non-appearance of typical signs of this condition also tend to exclude this. In this regard I believe that lumbar puncture, with the thorough centrifugation of the cerebrospinal fluid and examination for tubercle bacilli, is very helpful.

Of course, the final and absolutely diagnostic feature of the syndrome is the examination of the prostate per rectum, and the consequent discovery of an abscess or of a prostatitis. In all the cases which I have seen diagnosis has been easy once that rectal examination has been made. The treatment of the condition is, of course, surgical and because of this I am not competent to discuss it. Where operation is refused or deemed unwise I wish to suggest the possibility of successful vaccine treatment.

W. M.—A previously healthy physician, 24 years of age and an interne on the medical service of a large general hospital, noticed that for some two weeks he had been unable to carry on his work in a satisfactory way. He was inordinately tired at night, depressed, had loss of appetite and marked malaise. He was found to be running a night temperature gradually ascending day after day until when seen a night temperature of 103° was recorded. The pulse had been relatively low and the respiration rate throughout remained normal.

Physical examination revealed a practically negative condition, especial attention being devoted to the pulmonary status, notwithstanding the fact that no cough was present. Blood examination showed on this as on frequent other occasions a somewhat lowered hemoglobin percentage, but a normal red cell count and a total leucocyte count varying between 3,500 and 5,000. The differential counts showed a relatively high percentage of lymphocytes and mononuclears with relatively low polynuclears. Blood cultures were always negative.

For three weeks the temperature remained practically constant in the region of 103°. Prostration was extreme and profuse sweats were present. At times a mild delirium was manifested. Numerous Widal tests were made, always with negative results, and the urine and feces were cultured for typhoid and paratyphoid organisms also with negative results. At times the urine contained leucocytes in more than usual numbers but aside from probable external infections it remained sterile.

No pain was complained of at any time except for persistent and very severe headache, and though the patient was seen by many members of the house and visiting staffs, no absolute diagnosis was made. Cultures of the cerebrospinal fluid tended to negative the probability of a miliary tuberculosis and the general consensus of opinion was that the case was a severe type of partyphoid fever, though neither cultural nor serum tests confirmed this hypothesis. Meanwhile the prostration remained very grave and the patient had emaciated rapidly. Finally the patient remarked that

occasionally on defecation or when taking an enema some rectal discomfort was present. Rectal examination some four weeks after onset showed the presence of a small prostatic abscess which shortly ruptured into the urethra after which prompt fall in temperature and rapid and complete convalescence took place.

Cultures showed the abscess to contain colon bacilli and mixed staphylococci. There was no history of a previous gonorrhea or urethritis of any kind and the origin of the abscess is unknown.

In conclusion I wish to call to your attention the fact that this condition may exist without localizing symptoms of definite character and that it will induce a clinical picture almost identical with that of typhoid except as to bacterial findings. It is extremely common and it is readily diagnosticated when one considers the possibility of its existence.

44 West Ninth Street.

ON THE NATURE OF THE NEUROSES.*

A CONTRIBUTION TO THE STUDY OF THE NEUROTIC PERSONALITY.

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To the mind of every physician working in the clinics of every large city must frequently come up the question, "Why is a neurotic?" Day after day we see come and go in our dispensaries what seems to us a never-ending line of unfortunates, full of complaints verbosely described, which on examination reveal little of physical signs for substantiation. The type is so well known in all clinics—for the neurotic is a confirmed explorer into all fields of medical aid—that often he is dismissed with but superficial investigation, with a wave of the hand and a bottle of rhubarb and soda, classified as a "neurasthenic," generally with a profane prefix. Of course the neurological clinics secure the most of these cases, for sooner or later the neurotic comes to regard his trouble as "nervous," and seeks aid in the neurological clinic, where indeed he too seldom finds it.

In spite of the multiplicity of symptoms the type is not difficult of recognition. Although the diagnosis is often made falsely and an individual with a serious organic disease, not always of a rare or unusual nature, wanders around the clinics undiagnosed for months or years; nevertheless, in my opinion, this mistake is not often made, and in the large majority of cases the diagnosis stands. We all recognize the neurotic, often as soon as we see him, yet we are very much at a loss when we try to explain on what grounds our opinion is formed, which loss we express clearly in the time-worn remark, "This impresses me as a functional condition." It is the purpose of this paper to attempt to point out in very sketchy fashion some of the fundamental and characteristic points which neurotics have in common.

About one case in every four or five in our neurological clinics can be diagnosed as functional. Some among these easily fall into fairly well defined groups, as hysteria, primary neurasthenia in Freud's sense, anxiety neurosis, and compulsion neurosis; but in among these and all around them is a much larger group of undifferentiated, unclassified clinical pictures of ever varying nature, labeled psychasthenia, undifferentiated neurosis, simple neurosis, neurasthenia, or just plain nervous. It is especially this latter group which the writer wishes to consider here.

Among these patients women are found in somewhat greater numbers than men. The great majority are foreign born, but this is little surprising in a city where the preponderance of the population is not native. There can be no doubt that most of the neurotics of our clinics are Hebrews, mainly those coming from Russia and the Polish states. Among them one seldom sees the very young or the very old; almost all are in the active years of life when competition and the necessity of earning a living for themselves and usually for others should occupy their thoughts and interests.

The most frequent symptom complained of is pain, and it is very exceptional to see a neurotic who is unable to find at least one pain to dress up and parade before the physician. Among the Hebrews there exists a wonderfully extensive vocabulary of pain. While most of us are satisfied to describe our pains as "sharp" or "dull," these people possess a wide range of expression. Simple, "schmerzen" seems to differ from "drehen," which again is distinguishable from "stecken," "ziehen," "brechen," and more, each of which appears to have its own tone value. This tendency to catalogue pains so characteristic of the neurotic is always an important point in the diagnosis.

The location of these pains is very varied, but most often they are in the legs, the head, and the heart; important members and organs for the active life of the individual. The detailed way the neurotic speaks of his pains, the amount of affect he displays and the obvious desire to impress the physician with the great seriousness of it all show too clearly how much thought and reflection he has given to the development of his clinical picture. The more intelligent the patient and the greater his field of experience, the more complicated is the disease picture he paints. Among the ignorant the symptom expression is mainly in the field of somatic sensation—muscle weakness, paresthesia, and particularly pain, that great indicator of diseased function. Only the ignorant are capable of holding on to their pains which molest them for years, without interfering with their bodily weight, their sleep, and a reasonable enjoyment of life. The more critical easily perceive the inconsistencies of these clinical pictures and hence must take refuge for their symptom expression in other levels of nervous life: the psychic, on one hand, in the peculiar dizziness, the thought troubles, the fears, etc., or the vegetative, on the other hand, in the glandular and organic complaints.

This brings us to the first element in the nature of the neuroses. The neurosis is an explanation. It requires but little conversation with the neurotic for one to realize that he has devoted considerable time and thought and interest to the development of his picture and the cataloging of its symptoms. Most often they come to the physician with the diagnosis ready at hand and ask for treatment for "rheumatism," "neuritis," "paralysis," or what not. The older the neurosis, the more elaborate the symptom complex presented, for the neurotic enjoys talking over his troubles with any who will listen, swapping symptoms with others of his kind, acquiring here a new symptom, there a new explanatory term, the more firmly to establish a foundation for his personal philosophy.

*Read before Staff Conference, Bloomingdale Hospital, White Plains, N. Y., Feb. 17, 1915.

Much of the psychic energy then of the neurotic is devoted to attempts to find an explanation for his condition. That he feels badly is obvious and real, and the neurosis is the attempted explanation of why he feels badly. Hence the multiplicity of symptoms, the careful classification of feelings, pains, and other symptoms, and the utilization of diagnostic and explanatory terms in portraying them; for each neurotic must build his neurosis according to his needs and his ability. Probably the most characteristic point in the neurotic's tale is his extremely loose use of terms, and his devotion to terms of loose meaning. "Rheumatism" is ever a favorite—that term of pseudo-diagnosis, which has been spread, in popular and indeed in medical use, in such a thin layer to cover so large a number of conditions, that it has ceased longer to have a diagnostic significance, and conveys now no more real meaning than does the original word "pain" for which it is substituted. The same may be said of "neuritis," merely another way of saying pain—an explanation which explains nothing, and when combined with the foregoing in "rheumatic neuritis" we have a term of sufficient inaccuracy to satisfy the most fastidious neurotic. And then there is "nervousness," a massive, elastic blanket, which can be stretched to cover the whole field of chronic human disorders, from flat feet to the character changes of dementia precox. One could add to the list "uric acid in the system," "hardening of the arteries," "weakness of the blood," and hereditary tendencies, sonorously called "diatheses"—all pseudo-explanations, substitutions of words for ideas, until we see what is so characteristic of the neurotic, a veritable fetish of words.

The neurotic culls his explanatory terms from whatever source he can, the conversation of others, the newspapers, patent medicine advertisements, and, all too frequently, the physician. He is seldom satisfied with the explanations he elaborates, and he ever seeks new fields, not only in medicine and quackery, but in other forms of healing in all levels from the mechanical to the religious. When he finds a philosophy which completely fills his needs in accordance with his ability, especially if he is able to substitute devotion to an idea for devotion to symptoms, there he finds a cure and reverts to a blissful state of self-satisfaction, which is health for him. And so the neurosis is an explanation, which does not explain satisfactorily. The neurotic means something, but the neurosis is not what he means.

This brings us to the second element of the neuroses. The neurosis is a substitute. It is because it is a substitute for something else that it is not satisfactory. When one listens to the verbose recitals of the neurotic it is very evident that he is endeavoring to explain something. A little critical study of the neurotic's talk quickly reveals the fact that it is a wealth of details with no point, and the adage that "language is a means of disguising thought" is never more truthfully applied than to the neurotic. He thinks and talks freely on every phase of his difficulty, except the point, for if he should get the point, he would cease to be a neurotic. Possibly he might be something worse. Time does not permit me to go deeper into this phase of the subject, for it leads into the realm of psychic repression, a monstrous well, which apparently has no bottom. Suffice it to say that the psychic causes are entirely egocentric, having to do mainly with the conflict between ideals and ambitions, on one hand, and instinctive tendencies and methods of life, on the other. The frequency with which one hears of the diagnosis of "sexual neurasthenia" or "sexual neurosis" speaks eloquently for the participation of one great instinct in the etiology. The neurotic is essentially an idealist, an idealist who has hitched to a lofty star his wagon, frequently improperly equipped to travel on the earth. One cannot help but reflect on the causative value of this conflict between the ideal and the real, when one recalls how seldom, if ever, one sees neuroses among prostitutes, except those who have undergone a reformation.

There is but one other element of the neuroses I would speak of here. The neurosis is an asset. Every neurotic has something to gain by being a neurotic, and he ceases to be so when this element of gain disappears. This may be otherwise expressed: that the neurosis clothes a wish. Bailey in his article "The Traumatic Neurosis" has brought this point clearly in the foreground. The wish element in hysteria is too well known to call for corroboration, and how superficial that wish may be is shown by Ames in his cases of psychic blindness. In many of our traumatic neuroses the asset value of the neurosis may be measured in terms of monetary currency in the hope of a favorable verdict from the jury, which latter usually effects a cure. This exemplifies the statement made above that the neurosis ceases to exist when it ceases to be an asset. In the occupation neurosis with the spasm and pain symptoms, this asset element is little less clear, for at least it gives the individual an easy excuse for relinquishing a remunerative position, which is unpleasant, especially in an individual who has not the mental bravery to settle otherwise the difficulties which beset him.

In many of our neuroses the asset element is not so clear, but nevertheless it is present. At best it gives the individual an excuse for leading a more or less easy life, surrounded by the sympathy which civilized people feel is due the sick. Again, it occupies so much of the patient's mental life that there is little left over for other things, especially insight. David Harum's remark that "a reasonable amount of fleas is good for a dog, as it keeps him from brooding over being a dog" might be paraphrased for the neurotic, "A reasonable amount of symptoms is good for the neurotic, as it keeps him from reflecting on his being a number of other things at variance with his ideals, and much less pleasant."

40 East Forty-first Street.

STAPHYLOCOCCUS SEPTICEMIA COMPLICATED BY SUBPECTORAL ABSCESS.

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This case is reported on account of the gravity of infection, the favorable result obtained, and the fact that it is a rare condition. Von Bergmann and Mikulicz state in their "Surgery" that all the cases of subpectoral phlegmon having come to their knowledge were due to ordinary streptococci with two exceptions, one being due to *Streptococcus mucosus* and the other to *Streptococcus pneumoniæ*. Kümmel found among 1,080 cases of phlegmon treated during one decade at the hospital in Eppendorf only 26 cases of phlegmon of the thoracic wall. (Handbuch der Praktischen Chirurgie, Von Bruns, Garré und Küttner, Vol. II, p. 711. Stuttgart, 1913.)

There is nothing in the family history which is of any importance in regard to the present illness.

Previous History: The patient, Maurice D., born in U. S., 25 years old, single, a senior student of dentistry, had measles, whooping cough, chickenpox, and scarlatina when a child, diphtheria at 15, pneumonia at 17, and bronchitis at 23. He has been fairly active in athletics and is a good walker, swimmer, rower, tennis- and baseball-player, and an artist on the violin.

Habits: He uses alcohol very moderately, drinks one cup of coffee or tea, and smokes two packages of cigarettes a day.

Venereal history: He had a gonorrheal urethritis of 8 months standing at the age of 22 which resulted in a stricture at the peno-scrotal junction. Sounds were passed six times in order to dilate the stricture. At the age of 24 he had a second gonorrheal infection of the urethra. The discharge lasted 7 months, the stricture closed up, and the prostate became inflamed. Sounds were passed but no operation upon the prostate was performed. In January, 1912, he was operated upon for an ischiorectal abscess. The wound discharged for 9 months. A fistula formed which was excised in September, 1912. Then the wound healed in 1½ months.

In January, 1913, he suffered with furunculosis of the neck. Appetite, bowels, and sleep were normal before the present illness. Urination: Three to four times a day; the stream is small, twisted, and spattered. At times, especially after erection, the patient notices a "soreness" in the urethra. It takes him a considerable time to empty the bladder. For the last three months the patient has been very active socially and has been studying hard for his examinations, being therefore "physically run down."

Status præsens: He was taken ill February 26, 1913, with pain in all the muscles of the left shoulder and with fever. He received a vigorous antirheumatic treatment with aspirin by Dr. J. McP. who kindly transferred him to me, March 6, 1913, with the diagnosis of "acute muscular rheumatism involving the muscles of the left shoulder, due to autointoxication." I first saw the patient March 6, 1913, late at night. He was feverish, his tongue was coated, and the breath offensive. The muscles of the left shoulder were painful, and the left arm could not be raised. There was no visible swelling. Examination of the heart, lungs, and abdomen gave negative results. Suspecting gonorrheal myositis, I injected into the patient's arm one dose (2,000 million) of a polyvalent gonorrheal vaccine which I happened to have in my handbag. I discontinued the antirheumatic medication and ordered instead two rectal irrigations a day with one quart of physiological saline solution, one hot bath a day for 20 to 30 minutes, and a high caloried liquid and soft diet. (Two rectal saline irrigations were given twice a day for one week, then once a day until the patient got up. The hot baths were taken for one week only.) That night the patient suffered with insomnia. Next morning he had headache, "a bad taste" in the mouth, and pain in the left arm and upper part of the left side of the chest. I made several blood-cultures and took enough blood for agglutination and complement fixation tests. The agglutination and complement fixation tests for gonorrhea were negative. March 8, I obtained a growth of a staphylococcus in the blood cultures, and the following day I made an autogenous vaccine from transfers on meat infusion and ascitic agar. My diagnosis of the case was now "Staphylococcus septicimia plus acute inflammation of all the muscles of the left shoulder joint due to the staphylococcus present in the blood."

March 10. The first dose of 500 million dead bacteria of the autogenous vaccine was given into the patient's right arm. The left arm was painful especially in the arm pit. The axillary glands were slightly swollen. The chest "felt tight" and the patient "hardly dared to breathe."

March 11. The patient slept well all night. In the morning he could raise the left arm slightly; but he had headache and anorexia. I obtained a catheterized specimen of urine from which I made cultures. These yielded the same organism as the one obtained from the blood.

The urine was amber colored, slightly turbid, small flakes, after standing clear, with light mucous sediment; specific gravity 1026, acidity 130 (in terms of $\frac{n}{10}$ sodium hydroxide), faint trace of albumin, trace of bile, no sugar, slight increase of indican, no casts, no crystals, epithelial cells rare, a few Gram positive micrococci.

Smears from the tongue and pharynx showed staphylococci in great numbers and only a few other bacteria.

March 12. The left arm is very painful. There is a slight swelling of the left shoulder. The axillary glands are slightly enlarged. The external portion of the left pectoral muscles is painful. The pharynx and posterior faucial pillars are red, the tongue is coated, the throat and mouth feel dry, the back of the throat feels sore. A second dose of the vaccine, 1000 million bacteria, was given into the right arm.

March 13. The condition of the patient is the same as the day before. The patient received ¼ gr. of morphine every 4 hours when in pain. Upon the wish of his friend, a recently graduated doctor, I injected twice hypodermically 20 c.c. of the Hiss leucocytic extract, but without apparent effect.

March 14. The arm pit is slightly swollen but there is no fluctuation in the axilla nor bulging of the left pectoral muscles. He complains of pain in the left side of the pelvis.

March 15. The patient looked very ill. Under a general ether anesthesia I made an incision 2 inches long at the most dependent portion of the left axilla close to the outer border of the pectoralis major. About one pint of pus escaped from the wound. A sponge holder introduced into the wound could be passed to the clavicle, the left border of the sternum, the axilla, and under the scapula. The wound was drained by a rubber tube for 5 days and was dressed once or twice a day for 11 days, then once every second day until May 9, 1913. The discharge was a malodorous pus containing the same organism which was found in the blood. The muscles of the entire left shoulder girdle were massaged lightly and cautiously every day, the movements of the massaging hands being directed toward the wound. There was pus beneath the scapula and in the shoulder joint, the latter draining without surgical interference into the axilla. Adhesions in the shoulder joint were prevented by a single passive motion of the arm in every normal direction whenever the wound was dressed.

March 24. There is an increase of temperature and, for the last 4 days, great tenderness in the left side over the lumbosacral junction of the spine.

March 25. Under local novocaine anesthesia I made an incision down to the left side of the last lumbar and first sacral vertebræ. No pus was found. The wound was sutured and not drained. The axillary wound was discharging a little, the gauze being only slightly wet.

March 29. There is a moderately profuse discharge from the axilla. The patient looks bright and has a good appetite.

April 20. The patient has been out in the fresh air every day for a week. The arm is still painful. The discharge is slight, consisting of serum and blood. The patient received in all 8 doses of the autogenous vaccine.

The patient was perfectly restored to health. He can move his arm and shoulder freely in all normal directions without pain.

We have here a case of a general septicemia due to a *Staphylococcus pyogenes* infection complicated by a subpectoral abscess, the latter extending into the axilla, beneath the scapula, and into the shoulder joint. It was a general infection from the beginning. The infection started, according to my opinion, in the mouth, as no wound or abrasion of the skin of the entire left arm or an inflammation of the axillary lymph glands or any small wound in other parts of the body was noticed before the illness began and as the smears from the mouth showed numerous staphylococci and only a few other bacteria.

This staphylococcus resembled *Staphylococcus salivarius pyogenes*. The serum of a rabbit immunized with it agglutinated suspensions of *M. salivarius pyogenes*, *Diplococcus crassus*, *M. aureus pyogenes*, and *M. albus pyogenes*, which are all, according to newer investigations, strains of the same organism. It was agglutinated by the serum of the patient.

The good result in this case is very gratifying,

(1) as joints are usually crippled by a suppurative process due to a staphylococcus infection; (2) as a septicemia complicated by a subpectoral abscess is, according to von Bergmann and Mikulicz, a condition which is often very difficult to diagnose and which is almost always fatal.

The case teaches that 1. In "acute rheumatism" we have to look out for blood infections and make blood cultures; 2. A subpectoral abscess should be drained as early as possible; 3. A single incision in the most dependent part of the axilla may drain a subpectoral abscess and it is not necessary to make several and very large incisions as recommended by prominent authors; 4. An autogenous vaccine, if possible, to be obtained early, will help to bring about a favorable result; 5. Stock vaccines should not be used unless the exact nature of an infection has been determined by proper bacteriological and serological examinations.

633 East 241st Street.

SOME DIFFICULTIES IN THE DIAGNOSIS OF GENERAL PARALYSIS OF THE INSANE.

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When we consider the manifold physiological function of the area involved and the diffuse nature and varied intensity of the pathological processes found in this disease, we cease to wonder at the variety of disease pictures presented and the difficulty in the early diagnosis of all cases. Kraepelin, in his excellent treatise on "General Paresis" has distinguished the following principal forms, viz., the demented, the depression, the expansive, and the agitated, and in his discussion of the symptomatology under each of the groups, he seems to have well covered the cases generally seen.

However, in an institution such as the Government Hospital for the Insane, where about 8 per cent. of the large number of admissions are paretics, we are occasionally confronted with a case which differs in its symptomatology or which runs an atypical course and the diagnosis of which is uncertain.

I desire to present a few cases which have come under my observation, all of which have at some time been diagnosed general paresis although later developments have led us to believe that several were cases of cerebral syphilis.

The following case is interesting owing to its long duration and the difficulty in differentiating between paresis and cerebral syphilis:

Case I. Patient, a white male, aged 28 years, on admission July 25, 1906. He occupied a responsible position, having supervision of a large number of men. Family history negative except for the fact that the patient's father had an affection resembling locomotor ataxia. The patient had typhoid at the age of 14, had gonorrhea and chancroids on numerous occasions. He contracted syphilis in July, 1901, and received treatment for some five years subsequently.

He was sent to the Philippines on duty in 1903, returning in December, 1905. While in the Islands his first symptoms became manifest. He showed a loss of memory, was lazy, and came into frequent personal difficulty with his associates. On admission to this institution the patient was somewhat emaciated, muscles flabby, appetite poor, and he suffered from frequent attacks of indigestion. He was quite indolent, preferring to lie in bed most of the time. Complained of frequent headaches and nervousness, was sexually weak but not impotent. He suffered from a mild depression, was easily excited, at times talkative and occasionally shut himself in his room. The patellar reflexes were exaggerated, pupils normal. Speech was rather drawling and monotonous with occasional elision of syllables. The patient would not read or engage in any amusements. There was a partial Babinski reflex on both sides. The general mental picture at this time somewhat resembled that of dementia praecox.

On August 2, 1906, patient suffered from his first convulsion, following which he remained in a comatose state for about a half hour. He failed rapidly both mentally and physically, became exceedingly emaciated, was clouded mentally and could not recognize his friends. He refused nourishment and had to be tube-fed. There was incontinent of urine and patient became very untidy in habits. He showed marked retardation, speech became more slurring in character, the facial muscles showing marked tremor. There were no evidences of hallucinations or delusions at this time. He was treated with mercurial inunctions and showed marked improvement during the latter months of 1906. February, 1907, the patient had another convulsion and shortly afterwards an irregularity of the pupils was first noted, the left also being larger than the right. At that time the Romberg was negative, there was some incoordination, and the tendency to somnolence became more marked, the patient spending from sixteen to eighteen hours out of the twenty-four in bed. He was disoriented and memory for recent events was poor. In May and June, 1907, the patient had several attacks of dizziness, but did not lose consciousness. In August a severe convulsion occurred. The patient was placed on treatment with atoxyl every second day. Late in September another epileptiform attack occurred, followed by a peculiar sensation and numbness of the arms. Afterward his left arm became practically useless and left leg dragged somewhat. There was a slight ptosis of right eye and a drawing of corner of mouth on right side. Pupils were sluggish in their reaction to light and he could scarcely swallow. He remained in a partially stuporous condition until July, 1908, when he showed such marked improvement that he was allowed to visit Atlantic City for several weeks, returning apparently in a much better condition, but rather tired. In September, 1908, patient suffered from a severe convulsion. He went home for a visit in September, 1908, returning to the hospital in January, 1909. While away he drank considerable whiskey and went on frequent debauches. He had about four convulsions during this time. During February, 1909, he improved, but gait was ataxic and he complained of weakness of left side of body. His salivary secretion greatly increased and the patient became more untidy in appearance. Examination of the cerebrospinal fluid made July 26, 1909, showed the following: Wassermann reaction, positive; cells per cmm., 47; differential count: lymphocytes, 83 per cent.; large mononuclears, 10 per cent.; plasma cells, 5 per cent.; polymorphonuclears, 1.5 per cent.; kornchenzellen, 0.5 per cent. The Wassermann of the blood serum was positive.

Mental examination made January 3, 1911, showed patient's memory to be fair for both remote and recent events and during that year he improved somewhat mentally and physically. In March, 1911, and again in September, 1911, the patient received 0.6 gram of salvarsan intramuscularly. During the latter part of 1911 and all of 1912 his condition showed but little change and convulsions occurred occasionally. In January, 1913, the Wassermann of the cerebrospinal fluid was negative, appearance clear, protein content not increased, cells per cmm. 2. Early in 1913 he was placed on treatment with potassium iodide in increasing dosage. In December, 1913, the patient still experienced difficulty in walking, knee jerks were exaggerated, pupils were somewhat irregular but responded to light and accommodation. Slight tendency to Romberg apparent. Appetite was good and patient slept well. December 24, 1913, he was allowed to go on a visit home, returning March 3, 1914. After this he showed a great deal of improvement, enjoyed parole of the grounds, and conducted himself well. During 1914 he received potassium iodide and mercurial inunctions. He had a convulsion in June, 1914, followed by a stupor and confusion. His physical and mental condition again improved and he spent a great deal of time playing cards with fellow patients. In March, 1915, the Wassermann of the blood serum and of the cerebrospinal fluid were both negative.

At the present time the patient shows the following

symptoms: speech rather monotonous and great difficulty is experienced in the pronunciation of the test words. Patellar reflexes are somewhat exaggerated, pupils irregular in outline and react sluggishly to light. There is still a slight weakness of the muscles of the left side and the patient limps somewhat. He is still very indolent, preferring to remain in bed until midday. Memory is very poor.

In December, 1909, the mental symptoms, speech, and laboratory findings justified a diagnosis of paresis, and the case was so diagnosed. At present, however, because of the long duration of the disease and the negative character of the cerebrospinal fluid after such slight treatment, I think we can call this a case of cerebral syphilis.

The second case, while clinically one of general paresis, must be diagnosed cerebral syphilis owing to the laboratory findings.

Case II. Colored, male, driver, aged 42 on admission, May 12, 1914. Family history negative. Early life uneventful. He has apparently been a heavy drinker. First symptoms became manifest several years ago. He was irritable, irrational, talked to imaginary persons and wandered about the streets night and day saying he wanted to kill someone. On admission to this institution he was fairly well oriented, euphoric and had grandiose ideas. Stated that he was worth several millions of dollars, was personally acquainted with the President, etc. His memory was poor and he could not name the days of the week.

Physical examination—deep reflexes generally exaggerated. Romberg showed some swaying. Pupils were irregular in outline, but reacted to light and to accommodation. His speech was quite slurring in character, with marked slurring and elision of syllables and his lips were tremulous while speaking. There was a coarse tremor of the hands and of the tongue.

Shortly after admission he became quite negativistic and refused food, saying that he was tired of living. In May, 1914, the Wassermann of the blood serum was complete positive; of the cerebrospinal fluid negative, protein content increased, cells per cmm. 12. On December 12, 1914, the Wassermann of the fluid was still negative, cells per cmm. 7. Up to the present time this patient's condition has shown very little change.

The third case is remarkable for the frequency with which it has been necessary to change the diagnosis during a period of about ten years.

Case III. White male, single, occupation driver, aged 37 on admission, December, 1905.

Family history—father suffered from melancholia and died of paralysis. One sister died of tuberculosis. Patient was somewhat addicted to the use of alcohol. Admitted excessive and unnatural sexual indulgence. Syphilis denied. In September, 1905, immediately after the death of his sister, the patient became melancholic and lost all energy. In October, 1905, he refused to work and also declined all food or drink, becoming as a result quite emaciated. He was morose and for several days prior to his admission to this institution refused to speak.

On admission he was negativistic, indifferent, somewhat catatonic and quite untidy in habits. A diagnosis of dementia præcox was made at that time.

During 1906 the patient showed marked improvement and in January, 1907, was discharged as recovered.

He was readmitted January 24, 1910. At the time of his second admission his actions and general deportment were characteristic of a high grade imbecile. Mentally he was much below par and his reactions to the various tests were very childish. He was talkative, restless and mischievous, vain and boastful. His intellectual processes were quite limited and moral laxness was evident. The physical examination was without particular interest except for a ptosis of right eye.

In August, 1910, a diagnosis of imbecility was made. In November, 1910, the Wassermann of the blood serum was negative.

During 1911 and 1912 the condition of the patient showed some improvement. His behavior was excellent. He was alert, industrious, and evidenced a fair degree of intelligence. In October, 1912, the patient became rather confused and untidy in his habits, but would have periods of remission during which he was fairly normal in appearance. In February, 1914, it was noted that the patient was disoriented, his speech was slurring in character, and test words were pronounced in a stumbling manner. His speech disorder grew worse and in January, 1915, the patient presented the characteristic symptoms of general paresis. The Wassermann of the blood serum January 3, 1915, was complete positive. The cerebrospinal fluid showed a double positive Wassermann, protein content increased, cells per cmm. 10. Accordingly a diagnosis of paresis was made.

January 15, 1915, the patient suffered from a series of convulsions, grew weaker rapidly and died. Autopsy was not obtained.

After a study of the above cases and of others observed at different times, I have reached the conclusion that we must not be too hasty in making a diagnosis of a case of syphilis of the nervous system on the clinical symptoms alone, but must depend more and more upon modern laboratory methods, which have reached such a high degree of perfection. Especially is this true when we consider the difference in the prognosis of paresis and cerebral syphilis.

AN IMPROVED AND SIMPLIFIED TECHNIQUE FOR AUTOSEROTHERAPY.

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The subject of autoserotherapy is claiming the attention of thinking physicians everywhere, as is evidenced by the number of articles and references pertaining to this subject now appearing in current medical literature. Those who have given time and study to this subject are quite enthusiastic, for most excellent results have been obtained in the treatment of some of our most obstinate diseases.

The principal objection to the method has been the difficulty in carrying out a perfect technique, outside of a properly appointed hospital.

The most common method has been to draw off a portion of the patient's blood, centrifuge it to obtain the serum, add some antiseptic to the serum and then keep it on ice for repeated use by hypodermic injection into vein or muscle. This technique, unless carried out under strict aseptic conditions, is open to considerable danger. There is too much handling of the serum.

We have been studying autoserotherapy for several years and have perfected a technique which in our hands has proven simple, logical, and effective. The results of our work have led us to believe that autoserotherapy may be made to play a most valuable part in the treatment of pellagra, pneumonia, typhoid fever, psoriasis, septic conditions; in fact, wherever a stimulation of the antigenic functions of the body is indicated, autoserotherapy is the most rational method of accomplishing it. Our technique places autoserotherapy in the hands of the general practitioner. It makes it a safe method that may be generally employed in indicated cases without fear of harm.

An area on the chest two inches square is painted with three per cent. iodine; when thoroughly dry, a piece of ordinary fly blister plaster one and one-half inches square is smeared with sterile petrolatum and applied to this area. This is protected by a cupped shield (like that used following cataract operations) held in place by strips of adhesive plaster. In about twelve hours there will be from two to three cubic centimeters of serum in the blister, and this amount has proven amply sufficient in our work. One corner of the blister is raised, and an ordinary aseptic hypodermic syringe is used to draw

out the amount of serum desired. This serum is then immediately injected subcutaneously. The plaster is carefully removed, and the blister area dressed as a burn.

The advantages that we claim for this technique are:

Simplicity—It can be used by any physician anywhere without special equipment.

Safety—The serum is not exposed to contamination and is not liable to carry live bacteria.

Efficiency—We believe that this exudate serum is more active and more efficient than the serum from centrifuged blood. The method of producing this serum would undoubtedly cause it to be richer in antigenic properties. Antiseptics are not needed. The serum changes as the disease improves, for a fresh serum is prepared for each injection.

Medicolegal Notes.

Medical Examiner's Report of Autopsy as Evidence.—Under the Massachusetts statutes providing that a medical examiner, on receiving notice that there is within his county the body of a person supposed to have come to his death by violence, shall take charge of it, and, if he thinks it necessary, make an autopsy and file with the district attorney a report of the autopsy, and that the court or trial justice shall thereupon hold an inquest, it is held that the report of the autopsy, even though a public record, is *res inter alios acta*, and not admissible in an action for death to prove the cause of death, as its statements are of matters of opinion reached by the medical examiner upon his medical knowledge, or by way of inference from answers to his inquiries, or from facts observed by himself. The examiner, however, in testifying, may use the report to refresh his memory.—Jewett v. Boston Elevated Ry. Co., Massachusetts Supreme Court, 107 N. E. 433.

Regulation of Practice of Medicine—Drugless Healing.—In proceedings in the Michigan courts for practising medicine without a license in violation of the statute, the defendant claimed that he did not make use of drugs, but practised as a "chiropractor," treating patients by manipulation of the spine and muscles of the back. The question was raised whether the title of this act, "An act to provide for the examination, regulation, and licensing of physicians and surgeons," covers and applies to the practice of medicine. The defendant contended that the act is not one for the regulation of the practice of medicine, but one for the regulation of physicians and surgeons. It was held that the act is not only one to regulate but to examine, register, and license them. The police power to license, as indicated in the title, is the recognized power to authorize persons to engage in vocations which need special surveillance, without which they could not be permitted. The words "persons practising medicine" were held to be synonymous with "physicians." The following States have held that the practice of various systems of drugless healing, the respective merits of which the courts cannot and do not assume to decide, is to be regarded as practising medicine: Alabama (osteopathy); Nebraska (osteopathy); Washington (osteopathic and magnetic); Illinois (magnetic healing in the nature of osteopathy); Iowa (neurology and ophthalmology); South Dakota (ophthalmology, or fitting eyeglasses); Iowa (vital science); Ohio (Christian Science for pay); Indiana (suggestive therapeutics); Tennessee (functional ray treatment); Indiana (magnetic healing); Texas (manipulation); Kansas (chiropractic); Iowa (chiropractic); Missouri (chiropractic); New York (mechanoneural therapy). The principles on which this line of authority reached its conclusions are comprehensively expressed in Commonwealth vs. Jewelle (199 Mass. 558, 85 N. E. 858, as follows: "It would be too narrow a view of the practice of medicine to say that it could not be engaged in in any case or class of cases otherwise than by prescribing or dealing out a substance to be used as a remedy. The science of medicine—that is, the science which relates to the prevention, cure, or alleviation of disease—covers a broad field, and is not limited to that department of knowledge which relates to the administration of medicinal substances. It includes a knowledge not only of the functions of the organs of the human body but also of the diseases to which these organs are subject, and of the laws of health and the modes of living which tend to avert or overcome disease, as well as of the specific modes of treatment that are most effective in promoting cures. It is conceivable that one may practice medicine to some extent in certain classes of cases without dealing out or prescribing drugs or other substances to be used as medicines. It is conceivable that one may do it in other ways than those practised as a part of their respective system, by either osteopathists, pharmacists, clairvoyants, or persons practising hypnotism, magnetic healing, mind cure, massage-cure science, or the cosmopathic method of healing." There are authorities to the contrary of the foregoing views, but the court concluded that the great weight of authority sustains the views above expressed.—Locke vs. Ionia Circuit Judge, Michigan Supreme Court, 151 N. W. 623.

Corporation's Liability for Medical Services Ordered by Its Agent.—In an action by a physician against a department store for professional services rendered in the treatment of one of its employees at the request of the defendant's assistant superintendent it appeared that, in case of physical injury to an employee or a customer in its store, the defendant had instructed its superintendent and assistant superintendent immediately to summon and employ a physician to attend to the injured person. The defendant claimed, however, that the authority of its superintendent and assistant superintendent in that regard was limited to the employment of a physician to render first aid to the person injured, and that they were without authority to bind the defendant for the further medical treatment of such injuries. For more than two years before rendering the services for which he sued, the plaintiff had been summoned from time to time by the assistant superintendent to attend persons who were sick or injured in the store. The superintendent and assistant superintendent testified that they told the plaintiff of the limitation on their authority to bind the defendant for the services of physicians; the plaintiff denied that he had received such information. The defendant denied liability for the plaintiff's services beyond the first treatment. As a general rule the superintendent of a mercantile corporation has not implied authority to bind the corporation to pay for the services of a physician whom the superintendent has called to attend an employee of the corporation who has been injured in the course of his employment. But the corporation, after notice of such employment, by its conduct and by its silence, may be held to have ratified the acts of its agent, or to be estopped from denying the agent's authority. And notwithstanding the absence of actual authority in the agent and the unwillingness of the law to imply such authority from the nature of the agent's general powers, nevertheless the corporation by its previous conduct, as by payment for previous like services, may have so held the agent out as one having full authority to employ physicians that it will not be permitted later to disavow the agent's acts in that regard. The evidence in the present case was held to be sufficient to justify findings that the defendant was estopped to deny its superintendent's authority to hire the plaintiff and that it had ratified the superintendent's act. The superintendent knew that the plaintiff was treating the injured employee and intending to continue such treatment as long as required, and would regard the treatment as rendered on account of the employer and to be charged to it. It was held that such notice to the superintendent being notice to the employer, in order to escape liability for such medical services, it was necessary for the employer to notify the plaintiff it would not pay for complete treatment, and that its superintendent's authority had been limited to securing first aid to the injured.—Ward vs. J. Samuels & Co., Rhode Island Supreme Court, 93 Atl. 649.

In an action for the value of services rendered it appeared that the plaintiff was called to attend an employee who had sustained a serious injury in an elevator accident. On arriving at the place of business of the employer, a corporation, and realizing the seriousness of the injury, the physician made inquiry as to who would pay for the treatment and asked that a member of the firm should be called. In response to this request the secretary in charge of the business appeared, and directed the physician to go ahead and do the best he could for the employee and take him to a hospital. This evidence was held to justify a finding of an actual contract binding the employer to pay for medical treatment rendered by the physician.—Greensfelder vs. Witte Hardware Co. (Mo.), 175 S. W. 275.

MEDICAL RECORD.

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AN ALLEGED FALLACY OF THE ABDERHALDEN REACTION.

SOME discussion is said to have been aroused in scientific circles in Japan by the recent researches of M. Kiutsi, director of the gynecological department of the City Hospital of Hakodate, who has published his results for the benefit of English readers in a pamphlet entitled "A Contradictory Contribution Against Abderhalden's Theory of Protective Ferment." The author states that he and Abderhalden were the first to employ the term "Schutzfermente" or "Abwehrfermente" but that his later investigations have completely disproved the original hypothesis. He now proposes a new term, "Destructive ferment," "Minusferment," or "Abbauferment," which serves to break down and destroy the cells and cell substances. This ferment has a very strong resisting power, losing its activity only when heated to 120° C. for thirty minutes, and not being influenced by exposure to sunlight, *x*-rays, acids, alkalies, or the action of other ferments.

According to the Abderhalden theory the injection into the body of a substance foreign to the blood excites the production of the so-called protective ferment. Kiutsi injected into rabbits a 5 per cent. emulsion of fresh placental tissue that had been freed from blood. The urine of the rabbits was then tested daily for seven days by the author's so-called filtration process, as the result of which it was shown that the rabbit excreted the protective ferment within twenty-four hours after the injection of the placental extract. On the other hand if the latter was heated to 120° C. for thirty minutes previous to injection the protective ferment did not appear in the urine. The same results were obtained with the use of fresh sarcoma extract.

Kiutsi concludes that the protective ferment is, in all probability, present in the injected unheated material and thereby appears in the urine that is tested. Examination of fresh sarcoma tissue with the aid of the filtration process showed the presence of this ferment, which is supposed to be present in all tissues. If the ferment is isolated from the urine of a pregnant woman and is injected into a rabbit it subsequently appears in the urine of the latter. The above facts, if substantiated, would appear to demolish the very foundations of the Abderhalden theory. Instead of the living body creating the protective ferment to guard against the foreign proteins or their derivatives, this ferment is really introduced into the body with the injected material.

The presence of the destructive ferment is accounted for on the hypothesis that in all living cells there are two ferments: a constructive one—"Plusferment," or "Aufbauferment," which has the function of assimilating or synthesizing the cell substances, and a destructive ferment—"Minusferment," or "Abbauferment," which has the function of tearing down the effete cell substances and preparing them for excretion. In conditions of health there is a perfect equilibrium of both ferments. Disease may cause a disappearance of the constructive ferment with the result that the destructive ferment breaks down the cells and tissues that harbor it and then appears in the blood in which it may be detected. A marked contrast between the two kinds of ferments exists in the fact that the constructive ferment is very unstable, demanding for its existence a great many conditions, whereas the destructive ferment is highly stable, resisting a temperature even of 110° C.

THE CONTINUING MENACE OF TETANUS IN THE WAR ZONE.

Drs. Gudgeon, Gardner, and Bawtree have been investigating the bacterial flora of wounds produced during the present war and have published some of their findings in the *Lancet*, June 12, 1915. With regard to the occurrence of *B. tetani* they state of the eleven patients in whose wounds the bacillus of tetanus was found nine had been treated prophylactically with tetanus antitoxin at an early date and at no time did any one of these exhibit any symptoms of tetanus.

It is pointed out that it is of considerable importance to realize that a wounded man may be acting as a carrier of the bacilli of tetanus for at least two months after the date of the wound, and probably for a much longer period, without any reason or chemical grounds to suggest that these bacteria are present in the tissues. Whatever the nature of the wound, whether it be slight or severe, without a careful bacteriological examination it is impossible to be sure there are no tetanic spores lurking in its depths. The extreme difficulty of killing these pathogenic anaerobes makes it incumbent upon those called upon to treat wounds incurred in the war, and especially in Northern France and Belgium, to take very special precautions to prevent their spread as well as to cure those infected. In the first instance, great care should be taken to sterilize effectively surgical instruments which have been used in operating upon wounds. If this be not done tetanus is certain to be communicated. Prophylactic injections of antitoxin, as previously noted, have been proved to be of the greatest service and the writers of the paper state that such injections, when promptly given, have been the means of saving the majority of patients seen by them from this most serious disease arising from wound infection.

THE CLINICAL STUDY OF BLOOD-SUGAR.

Although clinicians have for a long time recognized the possible clinical importance of a determination of the sugar content of the blood, the routine use of this procedure has been neglected on account of the difficulty of the technique and the large amount of blood required. The improved method devised by Kowarsky about two years ago has apparently overcome these handicaps. With a modification of its technique, the simplicity and accuracy of the Kowarsky method have appealed to S. Strouse, assisted by I. F. Stein and H. Wisely (*Bulletin of the Johns Hopkins Hospital*, June, 1915), who with its aid have made an important clinical study of the sugar content of the blood.

The necessity of determining the variations in the blood-sugar is illustrated by a case of obstinate furunculosis in a young man in whom, although examination of the urine did not reveal the presence of any sugar, nevertheless examination of the blood showed a definite alimentary hyperglycemia. This examination was indicated particularly in view of a distinct diabetic family history. In this patient a strict carbohydrate-free diet resulted in a prompt healing of the lesions and the prevention of new ones. This case teaches an important lesson: hyperglycemia may exist without glycosuria. It also suggests two promising lines of investigation, namely, the early changes in diabetes mellitus and the interrelations between glycemia and glycosuria.

The authors conclude from a study of 61 determinations that the normal blood-sugar varies from 0.04 per cent. to 0.12 per cent. with an average of 0.84 per cent. These variations are attributed to the varying factors in the ordinary day of the normal individual, especially to the diet factor. Of course, an increase in the carbohydrate intake raises the blood-sugar. In the normal man this describes a curve which reaches its lowest limits before breakfast and before dinner and invariably shows a rise one hour after meals. To be of any value blood-sugar determinations must be performed before and after an ordinary meal containing carbohydrate.

A Laryngotracheal Sign in Pleural Effusion.

This sign is described by Luciano Meoni in the *Rivista Critica di Clinica Medica*, June 5, 1915. Its virtues consist in its simplicity and in its constancy as a diagnostic index. In cases of unilateral pleural effusion in a thorax of normal conformation, and not accompanied by any pulmonary lesions, there is a deviation of the trachea toward the side of the effusion. This deviation is rendered visible in the following manner: A thin strip of paraffin is fastened to the midline of the neck in front from the cricoid cartilage down to the episternal notch. By careful inspection one may observe the lateral movements of this strip which are exactly those of the trachea during the act of respiration. The deviation occurs during inspiration and is more pronounced at the lower end of the paraffin strip. In cases of bilateral effusion the deviation is toward the side of the greater effusion. It is questionable whether this sign will supplant any of the well-established methods of detecting pleural effusion. Nevertheless, the laryngotracheal sign may be of eminent confirmatory value in cases in which the ordinary physical signs are not conclusive. Possibly future studies may reveal an extended field of usefulness of this phenomenon in the study of the lateral movements of the visible portion of the trachea, particularly in cases of unilateral lesions of the lungs.

The Lactose Treatment of Diabetes.

For a long time it has been known that the administration of lactose in some cases of diabetes is followed by a marked diminution or even a disappearance of the glycosuria. Fernand Farges (*Gazette Hebdomadaire des Sciences Médicales de Bordeaux*, June 6, 1915), reports the excellent results he has obtained with this method in a series of seven cases of diabetes. In some of the patients the diet was restricted to two quarts of milk daily with the addition of from 20 to 30 grams of lactose, and in other cases the patient continued his regular diet to which the lactose was added. In most of the cases the sugar disappeared completely from the urine. In other instances the glycosuria was considerably diminished. The author concludes from his experience that lactose is completely assimilated by the diabetic. At the same time it appears to augment the assimilation of other carbohydrates that are ingested with it. Lactose is ordinarily a diuretic but in the diabetic it has the opposite effect. As a supplementary article in the diet of typhoid fever and other diseases requiring an easily assimilated nutrient, milk sugar plays an important rôle. In diabetes its rôle is a double one: First, as a nutrient, and second, as an agent that greatly increases the carbohydrate tolerance of the individual.

Exhaustion as Distinguished from Fatigue.

The nature of exhaustion is far from being understood. It differs from mere fatigue in that something in the body is actually used up and cannot be made good vicariously. In fatigue we may imagine an organism as clogged with its own slack, so that restored equilibrium is a matter of elimination. In exhaustion the muscular tissue has perhaps run out of glycogen, or the adrenals and other structures can no longer supply adrenalin. At a meeting of the United Berlin Medical Societies on March 23 (*Muenchener medizinische Wochenschrift*, May 4), Brugsch recognized in war exhaustion a special affection due to the cooperation of psychic and sensory insults, lack of nutrition (due to failing appetite), and excessive bodily exertion. These subjects may recover readily if they can sleep for three or four days at a stretch. There may be severe sequelæ, as persistent low blood-pressure, psychasthenia, myasthenia, and ready disposition to infection. Tuberculosis is often lighted up. The sequelæ are largely dependent on the fact that adrenalin production is still in abeyance. Until it is restored recovery is impossible. The deep-seated nature of exhaustion is shown by the fact that a similar picture develops in cancer patients.

Tetanus and Yawning.

In Gowers' work on "Nervous Diseases" attention was called many years ago to a certain parallelism between the order of participation of the muscles in the act of yawning and in that in the development

of tetanus. The yawn begins as a prolonged inspiration with depression of the lower jaw; next appear brief tonic contractions of the muscles of inspiration, the depressors and elevators of the lower jaw, and certain muscles of the face and neck. If the yawner happens to be standing there is also a slight contraction of the back muscles. These muscles are the ones first involved in tetanus, so that some peripheral nerve center may be invoked to account for the parallel. At a session last March of the Royal Imperial Medical Society of Vienna (*Muenchener medizinische Wochenschrift*, May 4), Beer, after corroborating the observations of Gowers, expressed the opinion that such a center should exist in the velum palati. This not only presides over the mechanism of the ordinary yawn, but is also in evidence in a variety of other phenomena, such as the preagonal yawn of the drowning. The position of this center at the entrance of both the respiratory and digestive tracts make the order of participation of the muscles in part an accidental one.

News of the Week.

Committee of American Physicians for the Aid of the Belgian Profession.—Dr. F. F. Simpson, treasurer, 7048 Jenkins Arcade Building, Pittsburgh, Pa., reports the following contributions received during the week ending July 10, 1915:

S. E. B., Pittsburgh, Pa.	$50.00
Dr. George B. Broad, Syracuse, N. Y.	10.00
Dr. Winfred Wilson, Memphis, Texas	11.50
Delta County Medical Society, Escanaba, Mich.	10.00
Receipts for the week ending July 10	$81.50
Previously reported receipts	7,544.34
Total receipts	$7,625.84

American Red Cross Workers Insulted in Vienna.—It is reported in *The Sun* that the surgeons and nurses attached to the American Red Cross unit in Vienna have been repeatedly insulted and mobbed by the Austrians because they speak English. They are evidently not wanted and their most sensible and dignified course would be to leave. In Russia, Serbia, and France Americans on errands of mercy have been gratefully welcomed and honored even though they did speak their mother tongue.

Typhus Decreasing in Serbia.—A number of American physicians and nurses from Serbia arrived in Paris on July 3 and reported that the epidemic of typhus in that country is practically under control. Dr. Strong and a large staff of Americans are still in Serbia, but it is not expected that they will remain much longer.

Few Amputations Indicated.—In reply to a question in Parliament recently the British under-secretary of war stated that in only 782 cases had it been necessary to amputate one or more limbs of British soldiers admitted to hospitals in England and France since the commencement of the war to the present time. This seems hardly credible when we learn that the French Government states that there are about 15,000 French soldiers in need of artificial legs. This statement was made to the artificial leg department of the American Relief Clearing House in Paris recently organized by Charles Carroll of Carrollton. Dr. Tuffier, it is said, has undertaken to make the necessary measurements, which will be forwarded to New York together with photographs of plaster casts of the stumps.

Health of New York City.—The Department of Health reports that there were, during the week ending July 3, 1,247 deaths in this city as compared with 1,160 deaths during the corresponding week of last year, the rate being respectively 11.20 in 1915 and 10.84 in 1914. While it is true that there were 87 more deaths, the increase in the population accounts for 47 of these. Moreover, the rate for the first 27 weeks of this year remains lower than the rate for the corresponding rate for 1914. Of the contagious diseases, measles showed a decided increase over last year. Both lobarpneumonia and bronchopneumonia and tuberculosis also showed a marked increase over the corresponding week last year.

The University of Vermont Medical School graduated a class of forty-one the last week of June.

St. John's Guild Floating Hospital.—The *Helen C. Juillard*, the floating hospital of St. John's Guild in New York, began her trips for the season on July 6. The boat starts from East River piers on Mondays and Thursdays, North River piers on Tuesdays and Fridays, and Brooklyn piers on Wednesdays and Saturdays.

Fewer Railway Casualties.—Reports made to the Interstate Commerce Commission by the steam railways of the country covering the quarter ending March 31 shows that 65 persons were killed and 1,972 injured in train accidents for the quarter. Compared with the same period the preceding year this was a decrease of nearly 50 per cent. in the fatalities and of more than 5 per cent. in the accidents causing injuries. There was also a considerable decrease in the number of other accidents, including those of employees engaged in railway work and to employees engaged in other work than the operation of trains, classed as "industrial accidents."

Increase in Fourth of July Accidents.—The Department of Health states that there were no fatalities attending the celebration of Independence Day in this city, but there was an increase in the number of accidents of more than 100 per cent over last year, most of the wounds being caused by blank cartridges.

Qualification of Health Officers Under the State Board.—The New York State Public Health Council has voted that local health officers appointed after November 1, 1916, shall have the following qualifications: (1) They shall be graduates of medicine of not less than three years' standing; (2) They shall when appointed be not less than twenty-four nor more than sixty-five years of age; (3) They shall have complied with one of the following requirements: (a) They shall have taken a correspondence course in public health of one year with at least one week of practical demonstrations in laboratory and field work, both correspondence course and demonstrations to be approved by the Public Health Council, with examinations and a certificate; (b) They shall have taken a course in public health of at least six weeks, including practical laboratory and field work with lectures and reading at an educational institution, such course to be approved by the Public Health Council, with examinations and a certificate; (c) They shall have submitted evidence satisfactory to the Public Health Council of special training or practical experience in public health work, with examination if required by the council. Under special conditions, however, speci-

fied in writing by the local board of health or other appointing power or by the health officer, any of these qualifications may be waived by the Public Health Council. The council has also recommended to boards of health that in appointing health officers previous to November 1, 1916, they specify that the appointee agrees to conform to the requirements within the first year of the new term.

Homeopathic Department in the University of California.—According to *Science* the Hahnemann Medical College of San Francisco has offered to convey all its property to the University of California, and has proposed to cease separate instruction. Instead two professorships are to be maintained in the University of California Medical School in homeopathic materia medica and in homeopathic therapeutics, the financial provision therefore to be made, for the next two years, by the homeopaths. The instruction in homeopathic materia medica and homeopathic therapeutics will be offered as elective courses. In all other respects students wishing eventually to become homeopathic practitioners will receive exactly the same instruction in the University of California Medical School as its other students.

Dr. Lucius P. Brown, head of the Tennessee Pure Food and Drug Inspection Department, has accepted the directorship of the Bureau of Food Inspection, New York City Department of Health.

Dr. W. F. R. Phillips of the Medical Department of the University of Alabama, Mobile, has accepted the chair of anatomy in the Medical College of South Carolina.

Dr. Allen W. Freeman, assistant health commissioner of Virginia, has been appointed epidermiologist in the U. S. Public Health Service.

Dr. W. S. Thayer of the Johns Hopkins Medical School has been elected an overseer of Harvard University.

Dr. Roger S. Morris of the Clifton Springs Sanatorium has been tendered the position of professor of internal medicine at the University of Cincinnati. The chair is the recently established Frederick Forchheimer memorial professorship.

Norwegian Hospital, Brooklyn.—The Board of Managers of the Norwegian Hospital, Brooklyn, has decided to build an addition to the institution at a cost of $100,000. The addition will be five stories in height and will cover almost as much ground as the old hospital proper.

Blindness in the United States.—A recently issued bulletin of the Census Bureau reports that blindness is less common in America than in most other countries, and is apparently decreasing among the young. Indians suffer much more than other races from the affliction, and blindness is much more prevalent among negroes than among whites, and among men than women. The blind population of the United States in 1910 numbered 57,272, or 62.3 to each 100,000 of population. Trades taught in schools or workshops have prepared 1,500 blind persons for total or partial self-support.

Charitable Bequests.—By the will of the late Phebe A. Brown of Philadelphia the sum of $5,000 is bequeathed to the Presbyterian Hospital for the endowment of a free bed to be known as the "William Snow Brown Bed." By the will of the late Samuel Dickson of Philadelphia the sum of $50,000 is bequeathed to the trustees of the University of Pennsylvania to constitute the Fanny Hazzard Dickson Fund and one-half of the income from which is to be applied to the maintenance of the William Pepper Laboratory of Clinical Medicine and the remaining half to be applied in the discretion of the trustees to the uses of the Latin and Greek departments.

Appointments at the Rockefeller Institute.—The Board of Scientific Directors of the Rockefeller Institute for Medical Research announces the following appointments and promotions: *Associates*—Dr. James B. Murphy (Pathology and Bacteriology), Dr. Carrol G. Bull (Pathology and Bacteriology), Dr. Frederick S. Jones (Pathology and Bacteriology), Dr. Clarence J. West (Chemistry), Dr. Michael Heidelberger (Chemistry), Dr. Frederick M. Allen (Medicine), Dr. Oswald T. Avery (Bacteriology), Miss Angelia M. Courtney (Chemistry), Dr. Eduard Uhlenhuth (Experimental Biology), Dr. Carl Ten Broeck (Animal Pathology). *Assistants*—Dr. Harold K. Faber (Pathology and Bacteriology), Mr. Chester H. Allen (Chemistry), Mr. James K. Senior (Chemistry), Mr. Glenn E. Cullen (Chemistry), Miss Mariam Vinograd (Chemistry), Dr. R. Werner Marchand (Animal Pathology), Dr. Herbert D. Taylor (Pathology and Bacteriology), Dr. Oswald H. Robertson (Pathology and Bacteriology), Dr. Reginald Fitz (Medicine), Dr. Arthur L. Meyer (Physiology and Pharmacology). *Fellow*—Mr. Ernest A. Wildman (Chemistry).

Changes at the Philadelphia General Hospital.—Dr. George M. Boyd and Dr. Wilmer Krusen have resigned as obstetricians and Dr. Frank C. Hammond and Dr. John A. McGlinn have been appointed their successors. Dr. Henry W. Stelwagon has resigned as dermatologist and Dr. Henry K. Gaskill has been appointed his successor. Dr. Isaac H. Jones has been appointed laryngologist, Dr. James K. Young orthopedic surgeon, Dr. Alexander Uhle genitourinary surgeon, Dr. William J. McKinley oral surgeon, Dr. Robert J. Hunter laryngologist to the tuberculosis department, Dr. Cornelius T. McCarthy assistant laryngologist to the tuberculosis department, Dr. George Wilson assistant physician. Dr. G. S. Crampton has resigned as assistant ophthalmologist and Dr. B. F. Baer, Jr., has been appointed his successor. Dr. Theodore LeBoutillier has resigned as assistant pediatrist and Dr. Charles V. Dorwarth has been appointed his successor. Dr. Harry C. Fish has resigned as assistant physician to the tuberculosis department and Dr. Thomas Kline has been appointed his successor. Dr. John F. X. Jones has resigned as assistant surgeon and Dr. Henry Winsor and Dr. Thomas Shallow have been appointed his successors. Dr. Thomas G. Aller and Dr. David Budin have resigned as assistant oral surgeons. Dr. George Wilson and Dr. Wilson G. Wood have resigned as registrars and they have been succeeded by Dr. Leon Solis Cohen, Dr. J. Morton Boice, Dr. Clarence N. Smith, Dr. J. Ralston Wells, Dr. David W. Kramer, Dr. Russell S. Boles.

Medical Society Elections.—The American Academy of Medicine, at its annual meeting in San Francisco the last week in June, elected the following officers: *President*, Dr. George A. Hare of Fresno, Cal.; *Vice-Presidents*, Dr. Reuben Peterson of Ann Arbor and Dr. R. W. Corwin of Pueblo; *Secretary*, Dr. Helen C. Putnam of Providence, R. I.; *Treasurer*, Dr. Charles McIntyre of Easton, Pa.; *Assistant Secretary*, Dr. W. L. Estes, Jr., of South Bethlehem, Pa. The next annual meeting will be held in Detroit.

The Fulton County (Ky.) Medical Association, at its annual meeting held at Cayce in May, elected the following officers: *President*, Dr. John Naylor of Cayce; *Vice-President*, Dr. Fred Paschall of Fulton; *Secretary*, Dr. Seldon Cohn of Fulton; *Delegate to the State Association*, Dr. H. E. Prather of Hickman.

The Essex South (Mass.) Medical Society held its annual meeting in DeLand in May, elected the the following officers: *President*, Dr. G. M. Kline of Hathorne; *Vice-President*, Dr. W. G. Phippen of Salem; *Secretary*, Dr. H. P. Bennett of Lynn; *Treasurer*, Dr. G. Z. Godell of Salem; *Librarian*, Dr. C. M. Cobb of Lynn; *Commissioner of Trials*, Dr. J. E. Simpson of Salem.

The Florida State Medical Association, at its annual meeting in DeLand in May, elected the following officers: *President*, Dr. R. H. McGinnis of Jacksonville; *First Vice-President*, Dr. W. R. Stevens of DeLand; *Second Vice-President*, Dr. Mary Freeman of Perrine; *Third Vice-President*, Dr. Coffie of Fort Mead. The next annual meeting will be held in Arcadia.

The Medical Society of New Jersey, at its 149th annual meeting held in Spring Lake the last week of June, elected the following officers: *President*, Dr. William J. Chandler of South Orange; *Vice-Presidents*, Drs. Philip Marvel of Atlantic City, William G. Schauffler of Lakewood, and T. W. Harvey of Orange; *Secretary*, Dr. Thomas N. Gray, East Orange.

The Kentucky Valley Medical Association, at its annual meeting in Winchester during the last week of June, elected the following officers: *President*, Dr. W. B. McClure of Lexington; *Vice-President*, Dr. W. H. Martin of Clay City; *Secretary and Treasurer*, Dr. J. H. Evans of Beattyville. The next meeting will be held in Richmond.

The Eleventh District (Texas) Medical Association, at its annual meeting in Palestine on June 24, elected the following officers: *President*, Dr. E. B. Parsons of Palestine; *Vice-President*, Dr. Davidson of Buffalo; *Secretary and Treasurer*, Dr. Vaughn of Tyler.

The Aroostook County (Maine) Medical Association met in annual session at Houlton the latter part of June and elected the following officers: *President*, Dr. H. F. Kalloch of Fort Fairfield; *Secretary*, Dr. W. G. Chamberlain of Fort Fairfield.

Obituary Notes.—Dr. Robert E. Swigart of New York, a graduate of the Cleveland College of Physicians and Surgeons, Cleveland, Ohio, in 1898, and general superintendent of the medical department of the United Fruit Company, died suddenly from apoplexy on June 27, aged forty-one years.

Dr. Hiram Owen Worthen died at his home in Barre, Vt., on June 13 at the age of 77 years. He was graduated from the University of Vermont Medical College in 1869.

Dr. John M. Hastings of Boston died at his summer home in Provincetown on June 11. He was born in Bangor, Me., and was graduated from the Hammond Medical School in the class of 1895.

Dr. Henry Janes of Waterbury, Vt., died June 16 at the age of 83 years. He was a graduate of the College of Physicians and Surgeons, New York, in 1855. He retired from practice a number of years ago.

Dr. Henry Otto Hoffmann of Brooklyn, N. Y., died on June 25 at the age of 76 years. He was born in Germany and received his degree from the University of Würzburg in 1872. Soon after graduation he came to this country and practised for ten years in Cleveland, Ohio, afterward removing to Brooklyn, where he had since resided. He was a member of the Kings County Medical Society and the Long Island Medical Association.

Dr. Robert N. Ramsay died at Philadelphia on June 16 at the age of 58 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1879. For a time he practised his profession at Mahanoy City, Pa., later going to Birmingham, Ala., and finally settling in Philadelphia. He was a member of the Philadelphia County Medical Society and of the Medical Society of the State of Pennsylvania and a Fellow of the American Medical Association.

Dr. Eugene I. Santee died at Philadelphia on June 16 at the age of 70 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1866.

Dr. Samuel Weiss died at Lebanon, Pa., on June 17 at the age of 70 years. He was graduated from Bellevue Hospital Medical College in the class of 1870.

Dr. James E. Cleaves of Medford, Mass., died June 20 at the age of 62 years. He was born in Somerville and was graduated from the Harvard Medical School in 1879. After practising for a few years in Amesbury he went to Medford, where he had lived for 35 years. He was for some time chairman of the Board of Health of that city, and was a member of the council of the Massachusetts Medical Society and also a member of the Medford and the Middlesex Medical Societies.

Dr. J. Walter Bean of Medford, Mass., died suddenly on June 21 at the age of 60 years. He was born at Sutton, N. H., and was a graduate of the Medical Department of the University of Vermont in 1882. He served a term as interne at Bellevue Hospital, New York, and then began practice in Lyme, N. H., but in a few years moved to West Medford, Mass. He was a member of the Medford Medical Society and was for many years a member of the Medford Board of Health, in association with Dr. Cleaves who died the day before he did, and was for some time its chairman.

Dr. George P. Sword of Huntington, L. I., a graduate of the New York Homeopathic Medical College and Hospital, New York, in 1888, died at his home suddenly on July 2, aged fifty-two years.

Dr. Charles Adams Stewart of Duluth, Minn., a graduate of the College of Physicians and Surgeons of Keokuk, Iowa, in 1870, and a member of the American Medical Association, the Michigan State Medical Association, the St. Louis County Medical Society, and the Western Surgical Association, died in Minneapolis, after a long illness from paralysis, on June 22, aged sixty-seven years.

Dr. Rebecca V. Combs of Columbus, Ohio, a graduate of the Ohio Medical University, Columbus, in 1896, and a member of the Ohio State Medical Association and the Columbus Academy of Medicine, died suddenly on June 20, aged sixty-three years.

Dr. George H. Zimmerman of Pocahontas, Va., a graduate of the Medical College of Virginia, Richmond, in 1880, died at his home after a long illness, on June 23, aged fifty-seven years.

Dr. Horace F. Livingood of Womelsdorf, Pa., died at Jefferson Hospital, Philadelphia, on June 25 at the aged of fifty-six years. He was graduated from Jefferson Medical College in the class of 1882.

Dr. Mary Elizabeth Nowell died of pneumonia at Altoona on June 25 at the age of seventy-two

years. She was graduated from the Woman's Medical College of Pennsylvania in the class of 1884. She was a member of the Blair County Medical Society and of the Medical Society of the State of Pennsylvania and she was a Fellow of the American Medical Association.

Dr. THOMAS HEWSON BRADFORD died in the sequence of an operation at the German Hospital, Philadelphia, on June 25 at the age of sixty-seven years. He was graduated from Jefferson Medical College of Philadelphia in the class of 1874, and he had served as interne in the Pennsylvania, Howard, and Children's Hospitals. He was chief medical director of the Philadelphia Life Insurance Company. He was a member of the Philadelphia County Medical Society and of the Medical Society of the State of Pennsylvania and a Fellow of the College of Physicians of Philadelphia and of the American Medical Association.

Dr. MENOTTI MAZZA died at Philadelphia on July 4 at the age of 46 years. He was graduated from Keokuk Medical College, College of Physicians and Surgeons in the class of 1906.

Dr. VICTOR ALBERT ELLSWORTH of Boston, Mass., a graduate of the University of Buffalo, Medical Department, in 1896, for twenty-one years superintendent of the Washington Home in Boston, and a delegate to the International Temperance Congress at Stockholm in 1907, and to The Hague Temperance Congress in 1911, died at his home on July 7, aged 69 years.

Dr. WILLIAM GIBSON FLOYD of Roanoke, Ala., a graduate of the University of Maryland, School of Medicine, Baltimore, in 1878, a member of the Medical Association of the State of Alabama, and a member and former president of the Randolph County Medical Society, died at a sanatorium in Atlanta, Ga., on June 26, aged 63 years.

Dr. J. A. JOHNSON of Atlanta, Ga., a graduate of the Atlanta Medical College in 1855, died at his home on June 30, aged 79 years.

Dr. BENJAMIN FRANKLIN STALKER of Borden, Ind., a graduate of the University of Louisville, Medical Department, in 1873, died at his home on June 25, aged 69 years.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

ST. GEORGE'S HOSPITAL—THE NEW MILITARY HOSPITALS—LEPROSY—ROTUNDA PATHOLOGICAL REPORT—DUBLIN ACADEMY—PLAGUE BACILLI—RED CROSS AND ST. JOHN'S SOCIETIES—FARMERS SELL ANIMALS OVER AND OVER—THE LATE DR. CARMICHAEL.

LONDON, June 26, 1915.

ST. GEORGE'S Hospital occupies one of the most prominent positions at the west end of London. From Hyde Park corner it faces full on the park and enjoys the view of the constant movement of the fashionable world. The value of the site is immense and it has often been remarked that its sale would produce an endowment for the hospital. At one time, in fact, power to dispose of it for this purpose was obtained from Parliament. The matter was referred to at the annual court of governors on the 17th inst. when it was said that on several occasions there had been some negotiations, but no one has made an offer which the committee could recommend to be accepted. They are at present considering whether it would not be well to carry out several improvements while waiting quietly for an offer of such a sum as would reach their expectations—more especially as the value will probably increase as time progresses.

The staffing of the five great military base hospitals just organized in London to prepare for the reception of the wounded has given rise to some sharp criticism. The medical officers are to have the rank of major and each severally to exercise complete control. But it seems that civilians and military officers will both be employed, and some people think they will not be likely to work well together. But the suggestion is unworthy and is not the real reason of differences alleged to have been met with already. The military may be dominant, but if they insist on so much time a day being passed in their hospitals, they can hardly expect civil practitioners to offer to assist them.

A case of leprosy—the tuberculated form—was shown by Dr. C. M. O'Brien at the Dublin Academy and Sections from a nodule were exhibited (prepared by Mr. T. T. O'Farrell) in which numbers of bacilli were seen. Some of these were in cells, but most of them were extracellular. The patient was a retired soldier who had offered to serve again, but was refused on account of a cutaneous eruption. He had served in Malta, Bermuda, Jamaica, and South Africa and left the army in 1906 and worked as a farm laborer. In 1913 he suffered much from boils. In 1914 the case was diagnosed and was at the meeting fairly obvious. Face broad, chin prominent, nose flattened, lips thick, forehead lumpy and shiny, hands grey and swollen, glands shotty, mucous membranes free, no anesthesia. Dr. O'Brien reported Wassermann reaction was positive and no reaction with alt-tuberlin injected subcutaneously or by von Pirquet's method.

At the previous meeting of the Academy Dr. Rowlette read the pathological report of the Rotunda Hospital for the past year. It was stated that 774 specimens had been reported on, including 128 fragments removed for the purpose of diagnosis; there were 169 operation specimens and 25 of lochia from septic cases. Vaccines were used extensively in the gynecological as well as in the obstetrical wards. A fatal case of acute yellow atrophy was related in full detail. The following specimens were exhibited: embolus in the pulmonary artery, naevoid polypus of cervix, sarcomata uteri, fibrosed uterus, malignant papillomata of ovary, malignant of ovary, fibroma of ovary thrombosed ovarian vein, fibroma of rectus muscle, retroperitoneal sarcoma.

Professor McWeeney (in the chair) said as to vaccines they were frequently used with good results when the organism was different from the one affecting the patient. He knew this was very heterodox doctrine, but he was led to it by experience. As to yellow atrophy of the liver naked eye appearances were not always striking. He had seen multi-nucleated giant cells scattered through sarcomatous polyo of the uterus.

Sir William Smyly was interested in the case of myoma with sarcoma, from having met a similar one. The myoma was removed and the uterus explored, but the sarcoma not found. Profuse hemorrhages continued and curetting tried when the sarcoma was found. He felt confident cancer at an early stage could be cured by operation, more especially cancer of the body of the uterus.

Dr. Neill's experience of vaccines in septic cases was favorable, and mentioned a case of pre-puerperal infection in which they seemed to save life.

Dr. O'Farrell asked if a particular type of endometritis was prone to malignant change, though at the time not cancerous. Also if differences in rate of growth on agar of staphylococci had been observed in comparison with the ordinary pyogenes. He had seen a staphylococcus grow so slowly as to resemble a culture of streptococcus in forty-eight hours.

Dr. Rowlette in replying stated the custom at the Rotunda to be as soon as sepsis appeared a dose of vaccine from a previous case was given and at the same time cultures were started to produce an autogenous vaccine. Stock vaccine gave a good result, but their practice was to have the autogenous ready for the second dose when possible. He did not think there was any relation between endometritis and malignancy. He had not seen a patient return with malignant tumor whose endometrium had previously been pronounced non-malignant. He hoped the extended use of vaccines would not lead to the neglect of other treatment.

Dr. Sheldon of Burma has sent a note to the *Lancet* on plague bacilli in an unusual position. An adult Burman died before medical aid reached him, after an illness of 36 hours. Specimens of peripheral blood and of cerebrospinal fluid were taken and stained. The former, when he examined the slide, showed plague bacilli in small numbers, but the "slides of the cerebrospinal fluid simply swarmed with them."

The joint fund of the Red Cross and the St. John's Ambulance Societies now exceeds a million and a half sterling. A feature of this collection has been organized efforts in various trades. The farmers in Bucks had a sale for the Red Cross in the cattle market, High Wycombe, at which a number of animals were sold several times over. The amount raised thus was over a hundred pounds. The British Farmers' Red Cross Society has further established a hospital for enteric disease at Calais at a cost already of £8,000. This fund has also presented two complete hospitals to Serbia and proposes to devote, as soon as collected, £20,000 to the help of the wounded British soldiers at the Dardanelles.

The City Corporation has established, in conjunction with St. Bartholomew's Hospital, a free dispensary at which workers in the city, whether residents or not, who are attacked with any form of tuberculosis may obtain advice and treatment free on Tuesdays and Fridays. A special clinic will be held on Thursday evenings for the investigation of important or difficult cases.

Dr. E. W. Scott Carmichael, who died on the 12th inst. at the age of 42, was the third Dr. Carmichael who practised in Edinburgh—the third, in fact, in direct descent, for both his father and grandfather held prominent medical positions in the Scottish capital. The late deceased practised both surgery and gynecology which, at one time, some strict specialists maintained, was rather objectionable.

Amenities of Mexican Warfare.—It is reported in El Paso that a band of revolutionists set fire recently to the Tively Hotel in Chihuahua, which was occupied as a base hospital by the Villistas, and burned to death 300 of the occupants, some 200 of the less severely wounded escaping.

Progress of Medical Science.

Boston Medical and Surgical Journal.

July 1, 1915.

1. The Transportation of the Wounded. E. L. Gros.
2. First Impressions of the Opportunity for Orthopedic Work at the American Ambulance. R. B. Osgood.
3. Some Paralytic Conditions Resulting from Surgical and Obstetrical Accidents. J. W. Sever.
4. Homogenized Milk; Its Possible Applications to Infant Feeding. Maynard Ladd.
5. Luetic Bursopathy of Verneuil; Report of Case of the Congenital Type. W. P. Coues.
6. Some New Symptoms in Amaurotic Family Idiocy. I. H. Coriat.

4. Homogenized Milk in Infant Feeding.—Maynard Ladd states that the homogenization of liquids of different densities consists in reducing the constituent elements into such a physical condition that they will no longer separate, but will maintain a permanent and even composition throughout the mixture. Briefly stated, this result is brought about by a powerful pump which forces the mixture through a finely ground agate valve against great pressure. After its passage, the mixture is perfectly homogeneous, and in the case of milk, or mixtures of milk and oils, the fat globules are crushed, torn, and pulverized and so incorporated with the other elements of the milk, that they can no longer rise by action of gravity, separate after long standing, or agglutinate. The mechanical device by which this result is made possible is the invention of M. A. Gaulin of Paris. His first machine was brought out in 1899. Homogenization improves decidedly the taste of the milk or cream, particularly that of pasteurized milk. As the process prevents the separation of the fat, homogenized creams can be readily pasteurized. When commercial milk is to be transported long distances in warm weather and its temperature allowed to rise from lack of proper refrigeration, the continual jolting to which it is subjected causes the cream to be churned into butter fat, and it is impossible to reincorporate it into the milk in its original form. The process of homogenization has a beneficial effect upon the keeping qualities of milk. The author has carried on a series of clinical experiments in order to show that vegetable oils, such as olive oil, are readily digested and assimilated when homogenized with skim-milk in cases of intolerance to cow's milk fat. By using a chemically pure precipitated casein, one can combine pure casein with pure oils and pure sugars of different varieties, adding artificially prepared mineral matter in varying proportions. Such mixtures, homogenized, may be found to be of use in exact metabolism experiments, although they would be too expensive and complicated for practical feeding. One may combine a vegetable fat, such as olive oil, with precipitated casein, or fat-free lactic acid milk, and test its food value in acute diarrheas, or in convalescents from acute diarrheas, conditions in which the ordinary fats of milk are not well tolerated. A more practical problem at once suggests itself in mixtures of olive oil and skim milk—especially in combination with the malt soup mixtures. The type of food which the author has found most useful in cases of fat indigestion with extreme malnutrition, is the malt soup mixture. Many of the worst cases are amenable to successful feeding by this method intelligently applied.

5. Luetic Bursopathy of Verneuil.—W. P. Coues reports a case of the congenital type of this condition. He states that there are two forms of gummatous bursitis, which may exist in congenital as in acquired syphilis, one by extension of specific disease from neighboring parts, the bones and joints, and the other class, to which the reported case belongs, primary in the bursa itself. Syphilis of the bursæ is probably often

unrecognized. The disease must be differentiated from subperiosteal abscess near the joints (specific osteomyelitis) and from congenital specific arthropathies, such as Clutton's disease. Radiographs will be of great aid in differentiating this trouble from true specific bone disease. The Wassermann test—contrary to the general idea that it is 100 per cent. positive in congenital syphilis—may be negative. An *x*-ray examination of the shin bones should always be made (lateral view) when there is a question of specific bursitis, as well as a Wassermann test. The *x*-rays will often give the more valuable information of the two. Traumatism brings the condition to activity. An indolent bursitis in a child, particularly in such localities as the elbow or knees, with or without traumatism, and with or without obvious signs of congenital specific disease, should arouse suspicion that one is dealing with a luetic bursopathy of Verneuil, and lead to further study of the case, with this in view.

6. New Symptoms in Amaurotic Family Idiocy.—I. H. Coriat calls attention to some phenomena in this disease which have been either completely overlooked or only briefly described. Explosive laughter was noticed in three cases. In two of these the mental deterioration was marked. In the first case the symptom appeared about seventeen months after the onset of the disease; in the second case it began as one of the initial symptoms and ceased about ten months later, at which time the child was taken ill with scarlet fever. In the third case it was noticed about six months after the mental dullness first appeared. Whether this explosive laughter is a sign of the mental deterioration, as sometimes occurs in multiple sclerosis or dementia præcox, or due to some thalamic lesion, is impossible to definitely state at present. Hydrocephalus was present in one of the author's cases, and in one case each reported by Huysmans and Sachs and Strauss. Bulbar symptoms were present in one case and were shown by drooling of saliva, choking spells, difficulty of swallowing, and attacks of apnea. This child died suddenly from bulbar paralysis. Constant lateral and rotary nystagmus was present in three cases, in one of which it persisted during the entire course of the disease. In two cases there was a marked flaccidity of the limbs, resembling the condition seen in amyotonia congenita (Oppenheim). Attention was first called to this symptom in amaurotic family idiocy by Kowarski in some cases reported from Wilna, Russia. Increased reflex reactions to sound and touch are among the most interesting phenomena of this disease. The unusual sensitiveness to sound (hyperacuisis), which is so characteristic, has long been known and appears to be present in nearly all cases, at least in the early stages, although it may disappear with the increasing mental weakness. Another abnormal reflex phenomenon is increased sensitiveness to light or to tactile stimuli. For instance, plantar stimulation may cause a tremor of the stimulated leg, or a rhythmical contraction of the quadriceps muscle, both of which may be of longer duration than the stimulus itself. A contralateral knee jerk reflex has also been observed, and like the plantar phenomenon, this consists of a rhythmical contraction of the opposite quadriceps and is of longer duration than the initial reflex itself. The explanation of these abnormal reflex signs is rather difficult. The phenomena are probably irradiative and show that certain inhibitions in the receptive mechanisms of the central nervous system are at fault.

New York Medical Journal.

July 3, 1915.

1. Cancer of the Mouth. Robert Abbe.
2. The Cancer Patient's Dilemma. William Seaman Bainbridge.
3. What Does Surgery Offer the Patient with Carcinoma of the Stomach? J. B. Deaver.
4. The Incision of Tumors for Diagnosis. J. Ewing.
5. Cancer in Relation to Body Elimination. L. Duncan Bulkley.
6. Cancer of the Skin. S. Pollitzer.
7. Uterine Carcinoma Treated by Radium. W. S. Newcomet.
8. Cancer of the Upper Air Tract, with Special Reference to Its Treatment with Radium. W. Freudenthal.
9. The Negative and Positive Diagnosis of Cancer of the Gastrointestinal Tract (with Ten Illustrations) Lewis G. Cole.
10. Cancer of the Bladder and Kidneys. Victor C. Pedersen.
11. The Treatment of Epithelioma by Modern Radiation. R. H. Boggs.
12. Cancer of the Female Breast. W. B. Snow.
13. Some Comments on a New Antiserum for Cancer. W. N. Berkeley.

1. Cancer of the Mouth.—Robert Abbe has studied the histories of the last one hundred cases of mouth cancer seen in private practice. This group chosen from hundreds of cancer cases in all parts of the body, has been observed during the past eighteen months. Without prejudice he has tried to find a common cause. The tongue showed cancer, or a precancerous condition, in thirty-six; inside of cheek, fifteen; gum, twenty-one; lip, fourteen; throat, fourteen; total, 100. Of women there were ten, men ninety. Of the ninety men, *all* were heavy smokers, except one who had a cancer of the lip, in a scar from an old baseball injury. Almost every man had been an inveterate smoker of from three to twenty cigars daily. One denied cigars, but acknowledged one or two packages of cigarettes daily; he had cancer of the tongue. The tongue cases showed strikingly that irritation was the cause. Thirty-three of the thirty-six cases were inveterate smokers, some of as many as twenty cigars daily. Many used a pipe, which often caused cancer to begin where the pipe end allowed the hot smoke to come upon the tongue. It seemed to the author in former years he had never seen tongue cancer in cigarette smokers, but in reviewing his carefully taken notes of patients' statements, he finds six among thirty-six tongue cancers were in smokers of cigarettes only. In conclusion, the author places emphasis on the prolific cause of all forms of cancer of the mouth from incessant irritation, notably from tobacco; a terrible and unnecessary toll on human life! If one must use tobacco at all, a moderate and not abusive amount may not be injurious; but it stands proved that in any form it may be disastrous.

3. Surgery in Carcinoma of the Stomach.—J. B. Deaver states that the operation of choice is subtotal gastrectomy with wide excision of involved glands and a posterior gastroenterostomy. Polya's new operation, of bringing a loop of jejunum through the transverse mescolon and anastomosing it to the proximal end of the cut stomach in its entirety, holds out the possibility of a greater area of extirpation. The mortality of gastrectomy is high at present, but with increased diagnostic skill and earlier operations one may hope to approach the mortality of other major surgical work. A gastroenterostomy done for pyloric cancer is a poor makeshift, and unless performed for relief of obstruction only in an inoperable lesion, is worse than useless and reflects little credit on the surgeon. The end results of operation upon carcinoma of the stomach at present suffer from the fact that most cases are operated on at the late incurable stages. The combined statistics of the large clinics indicate that from 20 to 30 per cent. of all patients having undergone gastrectomy for carcinoma of the stomach, will live more than three years after operation, and that from 10 to 20 per cent. will be alive at the expiration of the five-year period. That these figures can be much improved by earlier surgery there can be no doubt. Finally, one should operate in all cases of cancer of the stomach, operate early, and, if unable to make a diagnosis, operate to make it.

5. Cancer in Relation to Body Elimination.—L. Duncan Bulkley notes that in cancer there are evidences of

faulty metabolism and faulty body elimination. These errors may be observed not only in advanced and recurrent cases of cancer but also in those which are in very early stages; indeed their occurrence in recently forming cancer and in patients soon after operation forms a strong argument for their causative relation to the disease. The evidences of imperfect metabolism and faulty body elimination in cancer are found in the condition of the blood, and in the excretions from the kidneys, bowels, and skin; and minute and careful study will seldom fail to detect these departures from normal in patients with this disease.

7. **Radium in Carcinoma of the Uterus.**—W. S. Newcomet concludes that while radium cannot be recommended as an agent to control carcinoma of the uterus, as there is no evidence to show that it controls metastasis, it does inhibit its local growth in many cases, and even advanced cases can be temporarily restored. With the evidece of the complete disappearance of the disease, the general improvement of the system can scarcely be laid to a psychical impression. Therefore, the more general use of radiation in cases of uterine carcinoma is to be recommended, especially as a postoperative procedure.

Journal of the American Medical Association.

July 3, 1915.

1. Closed Ether and a Color Sign. J. Bryant and Y. Henderson.
2. The Bacteriology of the Urine in Nonsuppurative Nephritis. Its Etiological and Therapeutic Significance. George F. and Gladys R. Dick.
3. Differences in the Digestion in Adults and Infants. J. F. McClendon.
4. Autoserum Therapy in the Treatment of Psoriasis and Other Skin Diseases. J. S. Willock.
5. Treatment of Burns of the Extremities, with Special Reference to the Prevention of Deformities and Preservation of Function. C. A. Parker.
6. Experiment in Respiration. S. Pope.
7. Blood Changes in Workers with the Roentgen Ray, and Apparatus for Protection. Preliminary Report. M. M. Portis.
8. A Case of Intussusception Due to a Fibroma of the Ileum. J. W. Means and J. Forman.
9. Blastomycosis of the Eyelids, with Report of Cases. E. Jackson.
10. Referred Pain in Flatfoot. M. Strunsky.
11. Suppuration of the Forearm Treated by Immersion in a Salt Solution Bath. S. Salzman.

1. **Closed Ether and a Color Sign.**—J. Bryant and Y. Henderson point out that the same general facts and the same character of direct evidence which have established rebreathing as a proper and beneficial adjunct of nitrous oxide in general anesthesia demonstrate the advantages of rebreathing and the use of closed methods also in the administration of ether. Many of the special advantages claimed for nitrous oxide as compared with ether are probably due to the fact that the former is now generally administered by rebreathing methods, and the latter by open methods, rather than to the particular qualities of the two anesthetics themselves. Evidence is adduced to show that to a very large extent the depression of the circulation and respiration, and the postoperative nausea, vomiting, intestinal paresis, and gas pains incidental to etherization by open methods are the results of acapnia. On this account the authors urge the adoption of closed and rebreathing methods, the preliminary administration of morphine and atropine, and avoidance of fear and excitement. The Rovsing mask and bag afford a satisfactory and efficient method of controlling the rebreathing and rate of ether administration, combined with the utmost simplicity. The principal point made by the authors is that by observing the color of the skin it is possible to estimate the condition of the circulation. Pallor under ether usually indicates a circulation depressed because of acapnia and needing to be restored and maintained by more rebreathing and conservation of the body's store of carbon dioxide. Excess of rebreathing and deficiency of oxygen are indicated by a cyanotic tint. The rule for the anesthetist is: Keep the patient pink.

2. **Bacteriology of the Urine in Nonsuppurative Nephritis.**—George F. and Gladys R. Dick review the literature of this subject and report the results of their own investigations. They find that the organisms which are peculiar to nephritic urine for the most part are classed as small gram-negative or gram-positive anaerobic, pleomorphic bacilli. They are cultivated with considerable difficulty. They grow without hemoglobin, but not without ascites or serum. They are strict anaerobes. They resemble closely the bacilli described by the authors in anaerobic cultures of the throat, blood, and urine in scarlet fever in which nephritis is so common. In four cases these organisms were found in pure culture. Two of the cases lacked both streptococci and the small, pleomorphic organisms. The peculiar anaerobic, curved, pleomorphic, gram-positive organism found in these cases somewhat resembled diphtheria bacilli. Experiments show that the bacteria isolated from the urine of nephritis are capable of producing both the urinary and the anatomical findings of nephritis. The excretion of bacteria through the kidneys in focal infections and in acute infectious diseases indicates that both prophylactic and curative measures in cases with positive bacteriological findings should be directed toward removal of foci of infection from which bacteria might enter the blood stream, and when this is impossible, as in the acute infectious diseases, toward minimizing their action on the kidney.

5. **Treatment of Burns of the Extremities.**—C. A. Parker details a method of treatment of burns of the extremities with special reference to the prevention of deformities and the preservation of function. He holds that this is possible with proper treatment in any such burns, however extensive they may be, so long as they are compatible with life. The shorter the time of healing, the less likely they are to occur. In burns involving the whole thickness of the skin there is a slough to be thrown off and this may take three weeks or longer, before the active process of healing has commenced. The cutting away of the slough is dangerous and the burn should be treated during this period with such dressings as can be easily applied and cause least disturbance. The author is inclined to use the plain wet dressing. After the slough comes the aggressive treatment; here skin grafts can be used with various degrees of success, but are frequently ineffective. After the slough comes away, the author treats the wound as an ulcer with adhesive strips until it is finally healed. This does not interfere with skin grafts which can be laid on under the strips. The strips allow moisture to exist under them and are easily removed by inserting the blunt point of the scissors under the edge of the adhesive strips and cutting across all the strips from the bottom to the top, the strips being placed across the limb. Of course there is a flow of pus from the inside of the adhesive plaster but there is very little left remaining on the limb. The plaster prevents exuberant granulations and allows a continuous growth of epithelium from the margins. It does not adhere to the exposed surface, which is always moist. Such as remains after the removal of the plaster can be sponged off, and the plaster renewed as before. Antiseptics must not be used over the wound as they destroy new cells. For the prevention of contractures, fixation of the limb in the proper position constantly during the period of healing is essential, and for this the author uses a plaster-of-Paris cast made in halves so that it can be removed as frequently as necessary to change

the plaster and overlying gauze. This should be changed every day and the adhesive plaster twice a week.

The Lancet.

June 26, 1915.

1. Trypanosomes Causing Disease in Man and Domestic Animals in Central Africa. Sir David Bruce.
2. The Use of Magnesium Sulphate in the Treatment of Tetanus: With an Account of a Simple Apparatus for Pharyngeal Insufflation. S. J. Meltzer.
3. A Contribution to the Study of the Etiological Factor in So-called Cerebrospinal Fever. R. Donaldson.
4. Severe Case of Intractable Syphilis Treated Satisfactorily with Hectine. E. G. French.
5. Vaccines in the Treatment of Respiratory Diseases. R. J. Rowlette.
6. X-Ray Localization and the Removal of Foreign Bodies on the X-Ray Table. J. R. Caldwell.

2. Magnesium Sulphate in Treatment of Tetanus.—S. J. Meltzer describes this method of treatment as follows: In subcutaneous infections the dose should not be more than 2 c.c. and not less than 1.2 c.c. of the solution (25 per cent.) per kilogram of body weight, to be injected four times in twenty-four hours. No massage should be used. Light etherization of a morphinization should precede the injection of magnesium. The intramuscular injection and inhalation of ether is based upon the finding by Auer and the author that a moderate inhalation of ether increased considerably the efficiency of magnesium salts. Chloroform does not exert such an effect. The patient should be fairly well etherized, and 2 c.c. of a solution of magnesium sulphate (25 per cent.) per kilogram of body weight is injected into the muscles of the thigh. At the end of the injection the thigh should be massaged and the ether anesthesia continued lightly for about 20 minutes longer. In intravenous injections the concentration of the solution should be about 3 per cent. (isotonic), and not more than 5 c.c. per minute should be permitted to run into the vein. In intraspinal injection the dose to be injected, at the usual place of the lumbar region, should be 1 c.c. (of a 25 per cent. solution) for every 10 kilograms of body weight. Any case of tetanus, mild or severe, should from start to finish be treated by subcutaneous injections about every six hours with doses of magnesium sulphate as described before. Cases having severe attacks should receive in addition an intraspinal injection. This may be repeated when necessary, but the subsequent doses should be slightly smaller than the preceding ones. If the attack contains an element of immediate danger an intravenous injection may be administered. When for one reason or another the intraspinal and intravenous injections are not practicable the intramuscular injection plus ether anesthesia may be resorted to. When treating tetanus by magnesium sulphate preparations for artificial respiration ought to be made in order to be able to use efficient doses of the salt. The pharyngeal insufflation device is the simplest and most reliable method for this purpose. When this device is not at hand, oxygen should be administered by the method of intratracheal insufflation through a tracheotomy wound. The treatment of the failing respiration should be begun at an early stage; asphyxia of the tissues would thus be avoided and a complete restoration could be attained early. The treatment of tetanus by magnesium does not exclude its serum treatment.

3. Cerebrospinal Meningitis.—R. Donaldson reports the results of observations made during an outbreak of this disease in Reading, England. The cerebrospinal fluid from about seventy cases was examined. The author believes that the causal organism, the epidemic, was a diphtheroid rod closely related to the Klebs-Löffler bacillus, of which, indeed, it may actually be a variant, and that one is witnessing, as Sir William Osler says, the struggle of a new disease to win a place among the great epidemics of the world. This diphtheroid rod is an extremely pleomorphous organism and may give rise to Hoffmann-like forms, to what appear to be meningococci, etc. It is probably very widely spread in nature in one of its more resistant forms, and it is this form and not the meningococcal one which is trasmitted from one to another. It is also probably to be found more frequently among individuals than is imagined. The disease may give rise to the most diverse symptoms, evidently due to an actual invasion of the body by the infective agent, and not merely to the action of toxins manufactured locally. It is in this respect that it differs from diphtheria. In other ways, however, there is a certain similarity between the two diseases. The above hypothesis apparently offers an explanation why sera fail so often in the treatment of so-called cerebrospinal meningitis, and the analogy to diphtheria suggests that treatment on similar lines should be adopted.

Berliner klinische Wochenschrift.

May 24, 1915.

The Floating Lung Test.—Schönberg sums up his article as follows: We have the fact, a most striking one, that in a seven months fetus, taken by us from intact membranes, the lung tissue was expanded and contained air. The usual reasons for the presence of the latter could not have obtained. A gas forming infection and putrefaction can also be excluded. In addition to the air, the alveoli contained only a slight amount of the constituents of amniotic fluid, such as epidermal scales. This find has been shown to be quite normal. The fetus in this case had been removed from a woman dead of advanced tuberculosis. During her death agony the fetus, becoming asphyxiated, developed violent respiratory movements, causing negative intrauterine pressure. The possibility that air therewith entered the fetal lungs seems to be the only tangible hypothesis, which, however, is not supported by evidence. The percentage of gases in the amniotic fluid is too insignificant to explain the case. As a pure matter of fact, the floating lung test is not absolute evidence that a newly born child has breathed, hence the case is highly significant for forensic medicine.

Treatment of Pleural Suppuration with Irrigation Drainage.—Leschke refers to the 90 per cent. mortality of empyema during the first half of the 19th century in contrast with which we now cure 90 per cent. with siphon drainage and resection of the ribs, resources respectively of the physician and surgeon. Both these procedures have drawbacks. Rib resection involves a large wound, pneumothorax and the elimination of one lung from respiration. Siphon drainage does not completely evacuate all the pus and requires constant supervision and after treatment. Improvements have been introduced such as injecting and then aspirating antiseptic fluids. This resource, however, so changes the antrathoracic pressure that cerebral disorders have resulted. Pressure variations also tear new adhesions and cause hemorrhages. The author has sought to devise a method which shall be free from these drawbacks. He introduces two catheters side by side in separate openings in the pleural opening of the empyema. One is for the maintenance of Bülau's siphon drainage while the other is for irrigation of so smooth a type that neither pressure variations nor compression of the lung can occur. Irrigation may be continuous or consist of three separate flushings daily. These are readily secured by a gravity apparatus. The treatment is controlled by frequent radiograms. The author has thus far used the method in a few cases only.

Experiences with Antipediculosis Remedies.—Löhe

enumerates the following substances which have been tested for this purpose: Ethereal oils and especially anise oil, powdered naphthalin and combinations of the two, and various proprietaries the composition of which is more or less a secret. The latter, in sachets, have been sent in great quantities from the soldiers' home folks to the men at the front. These substances naturally possess drawbacks, and even cause serious lesions, some of which are "punched out" defects in the skin of the genital region, penis, scrotum, anus, axillæ, insides of thighs, etc. Some of these lesions are as large as a penny. They have no indurated base but form shallow crusts, detachment of which is attended by bleeding. According to the uniform tendency the affection begins with itching, and then vesicles appear which rupture and gradually end in ulcer formation. The lesions bear a striking resemblance to chancroids, but a careful search has shown the absence of Ducrey's bacillus. Priess in a very brief communication states that the composition of one of these secret remedies is as follows: Powdered anise, 2; sugar, 1; calcium carbonate, 1; hydrofluosilicate of sodium, 95.

Muenchener medizinische Wochenschrift.

May 25, 1915.

Cholera.—Gildermeister and Baerthlein come to the following conclusions in regard to Asiatic cholera in the present war: A large number of cholera vibriones in the dejecta of cholera patients perish in a few hours, although a not inconsiderable number persist alive in the said dejecta over intervals of up to 30 days. At the same time the intestinal evacuations of many healthy subjects contain living vibriones. In these carriers the latter may be active for several weeks. This survival is probably longer in war because the dejecta are deposited directly on the ground on fields and woods. Every effort should therefore be made to destroy these organisms as soon as they have left the body. For the demonstration of vibriones in the stools the author like the original culture medium of Dieudonne in association with hemoglobin extract in alkaline agar. In the stools of patients and carriers mutation forms of the vibrio have been seen. On the Eastern frontier were often seen mixed infection of cholera and dysentery and cholera and typhoid.

Digestibility of War Bread.—Decker means by war bread wheat flour rolls containing 10 per cent. of rye flour, and rye loaves containing potato flour. In Münich there are also zwieback when recommended by physicians, Graham bread and gluten bread for diabetics. War bread requires more mastication than the best wheat bread, but this cannot be held against it. War rolls if sliced thin and toasted have their digestibility and palatability increased. The rye-potato loaf is the real problem. Some individuals, naturally great bread eaters, consume it in much too large amounts. These should curtail their bread ration. It also helps materially if the bread is allowed to get a little stale. Fresh rye bread even without potato addition will cause bloating especially when taken with beer. Patients without gastric juice react by diarrhea and must be allowed wheat bread. The author recommends bacillary milk cultures for victims of intestinal indigestion, and Graham bread for those with constipation. Generally speaking those with whom war bread disagrees are advised to eat dishes prepared from cornmeal, rice flour, and any other farinaceous meal, in addition to the usual cereals.

Deutsche medizinische Wochenschrift.

May 20, 1915.

Specific Treatment of Typhoid Fever.—Peiper refers to the treatment of this affection with dead cultures of typhoid bacilli. He had practised this as far back as 1891, when eight typhoid patients received small therapeutic doses of bacilli cultures, with the idea of provoking the formation of curative antibodies. Another investigator, E. Fraenkel, made a similar test in 1893 on a large material—fifty-seven patients. Both the author and Fraenkel noted a breaking up of the continued fever and an early apyrexia. Peiper was obliged to discontiue his work, and not until 1914, or twenty-three years later, did he resume it by treating three children with certain typhoid with ordinary immunizing vaccine. Four therapeutic injections were given and within a week full defervescence was secured. The entire duration of the fever was two weeks. As the author has treated from first to last only ten cases of the disease, he can make no claims. There is, however, an undoubted specific activity exerted, as all symptoms showed improvement. Very recently Goldscheider and Aust have independently proceeded along this line of effort and have reported favorable results.

Torsion of the Pedicle in Inguinal Testis.—Jastram writes monographically on this rare accident, which was first described by Nicoladoni in 1885, and is able to add two new cases to the recorded material. Many years ago Enderlen collected and analyzed twelve cases in which the torsion lasted from one to seventy-seven days, apparently with no permanent ill effects. In a case of torsion lasting forty-two days the organ was found gangrenous. The author's patients were operated on two to five days respectively after the symptoms appeared. The onset of the accident is sudden, suggesting an incarcerated hernia of the omentum or intestine. The claim of Tiltmann that this accident always results from a trauma is surely erroneous. A mere change of posture might cause a rotation of the pedicle of a testicle which is undergoing involutional changes as a result of compression. In some of the recorded cases the organ had become flattened. The operation consists of an orchidectomy, the retained testis being a source of danger and of very doubtful value to the economy.

Mercurial Inhalations in the Treatment of Syphilis.—Stümpke appears to be enthusiastic over the power of mercury inhalation in causing the disappearance of the Wassermann reaction, even without the aid of salvarsan. Not sufficient time has elapsed to enable the author to record relapses. Unfortunately, mercury thus given will sometimes lead to certain phenomena of hydrargyrism so that care is required in selection of cases and in general technique. Men bear the treatment better than women. The contact of the mercury with the mouth and throat, especially when the latter are already irritated by the presence of mucous patches, appears to cause a general redness of the mucosa, but the treatment should be continued to a moderate extent and no true stomatitis will develop. The inhaler and method were first described in the preceding number of the *Wochenschrift* by Frankenstein, their inventor. Priority is not claimed, as Kromayer introduced a similar apparatus into practice in 1908. Briefly, the mercurial fumes are obtained by heating tablets of quicksilver amalgam.

Hypertrophy of the Thymus Gland.—Le Boutillier expresses the belief that certain cases of sudden death in infancy are due to tracheal compression by the sudden enlargement of an already hypertrophied thymus, the increase in size being the result of engorgement caused by some circulatory disturbance. The presence of hypertrophy of the thymus is to be suspected when a child is observed to be more or less cyanotic and to suffer from dyspnea without any discernible cause.—*Archives of Pediatrics.*

Insurance Medicine.

THE GENERAL FACTORS DETERMINING MEDICAL SELECTION.

FROM "ALLGEMEINE LEBENSVERSICHERUNGSMEDIZIN" BY PROF. DR. GEORG FLORSCHÜTZ OF GOTHA.

(*Continued from page* 79.)

It still remains to discuss the constitutional factor in definite organic diseases, but we must be brief, in order not to invade too much the special field of life insurance medicine. We recognize the pathological constitution in mental diseases through the fact that slight external irritants, suffice to disturb the brain in its psychic equilibrium and to occasion abnormal reactions with rapidly following states of exhaustion—in the first place through the heart in the peculiar quality of its musculature. But while we are advised in mental diseases to judge, essentially, the constitutional factor solely by heredity and previous disease, the heart *per se* may be judged as to its efficiency by a quantitative test of the myocardium. In recent years there has been very great activity in this special department and new methods have constantly been devised, in order to determine accurately the force of the heart's action, although thus far no one has succeeded in determining in any individual case exactly what the condition of the cardiac muscle is. For we cannot measure the muscular force of the heart itself, but only the circulatory force, and here a series of sources of error is apparent which we can not eliminate, nor even compute their relative value. And in the meantime medical selection suffers much.

But what holds good for the heart holds good equally for vascular conditions, the most important affection of which is arteriosclerosis. When we insurance physicians speak of arteriosclerosis we naturally mean the precocious, and not the senile form. From the standpoint of insurance medicine the latter can only be welcome, for we could desire nothing better than that all our insured should die of it as an accompaniment of advanced years. Arteriosclerosis becomes dangerous in insurance because it appears precociously, whether as an independent affection leading directly to death, or as an accessory cause of death when an infectious disease or any acute or chronic organic affection attacks a risk who has already become enfeebled by it. Precocious arteriosclerosis is the more dangerous because *per se* it is not a disease which reveals itself to the medical examiner by easily demonstrable symptoms.

"A man is as old as his arteries," says Cazalis, and I believe that no more just claim, none certainly which more encourages the insurance practitioner, exists than this one. Unfortunately, however, the arteries do not readily tell their age; least of all is the single examination by a physician able to reveal this guarded secret.

It happens often that only the family history can lead the medical director into the right path. For undoubtedly heredity occurs here in the sense that a definite quality of the vascular apparatus is transferred from the parents to their children. For only thus can we understand why it so often occurs that the same vascular region is involved in both parents and children. Again, these affections repeat themselves alike in the early and late periods of life, and not rarely determine the tendency to long or short life of the family.

Even in the case of tumors and their special representatives, the carcinomata, the existence has been assumed of a constitutional factor—an altered resistance of the tissues toward external irritants which prepares the soil for cancer formation. There is also the further assumption of a special exciter of cancer which settles in the pathologically altered tissues, as evidenced by the occurrence of so-called chimney sweep's cancer, smoker's cancer of the lower lip, and *x*-ray cancer. How far this theory is correct we must leave undecided. That it has so long been disregarded in life insurance is without significance because no means have been found for the recognition of the particular conditions which prepare the field for cancer. Investigations by insurance medicine of its own material have been unable to determine with any degree of certainty whether or not an element of heredity enters into cancer. The only result of the studies is to show both the increase and the enhanced malignancy of cancer in recent years. For while according to the observations of the Gotha Life Insurance Bank for the first five insurance years of the period 1881-1895 the supermortality from cancer amounted only to 12.9 per cent., the same figure for the period 1904-1908 was 40 per cent. And while in the former period only 18 per cent. of all cases occurred in the ages up to the 40th year, and 43 per cent. up to 45 in the later period, 39 per cent. occurred up to 40 years, and 61 per cent. up to 45 years; further, in this period there were no cases each in the 30th, 31st, and 32d years of life, and three cases in the 33d year. In the presence of such experiences, it is not necessary to emphasize with what great interest life insurance matches the study of cancer, and as far as possible supports it.

The Life Extension Institute.—Conceding that periodic health examinations are to form a regular part of life insurance practice, why is it not possible for each company to carry on this work separately through its own medical department? The work of examining people for the purpose of prolonging their lives is far different from that of examining applicants for life insurance. There is an entirely different psychology behind it, and the work of making these examinations effective is likewise a specialized function, which can be better performed by one central organism provided it has the equipment and the scientific backing that it should have to carry on these activities. In this way the work can be carried on in a simple manner and mistakes avoided, which otherwise each insurance company might make in the evolution of health conservation.

Mr. Harold A. Ley of Springfield, Mass., conceived the plan of forming such a central organization, and the institute was established in January, 1914.

Not only examinations for insurance health conservation, but examinations of individuals are made and also group work for factories, firms, etc. The fact should be borne in mind that these examinations of willing subjects, desirous of learning their true condition, can be made more thoroughly than a life insurance examination. The subject is stripped to his waist and the entire bodily conditions noted—eyes, ears, nose, throat, mouth, teeth, tongue, gums, etc., abdominal organs, blood pressure, systolic and diastolic, and very often the blood and sputum. The condition found, whether healthy or diseased, is reported to the insurance company which has sent the applicant and also to the individual.

Book Reviews.

OBSTETRICAL NURSING: A Manual for Nurses and Students and Practitioners of Medicine. By CHARLES SUMNER BACON, Ph.B., M.D. Professor of Obstetrics, University of Illinois and the Chicago Polyclinic; Medical Director, Chicago Lying-in Hospital and Dispensary; Attending Obstetrician, University, Chicago Polyclinic, Henrotin, German and Evangelical Deaconess Hospitals. Illustrated with 123 engravings. Price, $2.00. Philadelphia and New York: Lea & Febiger, 1915.

THIS is the latest addition to the "Nurses Textbook Series," and it is difficult to imagine a book better adapted for its purpose. The author has managed to compress into a moderate space all that the obstetrical nurse really requires. The introductory chapter dealing with the nurse's duty to herself, to the doctor, and to the patient, is full of valuable advice, and it should add to the nurse's usefulness. The author's style is exceedingly clear, and he has shown much judgment in what he has omitted. The book is of a handy size, is well printed and illustrated, and should become popular with nurses.

DISEASES OF THE BRONCHI, LUNGS, AND PLEURA. By FREDERICK T. LORD, M.D., Visiting Physician, Massachusetts General Hospital and Channing Home (for Consumptives); Instructor in Clinical Medicine, Harvard Medical School. Price, $5.00 net. Philadelphia and New York: Lea & Febiger, 1915.

THE author has endeavored to fill a present need of a practical treatise on the diseases of the respiratory organs. With a very clear idea of the exact need of the profession he has made admirable use of his obviously extensive knowledge of the literature and the tremendous amount of material supplied by the wards of the Massachusetts General Hospital. The result is an excellent and complete presentation of his subject. Pulmonary tuberculosis is not considered under a separate heading, but special attention is given to conditions which simulate pulmonary tuberculosis and their differential diagnosis. Detailed consideration is given to all pathological questions and the bacteriology, especially, is noticeably "up-to-date." Indications for surgical interference are included, as are some of the points in the surgical technique. One point, however, is deserving of severe criticism. The author has fallen into the evil habit of having his surgeon "operate a patient" instead of "operate upon a patient." This vile abuse of the English language was introduced some years ago by some of our foreign population, and seems to have found general favor, but it is disheartening to find such corruption issuing out of Boston. The work can be very highly recommended as it is undoubtedly the best on the subject in the English language.

A REFERENCE BOOK ON THE FEDERAL NARCOTIC LAW. By ALBERT DEAN CURRIER of the Chicago Bar and DANIEL R. FORBES, late with the U. S. Board of Food and Drug Inspection. Chicago, 1915.

THE new Federal Narcotic Law has brought within its scope members of the medical, dental, and veterinary professions as well as druggists, hospitals, and manufacturers who dispense, administer, or distribute what are known as habit-forming narcotics. There is still a considerable amount of ignorance concerning the interpretation of the new law, and as the penalties for the violation thereof are heavy, there is need for a brief reference book containing all the necessary information. This want has been supplied in a satisfactory manner by the issue of this short, concise reference book on the subject, which will serve as a valuable guide to those who deal in habit-forming drugs but are not acquainted with the provisions and regulations relating to the sale of the same as set down in the recent law.

A REFERENCE HANDBOOK OF THE MEDICAL SCIENCES. Embracing the Entire Range of Scientific and Practical Medicine and Allied Science. By Various Writers. Third edition, completely revised and rewritten. Edited by THOMAS LATHROP STEDMAN, A.M., M.D. Complete in eight volumes. Volume Five. Illustrated by numerous chromolithographs and 733 half-tone and wood engravings. New York: William Wood & Company, 1915.

THE subjects in this volume extend from "Head, Wounds of the," to "Life Insurance Medicine," and include some of the most important topics within the entire range of medicine. The articles on the heart, exclusive of such headings as endocarditis, arrhythmia, etc., which are dealt with elsewhere, comprise a section of sixty-one pages, and consist of separate articles on Anemic Infarction, Aneurysm, Animal Parasites, Development, Dilatation, Displacements, Fatty Degeneration, Fatty Infiltration, Functional Diagnosis and Therapeutics, Myocardial Disease, Neoplasms, Rupture, Syphilis, Thrombosis, Tuberculosis, Valvular Lesions, and Wounds of the Heart. Other large groups of articles are those on the Kidney, Larynx, Infancy, Intestines, and Jaws. Of timely interest and importance are the special articles dealing with various phases of war medicine and surgery, such as the comprehensive articles on Wounds of the Head, Military Hygiene, and Hospital Ships. The last contains a description of and a number of illustrations showing the organization of the U. S. S. *Solace*, with its chemical laboratory, *x*-ray room, dental room, etc. In addition there are given in detail the rules of The Hague Convention pertaining to maritime warfare, and the United States Army and Navy regulations governing hospital ships. The unique value of the Reference Handbook is particularly manifest in its inclusion of topics that one would not ordinarily find in other works, or that appear in this work for the first time in the reference literature of medicine. For example, one may cite the articles on Medical Examination of Immigrants, Hospital Construction and Equipment, Hospital Organization and Management, State Boards of Health, Medical Libraries, Medical Journalism, Life Insurance Medicine, etc. This volume is particularly rich in its short illustrated bibliographical sketches, including those of Hebra, Heidenhain, Helmholtz, Henle, Henoch, Hippocrates, His, Sir Jonathan Hutchinson, Edward G. Janeway, Koch, Laënnec, etc. Among the important neurological topics may be mentioned those on Hysteria, Hemiplegia, Headache, Hematomyelia, Hypnotics, and Tests of Intelligence. In the domains of biology and physiology there are lengthy articles on Inhibition, Animal Heat, Heredity, and Histological Technique. Surgery is represented by such subjects as Calculous Disease, Injuries, Tuberculosis, and Tumors of the Kidneys, Hernia, Heliotherapy, Intestinal Surgery, Artificial Hyperemia as a Therapeutic Agent, Laryngectomy, and Lateral Curvature of the Spine. There are interesting articles on Infancy and the Artificial Feeding of Infants; House Sanitation; Labor; Insect Carriers of Disease, Poisonous Insects, Intubation, Hearing and Defective Hearing, Hypertrichosis, Hypophysis Cerebri, Hemolysis, Heat Stroke, Therapeutics of Heat, Hydrotherapy and Infirmity. The Hippocratic Oath is described with reference to its history and interpretation. The illustrations are particularly numerous and include a number of full-page plates. In summing up with a brief characterization of this volume one may state that its contents are available for reading, for study, and for reference, a combination rarely achieved in medical works.

PRINCIPLES OF HYGIENE: A Practical Manual for Students, Physicians and Health Officers. By D. H. BERGEY, A.M., M.D. First Assistant, Laboratory of Hygiene, and Assistant Professor of Bacteriology, University of Pennsylvania. Fifth Edition, thoroughly revised. Price, cloth, $3.00 net. Philadelphia and London: W. B. Saunders Company, 1915.

THIS book is designed to meet the needs of students of medicine in the acquirement of a knowledge of the principles on which modern hygienic practices are based; to aid students of architecture in comprehending the sanitary requirements involved in the construction of buildings, and to aid physicians and health officers in familiarizing themselves with the advances made in hygienic practices in recent years. While the output of books on hygiene seems somewhat larger than recent additions to our knowledge warrants, in this instance the author, in his endeavor to bring his work up to date, has succeeded in presenting a very attractive and readable production. In view of the large range of topics that his subject involves no claim is made that any are treated exhaustively, but a very comprehensive general view of the subject is given. The chapters on industrial, military, and naval hygiene are particularly worthy of note. The author has been very conscientious in pointing out the unsolved problems in connection with the various topics discussed and has thus rendered a signal service in emphasizing the directions along which preventive medicine must develop. His use of the metric system throughout the book is undoubtedly commendable.

INFANT FEEDING. Its Principles and Practice. By F. L. WACHENHEIM, M.D., Attending Pediatrist Sydenham Hospital, and Mount Sinai Dispensary, New York City. Price, $2.00. Philadelphia and New York: Lea & Febiger, 1915.

A SUCCINT and clear account of the subject of infant feeding is presented in this volume. Following the opening chapters on infant digestion and metabolism, breast feeding, and cow's milk, there are described the numerous methods of milk modification. There are also chapters on other infant foods, artificial feeding, disorders of digestion, disorders of metabolism, rickets and scurvy, and the feeding of older infants. The author makes a plea for greater simplicity in artificial infant feeding, favoring the use of whole milk with the addition of cereal dilutions as originally recommended by Jacobi. He describes all the newer theories that seek to account for the alimentary disorders of infants, including the conception of salt-fever, and Finkelstein's hypothesis of milk-atrophy (Milchnährschäden). Considerable attention is devoted to the relation of infant feeding to such disorders as pyloric stenosis, pylorospasm, and digestive neuroses; to the mode of feeding in the infectious diseases; to the disorders of metabolism, including the exudative diathesis, acidosis, eczema, and urticaria; and to rickets and scurvy. The book is well written. The references to the literature and the appended bibliography are particularly helpful.

MEATLESS COOKERY. With Special Reference to Diet, Heart Disease, Blood Pressure, and Autointoxication. Compiled by MARIA MCILVAINE GILMORE. Introduction by Louis Faugères Bishop, M.D., Clinical Professor of Heart and Circulatory Disease, Fordham University. New York: E. P. Dutton and Company, 1915.

THERE is no doubt that too much meat is frequently eaten by middle aged and elderly persons, and by those who lead a sedentary life. It may be said, indeed, that too much food in general is eaten by the majority of civilized people and that individuals often "dig their graves with their teeth." After a certain age the consumption of meat should be restricted, and in some instances eschewed altogether.

The author of this work has compiled recently a book containing lists of vegetable menus, the only exception being one of chicken. The lists of diets suitable for those who cannot properly assimilate meat are excellently put together and should prove useful to this class. Dr. Louis Faugères Bishop, who is a strong advocate of rational if not always vegetable diet as a means of warding off affections of the heart and blood vessels, writes an introduction to the book in which he points out that unsuitable food has much to do with the causation of intestinal stasis, autointoxication, and the numerous physical ills that follow in their train. He advises that in order to avoid such complaints, a vegetarian diet should be followed.

MEDICAL DIAGNOSIS. By ARTHUR LATHAM, M.A., M.D. (Oxon.), F.R.C.P. (Lond.), Physician and Lecturer on Medicine, St. George's Hospital; and JAMES TORRENS, M.B., B. S. (Lond.), M.R.C.P. (Lond.); Assistant Physician, St. George's Hospital and the Paddington Green Children's Hospital. With 74 illustrations, 19 in color. New York: The Macmillan Co., 1915.

THE unique plan of this work is the concise presentation of clinical data together with laboratory methods in such manner as to provide in a form available for quick reference a broad and scientific basis for diagnosis. It combines therefore the features of the manual on clinical pathology with those of the textbook on medicine proper. A brief description of each disease is followed by a detailed description of its diagnosis, including the laboratory methods that may be employed. Then follows a full and ample discussion of differential diagnosis, each differentiated condition being given a separate paragraph. The completeness and usefulness of this phase of the work may be illustrated by the description of the differential diagnosis of typhoid fever, in which the distinguishing features of the following conditions are pointed out: septicemia and ulcerative endocarditis, miliary tuberculosis, a tuberculous storm in the mesenteric glands, appendicitis, lobar pneumonia, malaria, paratyphoid infection, and influenza. The chapter on diseases of the cardiovascular system and pericardium is particularly valuable, incorporating as it does the results of the latest studies with the aid of the polygraph and electrocardiagraph. One may question the correctness of the authors' use of the term "valvular lesions" as synonymous with "chronic endocarditis." This is a conception which has been largely discarded in favor of the newer idea that valvular lesions should be referred to in most instances as valvular defects, the result of a pre-existing pathological process. In most cases of so-called chronic endocarditis the clinical phenomena are solely the result of the mechanical defects in the heart. The topics in this book are admirably arranged from a didactic viewpoint, the illustrations are numerous, and the colored plates, including those in the section on the blood, are particularly fine. There can be no question that this book supplies a distinct want in medical literature. It bears the imprint of originality and ripe clinical experence.

THE BOOK OF PRESCRIPTIONS. With Notes on the Pharmacology and Therapeutics of the More Important Drugs, and an Index of Diseases and Remedies. By E. W. LUCAS, F.I.C., F.C.S. Pharmaceutical Chemist; Late Examiner of the Pharmaceutical Society of Great Britain; Member of the British Pharmacopœia Reference Committee; Author of "Practical Pharmacy," "The Book of Receipts." With an Introduction by ARTHUR LATHAM, M.A., M.D., F.R.C.P., Physician and Lecturer on Medicine at St. George's Hospital. Tenth Edition. Price $2.50. Philadelphia: P. Blakiston's Son & Co., 1915.

THIS little volume is intended to aid the senior student and junior practitioner in his early efforts at prescription writing. The fact that it is in its tenth edition is the best proof that the book has been of use. But the value of the work is somewhat impaired for readers on this side of the Atlantic by the fact that the preparations and doses are those of the British Pharmacopœia. The notes on Therapeutics and Pharmacology are well written and to the point.

THE NEWER PHYSIOLOGY IN SURGICAL AND GENERAL PRACTICE. By A. RENDLE SHORT, M.D., B.S., G.Sc., Lond.; F.R.C.S., Eng.; Hunterian Professor, Royal College of Surgeons; Examiner in Physiology for the F.R.C.S.; Hon. Assistant Surgeon, Bristol Royal Infirmary; Senior Demonstrator of Physiology, University of Bristol. Third edition revised and enlarged. Price, $2.25. New York: William Wood & Co., 1915.

THIS little book is of more than ordinary value. It contains such of the newer discoveries in the field of physiology as have a value in the diagnosis and treatment of patients. The author has been careful to omit mere theories and unproved statements and, with few exceptions, has given only the established and settled conclusions of many independent workers. In the present edition there will be found new chapters on the vitamines and on the genital glands; and the articles on surgical shock, the digestive apparatus, the pituitary and pineal glands, and on chloroform poisoning, have been largely rewritten. The other chapters have also been revised and brought up to date. Physicians and surgeons will find this volume a useful connecting link between the textbooks on physiology and the actual practice of medicine and surgery.

LECTURES ON THE HEART. Comprising the Herter Lecture (Baltimore), a Harvey Lecture (New York), and an Address to the Faculty of Medicine at McGill University (Montreal). By THOMAS LEWIS, M.D., F.R.C.P., D.Sc., Physician City of London Hospital, Assistant Physician and Lecturer in Cardiac Pathology, University College Hospital, London. Price, $2.00 net. New York: Paul B. Hoeber, 1915.

DR. LEWIS has made for himself a great reputation as an authority on the mechanism of the heart beat and on clinical electrocardiography. On a recent visit to this continent he gave five lectures. The Herter lectures emphasized the advantages of intimately combining clinical and laboratory observations. The Harvey lecture dealt with questions of physiological interest, while the address at Montreal served to illustrate in a more extended manner the application of laboratory methods to questions of immediate and practical consequence. The series of lectures taken together afforded an excellent exposition of the manner in which the author has cleared up, or has assisted in clearing up some moot points in connection with the action of the heart, and supplied an explanation of the method of electrocardiography. No more able exponent of the most recent views with regard to the heart, first promulgated by Mackenzie, can be found than Dr. Lewis, and the lectures contained in the book under review present these views in concise and interesting form.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held May 6, 1915.

THE PRESIDENT, DR. WALTER B. JAMES, IN THE CHAIR.

THE program of the evening was arranged by the State Department of Health.

Dr. WALTER B. JAMES, in opening the meeting, referred to the effective work which Dr. Biggs had done in New York City in reducing the death rate and making it the healthiest city in the United States. When it was observed that the death rate throughout the rural portions of the State failed to show a decrease corresponding to that of New York City, Dr. Biggs was selected as the man best fitted to prosecute a work throughout the State similar to that which he had done in New York City. The new health administration had now been in effect since January 1, 1913, during which time a Public Health Law had been enacted which was the best in this country and which had withstood all efforts to overthrow it or amend it. Though this law had been in operation but a short time the results were so striking that he felt that the members of the Academy and others would be interested in hearing of them.

The Public Health Council of the State of New York.—Dr. HERMANN M. BIGGS presented this paper. He recalled that previous to the year 1913 the powers of the State Department of Health were very restricted and almost wholly advisory in character. The Commissioner had no direct authority over the local health officers, and no power was vested in the Department to make sanitary regulations. There were about 1,400 separate health units in the State, each of which had a Board of Health and a Health Officer. Each Board of Health had the power of enacting a Sanitary Code for its own community. The cities generally of the State were an exception to this rule, and in many the City Council had the power to enact the sanitary code. To meet this condition the Commission which drafted the Public Health Law introduced the section which created a Public Health Council which should have no appointive, administrative or executive duties or powers, but should have authority to enact sanitary regulations of statewide application. Further than this, the Commission determined in the new Public Health Law to bring about the following results: First—To confer supervisory instead of advisory powers upon the Commissioner of Health and to extend the direct supervision of the Department throughout the State to the smaller communities by the division of the State into twenty sanitary districts, with a State Sanitary Supervisor in each. Second—To raise the standard of the sanitary work of the State by providing that important administrative positions should only be filled by well-trained and thoroughly qualified men, and to exclude as far as possible, the introduction of political influences in appointments in the sanitary service of the State. Third—The Public Health Law fixed a minimum compensation for local health officers of 10 cents per capita of the population of the community which each served. The Commission felt that without more adequate compensation for the local Health Officers little progress in the health administration of the State could be brought about. Fourth—There were created in the Department of Health nine divisions representing important phases of public health administration with a director in charge of each. Fifth—More complete registration of vital statistics was provided for by the incorporation in the Public Health Law of the model Vital Statistics Law, which was drafted by a joint committee of the United States Census Bureau and the American Medical Association. It was the intention of the Commission that the Public Health Council should be composed of experts representing public health administration, bacteriology, and preventive medicine, sanitary engineering, social welfare work, the medical profession and the people. The council as at present constituted included Dr. Simon Flexner, Dr. T. Mitchell Prudden, Mr. Homer Folks, Professor H. N. Ogden, dean of the faculty of engineering at Cornell; Dr. William Gaertner, Mrs. Elmer Blair, chairman of the public health committee of the State Federation of Women's Clubs, and the Commissioner of Health. The members of the council were appointed by the Governor, the term of service being six years and one expiring on January 1 of each year. After reading the sections defining the duties and powers of the Public Health Council, Dr. Biggs said it would be seen that the council was charged with three important duties: the enactment of a State-wide sanitary code which had all the form and effect of law; the establishment of qualifications for public health officials of various kinds, and to act as expert advisers on public health questions and matters of policy to the Commissioner of Health. This sanitary code replaced the fourteen hundred previously existent in the former sanitary districts of the State. It was hoped by the Commission that it would be possible to raise the standard of men in all the classes of public health work and to protect them so far as was possible from political influences. Appointments of local officials were still made by local authorities, but only such persons were eligible as had the qualifications prescribed by the council. This practically put these positions in the Civil Service class. The same provision applied to all important positions in the State Department of Health. The qualifications of directors of divisions were also prescribed. The position of Sanitary Supervisor, twenty of whom were to be appointed under the law, was placed under Civil Service rules. In the framing of the sanitary code the council had steadily aimed to secure to the citizens of the State all the advantages which science and experience had offered in the prevention of disease and in the promotion of the common welfare, with the least possible interference with the business, comfort and welfare of the people. The council had sought to eliminate from the code, especially in the chapter dealing with communicable diseases, the useless sanitary procedure which marked the views and practices of an earlier day, now replaced by exact knowledge, and to abandon in its text technical terms which had lost their earlier meanings and values and also those which were not readily comprehensible to the citizens for whose use and guidance the code was framed. Thus the council cherished the hope that the code would prove effective, comprehensible and not unnecessarily rigorous in view of the large advantage to all which the adoption and the enforcement of a modern scientific code promised. Up to the present time seven chapters of the sanitary code had been enacted. The first related to definitions and general provisions; the others to communicable diseases, milk and cream, the practice of midwives, labor camps, nuisances, the last to miscellaneous subjects, such as spitting, common drinking cup, common towel, barber shops, etc. One of the most important subjects at present engaging the attention of the council was the fixing of qualifications of local health officers hereinafter to be appointed. Owing to the existing lack of facilities or the training of health officers and to the comparative smallness of the salary, the council realized at present the impracticability of fixing at present the qualifications as high as was desirable. It was the belief of the council that the solution of this pressing problem involved the education of physicians and others in modern preventive medicine by the creation of a school of young men interested in public health, who would form a source of supply of health officers. To attract efficient young men to this important public service it was necessary to afford them attractive opportunity and adequate compensation. Those familiar with the public health law and service throughout the United States felt that for the first time in the history of this country an adequate, efficient public health law had been enacted and that a large future and useful careers had been opened to men who prepared themselves for public health work.

Certain Special Activities of the Department, Control of Midwives, Cold Storage, etc.—Dr. LINSLY R. WILLIAMS presented this communication. He stated that the various activities which he would describe were not taken up in the order of their importance. He first spoke of Public Health Nursing. He stated that the Department had an appropriation sufficient to employ eight nurses at $1,200 a year for the general public health work throughout the State. The qualifications for these nurses were that a nurse would be not less than twenty-five years of age; that she should be a registered nurse in New York State, and that she should have had not less than two years' experience after graduation in either maternity work, infant welfare, social service, tuberculosis, care of communicable diseases, or school nursing. Several of these nurses had done excellent work in connection with the infant welfare exhibits, and had been of assistance in organizing Little Mothers' Leagues. Four nurses had made quite an extensive survey in two counties in an endeavor to ascertain the amount of tuberculosis existing in those counties. Their work had initiated a cam-

paign for a new County Hospital for Tuberculosis in both counties. Another important feature of the work had been the supervision of midwives. Up to January 1, 1915, 238 midwives were licensed. Since that time the applicant had been required to possess either a diploma or show evidence that she had attended under instruction not less than fifteen cases of labor and to give the name, date and address of each case, and a written statement of the physician under whom she had received instruction. From January 1 to April 15, 1915, eighty-eight midwives had been licensed and 254 had been refused. A series of regulations controlling midwives had been enacted, modeled largely on those now in force in New York. It was the intenet of the department to instruct midwives and to attempt to improve the midwives' services, and as time went on to curtail the number of midwives and to make regulations more stringent, so that a better qualified woman would take up the work of midwifery. It did not seem practicable, and it would cause extreme hardship if the midwives were immediately abolished. Dr. Williams reviwed the law with reference to cold storage and stated that during the year 1914 there had been 5,150 inspections of cold storage warehouses and 1,845 inspections of retail stores and markets. A number of violations had been found, the majority of which were for misrepresentation, a comparatively small amount of food having been found unfit for use. Two hundred and twenty prosecutions were instituted in 1914 as against thirty-seven during the years 1911, 1912, and 1913. In reviewing the work of the division of sanitary engineering, the speaker stated that only seventy-seven water supplies in the State were protected by rules and regulations, and that there were about 400 not protected. Where violations of rules and regulations had been detected steps had been taken to abate them. Moral suasion and publicity were the only powers that the department had for correcting unsanitary conditions on these watersheds. During the past year seventy-one public nuisances arising from stream pollution were investigated by the department and eighty-one other public nuisances, all of which had been investigated and action taken in accordance with the Public Health Law. During the past seven years 1,100 summer resorts had been investigated and every effort made to see that the water supply, sewage and garbage disposal and milk supply was kept in sanitary condition. Nearly 100 State institutions had had a sanitary investigation made and report rendered thereon to the managers of the institution and to the proper State supervisory authorities. The operation of various sewage disposal plants, municipal and institutional, was also supervised. In a number of instances municipalities created public nuisances by discharging sewage into streams in violation of the law. In several instances the department had caused the State, through the Attorney-General, to bring action against a municipality. Although this law had been in force for a number of years, it had never been utilized for this purpose until this year.

Educational Work of the New York State Department of Health.—Prof. C.-E. A. WINSLOW discussed this phase of the department's activities, calling attention to the fact that it had been only within the past few years that the department had undertaken this work, and that New York was the first State to have a special division of Public Health Education as a part of the work of the State Health Department. A survey of the field showed widely varying needs in this direction. There was first the need for educating health officers. Some of the universities were acting as pioneers in this field and had established extension courses. In addition to proper education for those entering upon the public health work the State Department held an annual conference for Health Officers, the object of which was to keep these men informed and up to date on subjects relating to public health work. The conference at Saratoga Springs last fall was attended by 730 health officers. The importance of the practicing physician in public health work was recognized, and an attempt was made to reach him through the Monthly Bulletin and Health News, which was sent to every physican in the State. In addition they had distributed to physicians some twenty-two special bulletins on such subjects as communicable diseases, farm sanitation, the house fly, etc. These were distributed among volunteer workers as well as among physicians and health officers. If their work was to succeed they felt that they must reach the individual citizen and cultivate in him a sanitary conscience, and in this way they would get ahead of disease as the health officer alone could never do. After mentioning the subjects to which the Health News had devoted itself and calling special attention to the endeavor to reach the children in the public schools through a series of articles prepared for that purpose, Dr. Winslow related their experience in reaching the people through the columns of the local newspapers. They had sent short articles on health topics to 400 local papers throughout the State, and in this way had reached over a million readers. These articles had been well received by the people and the newspapers were showing a spirit of cheerful cooperation. Another branch of the public health education work was that of the lecture service. Lectures had been given to the number of about 100 monthly by the sanitary supervisors, and special lecturers and special campaigns had been undertaken through the women's clubs, labor unions, and granges. After speaking of the adult life, infant welfare and rural hygiene exhibits which had visited fifty-nine cities and fifty-three county fairs, the speaker said that they had a plan for reproducing these exhibits in a form that could be duplicated and that in this way all localities in the State could be reached. They planned to have booklets for distribution at these exhibits which would serve to impress the lessons of the exhibits in the minds of those who visited them. In preparing their literature their object had been to visualize their readers in such a way as to impress upon them the thing that they wanted them to do. A constructive plan for the future required cooperation between local organizations, through a Central Health Council in each community. In closing, the speaker again emphasized the need of individual knowledge and of organization if the people were to be effectively mobilized for public health work.

Laboratory Service for the State.—Dr. AUGUSTUS B. WADSWORTH presented this paper, in which he first briefly related the history of the laboratory of the State Department of Health. This laboratory was organized twelve years ago for the purpose of making and distributing diphtheria antitoxin. Some five years ago it began the distribution of tetanus antitoxin and about three years ago it commenced to distribute silver nitrate for the prevention of ophthalmia neonatorum. In 1906 the bacterial and chemical analysis of water was taken up. The reorganization of this work was now bringing great advantages to local health officers. A year ago last February, when the present health administration took up the work, they found the laboratories and stables, where 17 horses were kept, in a deplorably insanitary condition. It was found that in the midst of the overcrowding and chaos that prevailed the antitoxin that was prepared contained only 66 per cent. of the units it was supposed to contain. Since that time both the diphtheria and tetanus antitoxins had been standardized and were now distributed throughout the State much more generally than formerly. The tetanus antitoxin as a therapeutic remedy must be given without delay. Provisions for distribution had now been made so that telegraphic orders were seldom necessary. They were also distributing antimeningococcus serum, typhoid vaccine, and through the courtesy of the Hygienic Laboratory at Washington material for the treatment of rabies. Smallpox vaccine would soon be prepared. A new outfit had been installed for the preparation of the silver nitrate outfits for ophthalmia neonatorum. Inasmuch as the bacterial examination of water was not very satisfactory unless supplemented by a field inspection, they had succeeded in having the sanitary supervisors make such field inspections and had thus brought them in touch with the water supplies. The delay of specimens sent for diagnostic examination in transit and the deferring of examinations and reports had been a problem of concern for some months. Sometimes the delay was on the part of the physician sending the specimen and at others there was a delay on the part of the laboratory. They now telegraph the results of examinations to physicians. The result of an examination could now reach the Western part of the State in from thirty-six to forty-eight hours. They now had outfits for the diagnosis of almost every disease in which the laboratory examination was of any practical value. While their plant was still limited and no adequate appropriation or provision had been made for research work, nevertheless some had been undertaken, and offered a striking illustration of the value of research in the attainment and maintenance of a high standard of efficiency. Ninety-eight strains of diphtheria bacilli had been identified, verifying the accuracy of distinc-

tions which were now made between the pseudo and true diphtheria. Previously no such distinction was made. The different types of the agents of pneumonia were also to be studied. Other laboratories were being established throughout the State, which would cooperate with the State Laboratory, while the latter would aid in standardizing all this work. There were now 10 county and 21 municipal laboratories. In the more technical phases of the work the laboratory at Albany and the Branch Laboratory in New York would be consulted. Instruction would be given to those laboratory workers who had the prescribed requirements and to health officers. Thus had order come out of chaos. The stables had been removed outside the city and the buildings had been renovated and put into shape for laboratory work. The laboratory workers were Civil Service employees and the records of their time showed an average of 30 per cent. of overtime work that gave proof of their interest. In closing Dr. Wadsworth cited statistics showing the great increase in all departments of the laboratory service since the year 1913.

The Diminution in the Death Rate.—Dr. CRESSY L. WILBUR, Director of the Division of Vital Statistics, presented this paper in which he declared that the death rate of civilized countries during this age of modern hygiene was perhaps the most significant characteristic of our time. Formerly death rates of 40 or 50 per thousand population were not at all uncommon. Even with the high birth rates then present population did not increase as fast as at the present time. Now they were giving much practical attention to the bookkeeping of humanity, as the vital records had been termed, and undoubtedly they had at the present time a more serviceable body of data for public health purposes than ever before. An inspection of the present low death rates gave one an impression that the present rates were hardly likely to be diminished in the future to a very large extent, or at least to the extent observed in recent years. There was still, however, much opportunity for improvement. The death rate for the State of New York for the year 1914 was only 14.6 per 1,000 population. This was the lowest death rate ever recorded for the State since the establishment of accurate death records. In 1890 the rate was 20.8, so that in a quarter of a century it had declined about six points. Much more rapid had been the decrease in New York City as compared with that in the State at large. In 1900 the death rate of New York City was 20.6 per 1,000 population, and in 1914 it was only 14, a drop of six points in fourteen years. The drop was indeed somewhat more if the city estimates of population were employed. The remainder of the State showed a practically unchanged death rate in this period. There was unfortunately some little discrepancy between the published death rates for New York State and city as obtained from various sources dependent chiefly upon the various methods of estimating population for inter-censal and post-censal years. The choice of method was important, and perhaps the time had arrived for a change in the census method of estimation as the geometric method was now probably more in harmony with the observed facts of increase of population, not only for the City and State of New York, but more especially for the majority of registration states. In the census mortality statistics, 1911, the essayist had computed the specific death rates, by sex, of New York and other States, and also for the cities of 100,000 population and over, according to eleven age periods with a view to the statement of a corrected or standardized rate. Similar figures were presented for the State in 1900, so that the movement of mortality at the various age periods, by sex, could be compared for the eleven-year interval. Similar tables were presented in the Special Report of Professor Wilcox in the Annual Report of 1912, the figures relating to the census years 1900 and 1910. His conclusion which was in close agreement with that of the speaker was that a falling death rate was found among men below 45 and among women below 60 years of age. The death rate of males seemed to follow, by an interval of several years, the path of possibility blazed by the female rate. In other words, by greater protection from life hazards, by greater moderation of restraint and perhaps greater adaptability to the increasingly feminized conditions of modern life, woman was the healthier animal, and as fittest, was surviving to a greater extent at practically every age. Life tables would soon be available for the registration area of the United States and for individual states, by means of which exact comparisons could be made as to the relative mortality and life expectancy at each age. The speaker showed such a comparison between the New York City life table and those recently published by the Registrar General for England and Wales and the County of London. These tables showed that the life expectation was greater at practically all ages in England and Wales than in New York City. In discussing the question as to what could be anticipated for the future in the way of reduction of the general mortality, Dr. Wilbur said he believed the death rate of both New York City and New York State would continue to decrease for a period of some years. A death rate of 10 per 1,000 in a stationary population would represent an average longevity of 100 years. But our populations were growing, both by natural increase and by immigration, and hence they had by no means reached the lower limits of the general death rate under these conditions. Their great problem was the reduction of the death rate outside the City of New York, and especially in the smaller cities, villages and towns of the State. A difficulty in this connection was the fact that the age distribution of the rural communities was less favorable on account of the larger proportion of persons at advanced ages.

The New York State Department of Health and Infant-Welfare Work.—Dr. HENRY L. K. SHAW of Albany reviewed this division of the work. He declared that New York State could point with pride to the fact that it was the first state in the union to officially recognize the claim of the child through the formation in the State Department of Health of a special division devoted to his interests. No resources of the state were in such dire need of conservation as its children. After briefly reviewing the results of infant welfare work in New York City, Dr. Shaw stated that the infant mortality statistics in 1913, outside of the City of New York, showed that the infant date rate was 126 per 1,000 living births in comparison with 102 in New York City, where infant welfare work was in operation. Dr. Biggs then insisted that a special effort be made to reduce this high infant mortality and inaugurated through the Division of Child Hygiene a state-wide campaign to accomplish the result. The objects of the campaign were to educate the mothers in the care of their children and to arouse the community to the necessity for child welfare work, to point out the fact that a high infant death rate was unnecessary and should be considered a disgrace, to establish infant welfare centers with the employment of visiting nurses and to improve the general milk supply. Three exhibits were prepared which consisted of 20 large panels and a fully equipped infant welfare station. These exhibits started the first of April and continued until the first of July, when 45 cities and large villages had been visited and over 150 public meetings held. Advance publicity work was started in each city about two weeks before the coming of the exhibit. The trained nurse who had charge of the model infant welfare station weighed babies, gave advice to mothers and held informal talks on the bathing and care of the baby whenever a group was collected. A bed prepared for a maternity patient was included in the equipment and the steps in its preparation were demonstrated by the nurse in charge, who presented a leaflet entitled "Before the Baby Comes," and advised expectant mothers to consult a physician early and to take special care of their diet and clothing during the prenatal period. The results of the campaign were that 35 new stations were established in 22 new localities. In 18 of the 45 cities the infant mortality rate fell below 100 per thousand living births and in 31 of the cities the death rate fell below that of 1913, while in 12 cities not reached by the exhibit, in only four did the death rate fall below that of 1913. The infant mortality rate for the entire State was 101, which was per thousand living births in 1913 to 111 in 1914. When the rate for New York City was included, the infant mortality rate for the entire State was 101, which was lower than any State in the Union. Besides visiting 45 cities, the exhibits were sent to 57 county fairs. The State Department was continuing this work in rural communities. It was difficult, sometimes almost impossible, to educate the mother of the baby, but it was possible to reach the big sister through the public school. If the girls who would be the mother of the next generation could be taught how to take proper care of infants they might hope to diminish not only the high death rate among infants, but also the vast amount of unnecessary ill health and physical suffering

caused by neglect in infancy and childhood. The plans of the Division of Child Hygiene for the coming year were to conduct a campaign of education in localities which were not reached last year, and to establish more infant welfare stations. Efforts would be made to reduce the mortality of the first months of life by prenatal care and instruction. A study of the causes producing high infant mortality in infants' institutions would be undertaken and an effort made to reduce the number of deaths from respiratory diseases.

The Treatment of Diphtheria Carriers.—Dr. F. M. MEADER, Director of the Division of Communicable Diseases, read this paper. After considering the anatomical and pathological changes that took place in the parts usually involved in an attack of diphtheria, he stated that in diphtheria carriers these pathological changes in the epithelium might be observed long after the clinical manifestations of the disease had disappeared. On the tonsils, even in normal appearing tonsils, the local foci might be found studded over the surface. These foci were not apparent to the unaided eye. Whether or not these foci were as numerous on other parts of the mucous membrane as on the tonsils was not known. The fact that Overton, Zingher and Turrell had obtained negative reports from cultures in 16 of 18 carriers immediately after tonsillectomy might lead one to infer that the foci were confined chiefly to the surface of the tonsil, but they had no information regarding other surfaces since they might not have been touched by the swab. It had been observed that when the mucous membrane was unhealthy it might become secondarily infected with diphtheria bacilli. For example, a foreign body as a shoe button in the nostril had repeatedly been known to irritate the mucous membrane in such a way that a secondary infection with diphtheria bacilli had persisted for months with no clinical symptoms. When the button was discovered and removed the diphtheria organisms disappeared. It had been observed that when the mucous membrane had been infected with tuberculosis or syphilis, if a secondary infection with diphtheria germs occurred, it had been impossible so far as he knew to affect the carrier state until the primary lesion had disappeared. It would thus seem that at least a factor in the carrier state might be some primary pathological condition of the mucous membrane. Another interesting observation of these carriers was that they possessed natural antitoxin. In the treatment of these cases the removal of the primary condition was of importance. In the medication care must be exercised lest the caustic applied did not so injure the mucous membrane that a vicious circle was produced. Frequent spraying with a simple normal saline sufficient to keep the parts clean, the idea being to stimulate the production of a normal mucous membrane, had been used with success, but this method was tedious and sometimes of long duration. The spraying of the mucous membrane with a living culture of staphylococcus aureus, or lactic acid bacillus, or bulgarian bacillus had often been tried and reported as successful. In their hands it had been easy to obtain negative cultures for a few days following the use of such a method, but subsequently the diphtheria organisms were found to persist. They felt that the diphtheria organisms were simply overgrown in these cases. The immunization of carriers with autogenous vaccines made from the diphtheria bacillus had received some attention. In the literature and in his personal experience, it appeared that if the usual technique for demonstrating bacteriolytic amboceptors in the blood was employed none of these antibodies could be found. However a slight modification in the technique made it possible to demonstrate an amboceptor-like body, which was produced by immunization with the diphtheria bacilli. This antibody disappeared soon after immunization ceased. The frequent examination of the blood of patients convalescent from clinical diphtheria who recovered normally failed to show any trace of this antibody, so that they did not feel that immunization with diphtheria vaccines, at least with methods used, was a fruitful field of endeavor. Removal of the tonsils of diphtheria carriers was usually followed immediately by the report of negative cultures. There was no report of serious complications following this procedure. But there was no data to show that foci on a large part of the mucous membrane might not still be infected. In discussing the danger of the carrier to the community, Dr. Meader stated that it had been estimated that about 0.4 per cent. of the general population were carriers. During epidemics the percentage rapidly increased. Since last August it had been the rule of the Department to release from quarantine patients whose nose and throat had been normal for five weeks. There were three conditions stipulated: 1. The patient must be careful about coughing or sneezing in the presence of little children. 2. Cultures must be taken at intervals of two weeks until the diphtheria bacilli disappeared. 3. There must be an agreement that any secondary cases traced to such carriers be immediately reported to the Department.

Dr. WILLIAM HALLOCK PARK said that Dr. Meader's experiments brought back a recollection of some work that he had done some years ago which led him to the conclusion that in dealing with carriers a simple method of cleansing was the best. In their investigations they had found that carriers were more frequent than had been supposed. About 10 per cent. of children with scarlet fever were carriers as against one per cent. of ordinary children. There must be some condition of the naso-pharynx in scarlet fever that made it a suitable nidu for the bacilli. The speaker said he could scarcely concur in the belief that after a certain length of time, and on one negative examination, a carrier was no longer a menace. That was only true of carriers who had had the disease. It seemed unreasonable to allow a carrier, even if time had elapsed and one examination had been shown to be negative, to enter a community where no diphtheria and no such carrier existed. Dr. Wadsworth had spoken of educating public health officers along public health lines. The majority of medical schools now offered an extension course or had added a course in this subject to their curriculum, and he hoped that the Council would add this requirement as a qualification for public health work. Learning from the State Health Department seemed new to them, but he believed this was the beginning of cooperation between the city and the state, and that each would get information from the other, and there would spring up between them a spirit of generous rivalry that would be of benefit to both.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

STATE BOARD OF MEDICAL EXAMINERS OF GEORGIA.

Atlanta, October, 1914.

(*Continued from page* 46.)

OBSTETRICS.

1. What are the characteristics of the female pelvis and how does the male pelvis differ therefrom?
2. Describe pelvimetry and name the five most important measurements.
3. What precaution as to the urine should be employed in the case of a pregnant woman.
4. Describe methods to determine position of the fetus previous to labor.
5. Define second stage of labor and state the conditions which may cause delay of delivery in this stage, and how such conditions should be managed.
6. How would you determine that a dead infant had been born alive?
7. Give the technique of obstetric asepsis and antisepsis before, during and after labor.
8. Give your method of caring for the new born from birth until it is dressed. (*b*) What attention should the babe's eyes receive?
9. Give causes, symptoms,, and treatment of phlegmasia alba dolens.
10. Discuss gonorrhea in women—symptoms and far-reaching results.

DISEASES OF WOMEN.

1. Describe the uterus.
2. Define menorrhagia; (*a*) Give causes; (*b*) treatment.
3. What is the usual cause of menorrhagia in virgins?
4. Define chronic simple endometritis. (*a*) Give some of its synonyms; (*b*) causes and treatment.
5. Give symptoms and treatment of urethral caruncle.
6. What is the main support of uterus?
7. What is the main object in repairing the perineum?
8. Describe an operation for the repair of perineum.

9. Define pyosalpinx and give your method of handling same.

10. Diagnose cancer of uterus.

ANSWERS.

OBSTETRICS.

1. The chief differences between the male and female pelvis are thus tabulated in Morris's *Anatomy:*

MALE.	FEMALE.
Bones heavier and rougher.	Bones more slender.
Ilia less vertical.	Ilia more vertical.
Iliac fossæ deeper.	Iliac fossæ shallower.
False pelvis relatively wider.	False pelvis relatively narrower.
True pelvis deeper.	True pelvis shallower.
True pelvis narrower.	True pelvis wider.
Inlet more heart-shaped.	Inlet more oval.
Symphysis deeper.	Symphysis shallower.
Tuberosities of ischia inflexed.	Tuberosities of ischia everted.
Pubic arch narrower and more pointed.	Pubic arch wider and more rounded.
Margins of ischiopubic rami more everted.	Margins of ischiopubic rami less everted.
Obturator foramen oval.	Obturator foramen triangular.
Sacrum narrower and more curved.	Sacrum wider and less curved.
Capacity of true pelvis less.	Capacity of true pelvis greater.

2. *External pelvimetry.*—"The measurements are made with a pair of calipers. *Interspinous diameter.*—The points of the calipers are held in the two hands so that the point of the forefinger rests alongside the point of the instrument. The two anterior superior spines are located, and the points placed on them. The calipers are then screwed tight by an assistant or nurse, and the measurement read off. Normally it is 9½ to 10 inches. *Intercristal diameter.*—The instrument is held as before and the points passed slowly round the iliac crests until the points of greatest separation are found, when the measurement is made. Normally it is 10½ to 11 inches. The *external conjugate diameter* is measured by placing the one point of the calipers over the tip of the last lumbar spine, and the other over the front of the symphysis pubis. This is most easily done with the patient standing, and the tip of the last lumbar spine can be found by counting downwards from above. It is, however, usually marked by a slight dimple due to fascial attachments. In fat persons it suffices to make a point in the mid line 2½ inches above the line joining the posterior superior iliac spines. The external conjugate usually measures about 7½ to 8 inches; 3½ inches at the very least must be allowed for the thickness of the bony and soft tissues. Therefore, while a large reading may not necessarily mean a large conjugate, a reading under 7½ inches, and more especially under 7 inches, indicates that the conjugate is diminished proportionately.

"*Internal pelvimetry.*—The *diagonal conjugate* from the promontory of the sacrum to the under margin of the symphysis may be measured by the fingers. The diagonal conjugate measures 4½ to 4¾ inches, and ½ to ¾ of an inch must be subtracted to give the length of the conjugata vera. The actual amount to be subtracted varies with the depth of the pubic bone and its inclination toward the sacrum, so that at the best this method of estimation is but approximately correct. In practice, however, these methods are found to be sufficiently accurate in the vast majority of cases. It should be remembered that in a normal pelvis it is impossible to touch the promontory of the sacrum by vaginal examination without forcing the fingers so far in as to hurt the patient. Therefore if the promontory can be felt readily it indicates a small pelvis and the desirability of more careful investigation. The *outlet of the pelvis* can be directly measured in both its anteroposterior and transverse diameters by means of the fingers and a measuring tape, or more conveniently by means of a pair of calipers with the points crossed."—(Johnstone's *Textbook of Midwifery.*)

3. "The *urine* should be examined at regular intervals throughout pregnancy. This examination should be both chemical and microscopical, and made at least once a month for the first six months, and once a week during the last four. The presence of albuminuria, the evidences of toxemia, edema, renal insufficiency, or nephritis, demand daily examinations. This examination should determine the amount of urine passed in twenty-four hours, its specific gravity, the total amount of urinary solids, the percentage of urea, the presence or absence of albumin or sugar and of tube casts."—(Polak's *Manual of Obstetrics.*)

4. *Methods of determining the position of the fetus prior to labor:*—"The examiner stands alongside the patient, facing her head; the tips of the fingers of both hands, moving together and at equal distances from the middle line, are carried up the sides of the abdomen by a series of tapping movements; and upon one side (for example, the left, in the L. O. A. position) is noticed a firm, broad, even sense of resistance, contrasting with the cystic, tumor-like sensation of the other side, with the occasional encounter of firm, irregular bodies,—the fetal extremities. This firm, broad, even resistance is produced by the fetal back, and, to confirm this fact, the extremities are felt for by a rubbing motion with one outstretched hand on the opposite side. They are felt as cylindrical, irregular bodies, slipping away from the hand, and changing their position from time to time. Having located the back and the extremities, the portion of the fetal ellipse presenting at the superior strait is next ascertained. The examiner now faces the woman's feet, and, with the outstretched hands, the fingers parallel with and the middle finger over the center of Poupart's ligament, on either side, the fingers dip down beneath the ligament into the pelvic cavity. If the head is presenting, it is felt as a hard, regular, round body, the greater mass of the occiput, the sharp point of the chin, and the groove between occiput and back being often distinguishable. At the same time, the density of the head, its compressibility, its approximate size, and its relative size to the pelvis may be learned. By *auscultation* the fetal heart-sounds are located, and their rate and intensity are noted. The uterine bruit and the funic souffle are often heard. The former is a low-pitched musical murmur synchronous with the maternal heart-beat. The latter is a high-pitched whistling murmur synchronous with the fetal heart-beat. The position of the abdomen at which the fetal heart-sounds are heard with greatest intensity is of diagnostic value in confirming the find, by abdominal palpation, as to position and presentation. By *vaginal examination* the finger detects the varying portions of the fetal body which may present at the superior strait, as the cranium, the face, the shoulder, the buttocks, the knees, feet, and, exceptionally, the elbow or hand."—(Hirst's *Obstetrics.*)

5. The second stage of labor begins when the os is fully dilated, and terminates with the expulsion of the child. Conditions which may cause delay are rigidity, edema, atresia, or displacement of the os or cervix; fibrous bands or atresia of vagina; persistent hymen; unyielding perineum; tumors; distended bladder or rectum; hernia; edema of labia; pelvic deformities; malpositions or malpresentations of the fetus; prolapse of limbs; short cord; large fetus; dead fetus; twins or monstrosities; uterine inertia; rupture of uterus.

It is manifestly impossible, in the space at our disposal, to give the treatment of all these conditions.

6. *Application of hydrostatic test, to determine whether a dead infant was born alive:*—"Having opened chest, note *position* of lungs (*before* respiration they occupy a small space at upper and posterior parts of thorax); their *volume* (of course increased after breathing); their *shape* (before respiration, borders sharp or pointed; after it, rounded); their *color* (before breathing, brownish-red; after it, pale red or pink); their *appearance* as regards disease and putrefaction; and whether they *crepitate* on pressure (as they will *after* respiration). Take out lungs with heart attached, and place them in pure water having temperature of surrounding air. Note whether they float (high or low), or sink (slowly or rapidly). Separate them from the heart and weigh them accurately; then place them in water again, and note sinking or floating, as before. Subject each lung to pressure with the hand, and note sinking or floating again. Cut each lung in pieces and test floating again. Take out each piece, wrap it in a cloth, and compress with fingers as hard as possible, and test floating, etc., as before. The crucial test of *perfect respiration* is each piece floating after the most vigorous compression." (King's *Manual of Obstetrics.*)

7. In addition to the bath, clean clothes, and other details which may be taken for granted in persons of refinement, the physician should, before making a vaginal examination, carefully cleanse his hands, as

scrupulously as if he were about to undertake a major operation. The hands should be scrubbed for at least five minutes with hot water, soap, lysol, and a nail brush that has been boiled or soaked for some time in an antiseptic. Special care must be given to the nails and nail-folds. The hands should then be soaked for three minutes in an antiseptic solution such as bichloride of mercury 1:1000. This is followed by another washing in sterile water. Rubber gloves that have been boiled and kept sterile and a sterile gown add to the safety of the patient.

The patient should receive a full bath before labor begins and all bed-clothing and personal clothing should be clean. If there are any pathological discharges from the genitals, the vagina should be thoroughly scrubbed with tincture of green soap and hot water, followed by a mercuric chloride douche (1:2000); this followed by a douche of sterile water. The physician's hands should be scrubbed for ten minutes with tincture of green soap and hot water, followed by alcohol, and immersion in mercuric chloride (1:100). All instruments should be boiled for ten minutes or immersed in mercuric chloride 1:1000 for half an hour. Examinations should be made when necessary to determine the position, presentation, size of the fetus, etc.

8. *Care of infant:* After the cord has been ligated and cut, the eyes should be cleansed with a saturated solution of boric acid, after which, if there is any vaginal discharge from the mother, 1 or 2 drops of a 1 per cent. solution of silver nitrate should be instilled in each eye. The mouth should also be gently cleansed, for which may be used a soft cloth and boiled water. The vernix caseosa should be removed by means of some oily substance. The baby should be bathed in water at 100° F., carefully dried, and the cord dusted with some antiseptic powder. Sponging should be practised for 10 days, after which a full tub-bath at 98° F. should be given daily for 6 months. The temperature may then be reduced to 95° F., and at the end of a year to 90° F. The binder and clothing should be woolen. If the infant's extremities are blue or cold, external heat should be applied. The diapers should be made of flannel, and dusting powders should be used to prevent chafing."—(*Pocket Cyclopedia.*)

Ophthalmia neonatorum is an infectious, purulent inflammation of the conjunctiva in the newborn, due to the gonococcus or other pyogenic germ; produced by contact of the eye with the vaginal secretion of the mother during labor, or infected fingers, or instruments, etc. *The treatment is* (1) *Prophylactic.*—Whenever there is the possibility of infection, or in every case, wash the eyelids of the newborn child with clean warm water, and drop on the cornea of each eye one drop of a 1 or 2 per cent. solution of nitrate of silver, immediately after birth. (2) *Remedial.*—Wash the eyes carefully every half hour with a saturated solution of boric acid; pus must not be allowed to accumulate. Two drops of a 2 per cent. solution of nitrate of silver must also be dropped on to the cornea every night and morning. The eyes must be covered with a light, cold, wet compress. The patient must be isolated, and all cloths and compresses used must be burned.

9. PHLEGMASIA ALBA DOLENS is a form of manifestation of puerperal sepsis in which there is a thrombosis of the iliac or femoral vein. Sometimes it occurs after a uterine phlebitis, in which clots are carried from the uterine sinuses to the hypogastric veins, where they cause obstruction to the blood flow in the crural veins. The trouble may also begin as a crural phlebitis. It is thus due either to cellulitis or to thrombosis. It usually appears about the third or fourth week of the puerperium. *Symptoms:* Irregular chilliness and malaise, pain in leg and abdomen, rigor and swelling of leg, fever, skin is white and tense, and the vein feels hard. *Treatment:* Rest in bed, support patient's strength, relieve pain, and apply lead and opium wash to take down the inflammation.

10. GONORRHEA. *Symptoms:* Pain and burning in the vulva; pain and burning on micturition; dyspareunia; yellowish or greenish discharge, in which the gonococcus can be found; the vagina is hot, red, swollen, and tender. *Possible results:* Cystitis, urethritis, vulvitis, endometritis, salpingitis, septic peritonitis, sterility, condylomata of vulva, abscess of Bartholin's glands. *Diagnosis* is made from the symptoms, particularly from finding the gonococcus in the discharge. It is *so serious*, on account of the possible results, enumerated above; it often leads to chronic invalidism, and may be the cause of death.

Treatment: Rest, if possible in bed; freedom from alcoholic or sexual excitement; a mild and unirritating diet; salines and diuretics; plenty of water to drink; a warm sitz bath; douching of vagina with about a gallon of a 1:5000 bichloride solution, or of borax (1 dram to the quart), or of potassium permanganate (1 per cent. solution); the douche is to be taken in the recumbent position.

DISEASES OF WOMEN.

1. In the nulliparous adult the uterus is about three inches long, about two inches wide at the upper part, and about one inch thick. The uterus lies between the rectum behind and the bladder in front; it is below the abdominal cavity, and above the vagina. Its position is one of slight anteflexion, with its long axis at right angles to the long axis of the vagina. The anterior surface of its body rests on the bladder, and the cervix points backward toward the coccyx. The uterus is not fixed, but moves freely within certain limits. It is held in place by ligaments. (1) *Broad ligaments*, which extend outward on each side from the side of the uterus to the side of pelvis. (2) *Rectouterine ligaments*, which extend backward from the intraperitoneal portion of the cervix uteri to the peritoneal investment of the rectum. (3) *Round ligaments*, which extend from the uterus just below the Fallopian tubes, through the inguinal canal to the labia majora. (4) The *ovarian ligaments*, which extend from the superior part of the uterus, behind the Fallopian tubes, to the inner end of the ovary. (5) The *uterosacral ligaments*, which extend from the highest part of the cervix uteri to the sides of the sacrum opposite the lower border of the sacroiliac synchondrosis.

2. *Menorrhagia* is an excessive loss of blood at the menstrual periods. *Local causes:* Uterine displacements, malignant disease, inflammations of uterus or appendages, fibroids, cystic degeneration of the cervix, subinvolution, ectopic gestation, abdominal tumors.

General causes: Hemophilia, scurvy, purpura, malaria, anemia, mitral disease, diseases of kidneys, or liver, acute infectious fevers.

Treatment: Remove the cause, if possible; treat abnormal conditions that are present; vaginal douches, tampons, and curettage have been recommended; also ergot, hamamelis, hydrastis, and viburnum prunifolium; rest in bed is necessary. Intrauterine applications of astringents or of adrenalin have been used.

3. *The usual cause of menorrhagia in virgins* is some general systemic condition; but uterine congestion, polypi and fibroids must not be forgotten.

4. *Chronic endometritis* is a chronic inflammation of the mucosa lining the uterus. *Causes:* Debility, repeated pregnancies, laceration, and subinvolution of uterus, fibroids, gonorrhea, or sepsis. *Symptoms:* Neuralgic, bearing-down pains; cramps; dysmenorrhea; irritable bladder; menorrhagia or metrorrhagia; leucorrhea, which may be blood-stained or purulent; profuse hydrorrhea; loss of appetite, constipation, dyspnea, palpitation, sterility. The uterus as a whole is abnormally tender; the uterine cavity is enlarged; the external os is patulous, and shows a tendency to bleed on being touched. *Treatment:* The general health must be attended to; rest is indicated; constipation must be avoided; tonics are of slight use; ergot is useful for the menorrhagia or metrorrhagia; vaginal douche, pessaries, hip-baths, and counterirritation have all been recommended; curettage may help; and one or both lips of the cervix may be amputated.

5. *Urethral caruncle* is a small red fleshy growth generally situated on the posterior part of the meatus of the urethra. There are local pain and tenderness, which may be excessive; a burning sensation is experienced on urination; it may bleed. The proper treatment is to excise it or destroy it with the thermocautery.

6. The main support of the uterus is the perineum, chiefly the sling of muscles and fascia which surrounds the vagina and its opening.

7. The *main object in repairing the perineum* is to prevent atrophy of the injured muscles, subinvolution and prolapse of the uterus.

8. *Operation for lacerated perineum:* "The labia are seized with Allis' forceps at the level of the lowest carunculæ myrtiformes. A guide stitch is placed in the posterior vaginal wall directly under the external urinary meatus. By pulling one Allis forceps and the guide stitch in opposite directions outward and downward, the posterior sulcus is exposed; denudation is required, even in a recent tear, for a part of it is always submucous. The other sulcus is exposed and de-

nuded. Then by holding the guide stitch upward in the middle line and pulling the forceps apart the mucous membrane between the sulci is denuded or freshly torn surfaces covered with granulation-tissue are scraped with the edge of a knife. The ruptured levator ani muscle in the posterior sulci is united with a double tier suture of chromic gut, two half hitches being taken in the stitch as it turns upward after coming down from the apex of the wound, in its deeper portion to the base. One knot at the apex of the sulcal denudation secures the stitch. The retracted ends of the transverse perinei and bulbocavernosus muscles are brought together by silkworm sutures. Finally, a single stitch at the top of the perineal wound unites the posterior commissure of the vulva, restoring the fossa navicularis. The perineal stitches are knotted; they are removed on the twelfth day."—(Hirst's *Obstetrics.*)

9. *Pyosalpinx* is a condition in which the Fallopian tube is distended with pus as the result of a salpingitis which has become purulent. The *treatment* of the acute form consists in rest in bed, free purgation with Rochelle salts (5i every hour), hot vaginal douches, and hot applications to the abdomen. If the symptoms become more severe celiotomy is indicated. The chronic form may be treated during the menstrual period by rest in bed, free purgation, hot vaginal douches, local applications of iodine to the cervix and vaginal vaults, and glycerin tampons. If these measures fail removal of the tube and ovary and replacing the retroverted uterus, etc., are necessary.

10. *Cancer of the body of the uterus is diagnosed* by the history, symptoms, physical signs, and microscopic examination. It is a disease of advancing years, and generally occurs after the menopause; nulliparæ and multiparæ are equally liable. The chief symptoms are hemorrhage and discharge with an offensive odor, pain, and cachexia. The cervix is soft, the uterus enlarged, and tender. The uterus must be curetted, and the scrapings examined by the microscope.

(To be continued.)

BULLETIN OF APPROACHING EXAMINATIONS

STATE	NAME AND ADDRESS OF SECRETARY	PLACE AND DATE OF NEXT EXAMINATION†	
Alabama*	W. H. Sanders, Montgomery	Montgomery	
Arizona*	J. W. Thomas, Phoenix	Phoenix	
Arkansas	W. S. Stewart, Pine Bluff	Little Rock	
California	C. B. Pinkham, Sacramento	Los Angeles	Dec. 14
Colorado	David A. Strickler, Empire Building, Denver	Denver	
Connecticut*	Chas. A. Tuttle, New Haven	New Haven	
Delaware	J. H. Wilson, Dover	Dover	
Dist. of Col'bia	E. P. Copeland, Washington	Washington	Oct 12
Florida*	E. W. Warren, Palatka	Jacksonville	Dec. 7
Georgia	C. T. Nolan, Marietta	Atlanta	
Idaho*	J. F. Schmershall, Jerome	Wallace	Oct. 5
Illinois	C. S. Drake, Springfield	Chicago	
Indiana	W. T. Gott, Crawfordsville	Indianapolis	
Iowa	G. H. Sumner, Des Moines	Des Moines	
Kansas	H. A. Dykes, Lebanon	Topeka	Oct. 12
Kentucky	J. N. McCormack, Bowling Green	Louisville	
Louisiana	E. L. Leckert, New Orleans	New Orleans	
Maine	F. W. Searle, Portland	Portland	Nov 9
Maryland	J. McP. Scott, Hagerstown	Baltimore	Dec. 14
Massachusetts*	W. P. Bowers, State House, Boston	Boston	
Michigan	B. D. Harison, 205 Whitney Building, Detroit	Lansing	Oct. 12
Minnesota	T. McDavitt, St. Paul	Minneapolis	
Mississippi	F. H. Galloway, Jackson	Jackson	Oct 5
Missouri	J. A. B. Adcock, Jefferson City	Kansas City	Sept. 28
Montana*	Wm. C. Riddell, Helena	Helena	Oct. 5
Nebraska	H. B. Cummins, Seward	Lincoln	
Nevada	S. I. Lee, Carson City	Carson City	Nov. 1
N. Hampshire	Walter T. Crosby, Manchester	Concord	
New Jersey	H. G. Norton, Trenton	Trenton	
New Mexico	W. E. Kaser, East Las Vegas	Santa Fe	
New York	H. H. Horner, Univ. of State of New York, Albany	New York, Albany, Syracuse, Buffalo	Oct 5
N. Carolina	H. A. Royster, Raleigh	Greensboro	
N. Dakota	G. M. Williamson, Grand Forks	Grand Forks	
Ohio	Geo. H. Matson, Columbus	Columbus	
Oklahoma	J. W. Duke, Guthrie	Oklahoma City	
Oregon	B. E. Miller, Portland	Portland	
Pennsylvania	N. C. Schaeffer, Harrisburgh	Philadelphia, Pittsburgh, Harrisburgh	Jan.
Rhode Island	G. T. Swarts, Providence	Providence	Oct 5
S. Carolina	H. E. Boozer, Columbia	Columbia	June 13
S. Dakota	P. B. Jenkins, Waubay	Pierre	
Tennessee	A. B. DeLoach, Memphis	Memphis, Nashville, Knoxville	
Texas	M. P. McElhannon, Belton	Austin	
Utah	G. F. Harding, Salt Lake City	Salt Lake City	
Vermont	W. Scott Nay, Underhill	Montpelier	Jan 11
Virginia	J. N. Barney, Fredericksburg	Richmond	Dec. 14
Washington*	C. N. Suttner, Walla Walla	Seattle	
W. Virginia	S. L. Jepson, Wheeling	Charleston	
Wisconsin	J. M. Dodd, Ashland	Madison	Jan 11
Wyoming	H. E. McCollum, Laramie		

*No reciprocity recognized by these States.

†Applicants should in every case write to the secretary for all the details regarding the examination in any particular State.

Therapeutic Hints.

Preparations of Cinchona Suitable for Chronic Paludism.—Gilbert states that these may be given in the form of a wine, a syrup, an infusion, or a pill. The wine may be prepared as follows:

℞ Cinchona rubia, 25 grams.
Alcohol (60 per cent.), 75 grams.
Dilute hydrochloric acid, 2 grams.
Red wine, 920 grams.

Of this 50 to 100 grams may be taken daily after meals.

The following is the formula for the syrup:

℞ Cinchona rubra, crushed, 100 grams.
Alcohol (30 per cent.), 10 grams.
Sugar, 1,000 grams.
Distilled water, q. s. ad 1,525 grams.

The dose is the same as that of the wine. The infusion is prepared with 20 grams of cinchona bark in one liter of water for 20 hours. It may be drunk freely, preferably after meals.

Pills, consisting of 0.2 gram of cinchona, may be administered to the extent of 5 per diem, during meals, and increased gradually to a daily dosage of 10 pills.—*Journal des Praticiens.*

Magnesium Sulphate in Acute Rheumatism.—Thiroloix and Mairesse extol the value of intramuscular injections of a 25 per cent. aqueous solution of magnesium sulphate in doses of 4 cubic centimeters daily. This method of treatment not only relieves the pain but also lessens the fever and shortens the course of the rheumatic attack. The magnesium sulphate may be given alone or in conjunction with sodium salicylate. Generally four injections suffice to effect a cure.—*Bulletin Général de Thérapeutique.*

Antiseptic Iodine Solution.—Dr. H. W. Yeamans, first lieutenant, Medical Reserve Corps, U. S. A., says he has used the following formula to the exclusion of all others during the past eight years, with better results and greater satisfaction than any other disinfectant has ever given him:

℞ Iodine, 1.00.
Potassium iodide, 2.00.
Salicylic acid, 5.00.
Alcohol (70 per cent), 100.00.

Undiluted, this solution may be made use of for sterilizing the hands and sites of operation; for disinfecting wounds, and for such other purposes as will readily suggest themselves. For wet dressings and for irrigations it should be diluted with water so as to represent an iodine content of from 1:1000 to 1:5000; diluted to 1:25,000, it may be used for eye (gonorrheal ophthalmia) and urethral irrigations, with excellent results, though it is advisable to cocainize the eye previously. The solution is not deleterious to instruments; in fact, it may be used for sterilizing them, other means failing.—*The Military Surgeon.*

Strychnine, Iodine, and Arsenic in Typhoid Fever.—Vernier believes that this combination of drugs exerts a specific influence in typhoid fever. The strychnine is given in daily doses of 2 to 4 milligrams. The iodine and arsenic are administered together as follows:

℞ Solution of potassium arsenite (1 per cent), 1.5 grams.
Potassium iodide, 0.50 gram.
Tincture of iodine (10 per cent), 15 grams.

M. et Sig.: Six to 8 drops in milk every 3 hours, or 12 to 16 drops every 6 hours.—*Journal de Médecine et de Chirurgie Pratiques.*

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Original Articles.

ANGINA PECTORIS.*

By RICHARD STEIN, M.D.,

NEW YORK.

VISITING PHYSICIAN TO THE GERMAN AND THE LEBANON HOSPITALS.

If one will read with care the description of angina pectoris as it was set down by William Heberden[1] nearly a hundred and fifty years ago, the physician who gave the complaint the name it bears, one will find in the three short pages of his commentaries and in the letter of Edward Jenner which was addressed to Heberden concerning the case of their mutual friend, John Hunter, if not the sum of our present knowledge of the subject approximately the substance of what we know of the nature of this "sphynx of diseases."

In Heberden's account we read: "It is different from other chest pains, or, as we might say, it is an affection *sui generis*." It is not extremely rare, the author states—he had seen a hundred cases. The experience of the busy practitioners of today is probably equally as large, especially if we include the rudimentary syndromes observed in the course of heart disease at the time of decompensation. Heberden's cases were mostly in men beyond the age of fifty, the period which we recognize as that of arteriosclerosis of the vascular system. Heberden saw the pain set in after exertion or after a meal; he saw it recede or vanish when the patient was at rest. All of this is now generally interpreted by saying that rise of the blood-pressure may bring on an attack. Heberden continues: "There is a sense of strangling or anxiety over the sternum, and down the left arm, rarely the right, sometimes in the hand and fingers." Patients have described this to me as a feeling of constriction around the chest to the point of extinction—to the very imminence of death. Heberden adds: "There are cases which end fatally that never show any but the pains in arms and hand." Osler speaks of such cases as extrapectoral angina in contradistinction to those with intrapectoral pang. The pain is, in fact, different from other chest pains, different from the sharp sore pain of pleurisy. It is a dull or deep boring pain under the chest bone, spreading to one or both shoulders, down to the arms and fingers, left or right, or into the neck, jaws, or teeth, or to the back of the head. Or it may begin in the abdomen like a true colic, and combine itself with the chest pain. Or it may shoot into the back or testicle. Very common are stationary pains on trunk, arms, and wrist. In fact, long experience has taught us many localizations, combinations, and variations. Nothing is easier than to miss the significance of atypical anginal pain or to misinterpret certain gastric symptoms. Often they are the unrecognized warning-signal of death. Pain in the fingers of the left hand is characteristic. Popularly the left ring-finger is thought to have a special relationship to the heart. Heberden also describes, though in not so many words, what is known as the chronic state of angina, the status anginosus.

The pulse is at least sometimes not disturbed by this pain, he says. This is also our experience. The prognosis in the progressive cases is given by the author in one short phrase: If no accident supervenes, the patients all suddenly fall down and perish almost immediately. This tragic ending, oftentimes so unexpected, has been the experience of all of us. Still we know that some cases are curable, others amenable to treatment. The accidents Heberden speaks of are the various incidences of the arteriosclerotic, such as hemorrhage of the brain. And it is remarkable to see in such instances how a heart which but yesterday, during a paroxysm of angina, threatened to be extinguished in an instant, keeps up the current of life for days after an apoplectic attack.

The author puts the right stamp on the character of the attack when he states that angina pectoris is a spasmodic complaint. This is indeed the effect it creates, if you witness a sharp, quickly fatal attack of a sthenic nature. You see the violent spasms of the muscles of the face, the chest, the abdomen, accompanied by an overpowering expression of pain and anguish, the protruding eye, the fixed jaw, the diaphragm set to the breaking point. You hear the agonizing scream of torture and despair till the face and hands grow blue and cold, covered with clammy sweat, and the heartbeat, at first round and full and slow, becomes quick, feeble, and irregular, until the heart expends itself.

Heberden says angina is not an inflammatory complaint, although some spit up matter and blood that seem to come from the seat of the disease. Today we recognize in this symptom the failure of the left ventricle, the sudden fall of the blood-pressure, edema of the lungs.

Heberden concludes: "In opening the body of one who died suddenly, a very skillful anatomist could discover no fault in the heart, in the valves, in the arteries, or in the neighboring veins, excepting some rudiments of ossification in the aorta."

It was only a few years after the publication of Heberden's paper that the great anatomist John Hunter[2] fell a victim to this complaint. His pupil, the genial Edward Jenner diagnosed Hunter's case correctly. He had written to Heberden, stating that the cause of Hunter's attacks, as had been proven by the dissection of similar cases, was ossification of the coronary arteries of the heart; and he goes on to say: "The importance of the coro-

*Delivered before the Metropolitan Medical Society, April 27, 1915.

naries, and how much the heart must suffer from them not being able duly to perform their function . . . we cannot be surprised at the painful spasms . . . it is possible that all the symptoms may arise from this one circumstance." As Hunter turned his face toward the looking glass he looked at death itself, and when he tried to feel his pulse it was not there.

I have quoted the sources at some length and even attempted to paraphrase the essential statements of Heberden, because nothing, I venture to state, makes a subject like this more lucid than its historical aspect. The insight of the old observers often seems phenomenal—akin to divination. The subject in hand as it unravels itself in the course of the years by subsequent masters like Parry,[3] Latham,[4] Manson,[5] Walshe,[6] Huchard,[7] Nothnagel,[8] and many others, seems but an amplification of the original observations of Heberden, John Hunter, and Edward Jenner—simply an attempt to interpret the symptomatology in the light of the knowledge of each succeeding period of medical science.

To those who wish to study this subject in this comprehensive way, I would warmly recommend the "Lectures on Angina Pectoris and Allied States" by William Osler.[9] They are written in that author's most fascinating style. This little book has received a fitting appendage in his three Lumleian lectures of 1910. Neusser's[10] treatise on the subject is a classic of clinical observation. A very valuable contribution, "The Sensory and Motor Disturbances of the Heart," by Alexander Morrison of Cambridge, England, has just appeared. In the following I will attempt to sketch our modern conception of agina pectoris—the syndrome of pectoral and extrapectoral pain, as it has been gradually evolved on the basis of an extensive anatomical, experimental, and clinical experience. The latter has in no mean degree been enhanced in recent years through the actual measurement of the rise and fall of the blood-pressure during the paroxysm.

In the attempt to bring this subject to a clear understanding we encounter a number of problems, the interpretation of which is beset with serious difficulties. We must state with reluctance that, in spite of all the talent which has been brought to bear upon the elaboration of the various phases of the subject, we have not yet entered into the "essence of the matter" at hand. In trying to solve the various problems, we must be content to rest our case by bringing forward a number of theories, hypotheses, and analogies taken from the disturbances or organs like the leg or the foot—organs more patent to direct observation than those hidden away in the chest. Or we are compelled to draw upon analogies from painful disturbances of the gall-bladder, the intestine, the ureter—disturbances generally described as a state of spasm, or colic, of these organs. The principles which underlie the disfunction of these organs seem clear enough, presenting, as they do, favorable objects for comparison with apparently similar phenomena in a complicated apparatus like the heart.

Disturbance of Function.—That in one word brings us nearer than any other phrase to the general conception of angina pectoris. But disturbance of function of what organ or organs? To answer this question directly and without qualification is not possible at the present time. It would seem that Heberden stopped right here, and called the disturbance not angina cordis but angina pectoris. The changes he found in heart and vessels were insignificant. To Jenner it was reserved to find ossified coronaries, and since Jenner's time it has been generally held that angina pectoris is a disturbance of function of the coronary system of arteries, an occlusion partial or complete, gradual or sudden, of the heart's nutritional system.

The coronary theory of angina pectoris was subsequently sustained by Cohnheim[11] by means of animal experimentation. By him it was shown that the coronaries are end-arteries, so that embolism, thrombosis, or obliteration of a coronary branch generally meant heart-death, instantaneous or gradual. This theory could not be shaken by subsequent investigations, which showed that the coronaries were not end-arteries in an anatomical sense. For all practical, functional purposes, they must be considered end-arteries in the Cohnheim sense. In this way it was supposed that the painful disturbance of the heart's function was put on an organic basis. Huchard,[7] from a large personal experience and by an exhaustive study of the literature in the well-known stye of the French monograph—a work of nearly a thousand pages—sets out to prove one theme—that angina pectoris in each and every instance is caused by an affection of the coronary arteries of an organic nature.

Now if it could be proven that there are cases of angina pectoris which have been investigated by competent observers which show intact coronaries, the theory of coronary angina would not be universally applicable. That it is in fact not at all uncommon to find intact coronary arteries in angina has been known for a long time; and although coronary changes accompany other organic changes, which are to be named presently, the disorder exhibits varied anatomical substrata: organic changes of the semilunar valves, aortitis, especially in the suprasigmoid portion, the various forms of aneurysm of the aorta, to speak only of the usual well-known causes. Pathologically speaking, too, there can be no doubt of a true angina cordis. In all of these conditions, the changes in the coronaries may be insignificant.

In addition to this, it can be authoritatively stated that there are innumerable examples of subjects who harbor very material organic changes in the coronaries and who never present the symptom-complex of angina, and finally die from a variety of causes, the theory of coronary angina, though seemingly the key to the whole situation cannot be regarded as the universal or exclusive cause of angina pectoris. Or the case may be formulated thus: Coronary disease is often the *causa mortis* in persons afflicted with angina pectoris, but it is only one of various organic changes found.

After all is said, however, it would be unwise to underrate the rôle of the coronaries. In the delicate mechanism of the heart's action any disturbance of equilibrium of the coronary system, directly or by reflex, is likely to induce serious functional disturbance. Especially is this the case when the circulatory apparatus is pitched to the highest key as in the high tension of the arteriosclerotic, and additional pressure is thrown upon it through overexertion. The angina de l'effort of Potain-Huchard is the angina of high tension.

The theory of intermittent claudication, of ischemia of the heart's muscle, taken from the analogy of pain-production felt in the voluntary muscles of the lower extremities, which theory was

first presented by Charcot[12] in explanation of angina pectoris, has met with general acceptation. This theory stands and falls with the coronary theory; the limit of the one is the limit of the other. It is necessary to point out here, too, that in intermittent claudication it is also necessary to introduce an additional unknown factor to explain the pain-production, under circumstances apparently similar; presence and absence of pain under apparently identical conditions call for an additional element.

The fundamental studies in the experimental pathology of the circulation by Ludwig Traube[13] enabled this pioneer of clinical pathology to formulate a theory of angina pectoris which is representative of the views held by Parry, Stokes, and others. Traube's theory in a few words is this: Angina pectoris is the result of a violent circulatory impetus on a weakened, degenerated heart-muscle. Through the sudden influx of an increased quantity of blood into the heart, the tension of the degenerated left ventricle is worked up to a maximum; at the same time the blood flow through the sclerotic coronaries is insufficient to supply the demand of the quickened action of the ventricle. The immediate effect of the increased pressure on the heart-wall is a tearing and rending of the motor and sensitive filaments of the heart-nerves. The insufficient nutrient blood supply to the heart-muscle is the cause of the weakened heart-action. This cardiomechanic theory of angina, increased pressure on the one side, weakness of the left ventricle on the other giving rise to sensory and motor disturbances, has been adversely criticized by Fraenkel and Vierordt.[14] If weakness of the heart is the essential cause of angina, why, in a great many cases, are the objective signs of heart-weakness not apparent? A strong pulse during the attack is not unusual. The clinical paradigm of heart-weakness is not angina pectoris, but cardiac asthma. The latter not infrequently follows in the wake of an anginal attack. Functionally the two conditions are of a different portent. The painful paroxysm of angina pectoris, which, after all, is the essence of the matter, cannot be explained by the simple mechanical principles cited above. Both pain and disturbance of motility are the coordinated symptoms of an unknown noxious factor, probably of a chemical nature.

James Mackenzie's[15] theory of angina pectoris may be considered the theory of true angina cordis. The phenomenal advances of cardiac physiology and pathology, which we, in our own times, owe to the labors of James Mackenzie and many others, have among other things shown their influence in the conception of the nature of angina pectoris. By use of the sphygmographic method he proceeds to determine the functional disturbances of the various elements of the heart's musculature. As is well known, the heart's action according to Mackenzie is made up of five elements: excitability, conductivity, rhythmical stimulus, tonicity and contractility. The tracings made during an anginal attack go to show that the first three functional elements (*e, c, rs*) are intact. The loss of tonicity, too, which shows itself in a dilatation of the heart's outline, need not be present. Everything points toward a loss of contractility. This is the function which supplies the motor force of the heart, which under the circumstances, is struggling against increased resistance, and thus becomes exhausted. The sphygmographic method also shows that sometimes angina pectoris is associated with the pulsus alternaus, a sure sign of exhausted contractility. Mackenzie's theory of the rapid exhastion of contractility is in accord with the original theory of heart-fatigue of Allan Burns[16] and Lauder Brunton.[17] The origin of pain is to be sought in the disturbance of the Gaskellian function (Osler). Mackenzie himself puts it in this way: Physiologically speaking, the heart produces pain on the principle of the summation of stimuli; that is, when its contractility is forced to pass the limit of stimulation.

Ever since Heberden characterized angina pectoris as a spasmodic complaint, it has been assumed in a general way that the heart itself, during an attack, is in a state of spasm, cardiospasm, Herzkrampf. In my introductory remarks, I have tried to depict this form of angina from actual observation. These attacks look for all the world like a biliary or renal colic, like the pressing expulsive labor pains of the third stage. Now we do know that in the analogous conditions just named we are dealing with intensive contractions of the smooth muscle fibers of the gall-bladder, ureter, and uterus. Should the analogy hold good—pain production in the heart, through excessive contraction of that hollow organ—it becomes necessary, first of all, to demonstrate a system of musculature like that of the gall-bladder, etc., designed to contract violently in an effort to exert expulsive force of the kind in question. Has this been demonstrated? However that may be, cramp of the heart, whatever its nature, cannot be viewed as a tetanoid or tetanic contraction of the heart-muscle, analogous to the cramp of a voluntary muscle, induced by the electric current, for instance, as that would entail complete cessation of the heart's action. The outline of the heart by percussion and the orthodiagram, point rather to a distention than a contraction. Fraentzel's[18] acute dilatation of the heart due to overexertion is regularly accompanied by symptoms of angina. This question of heart cramp or heart colic is important, because a clear understanding of this point might go a great way in solving the whole question of pectoral pain. But unfortunately, the large subject of visceral pain and colic is still, in all its bearings, a matter of contention among physiologists and clinicians. Summing up the various hypotheses which have been put forward in the effort to explain heart-pain, we have mentioned cardio-spasm, distention, intermittent claudication and ischemia, disturbance of the Gaskellian function, summation of the stimuli or heart-fatigue. It is evident from this enumeration of essentially different, even diametrically opposed, states of the heart-muscle that the rôle the heart plays in pain-production is so far undetermined. We are plainly moving in a circle of pure conjecture.

Our knowledge of the theory of angina pectoris has been materially advanced by the study of the vasomotor phenomena. We owe this in the first instance to the genius of Nothnagel,[19] who from a number of clinical observations was led to infer that under certain circumstances anginal attacks in neurotic individuals may be induced by vasomotor disturbances of the peripheral vessels. Nothnagel looked upon these cases as neuroses of the cardiovascular system. Since then this theory has been universally applied by students of the subject as the integral factor in the production of the attack in the true as well as the false anginas.

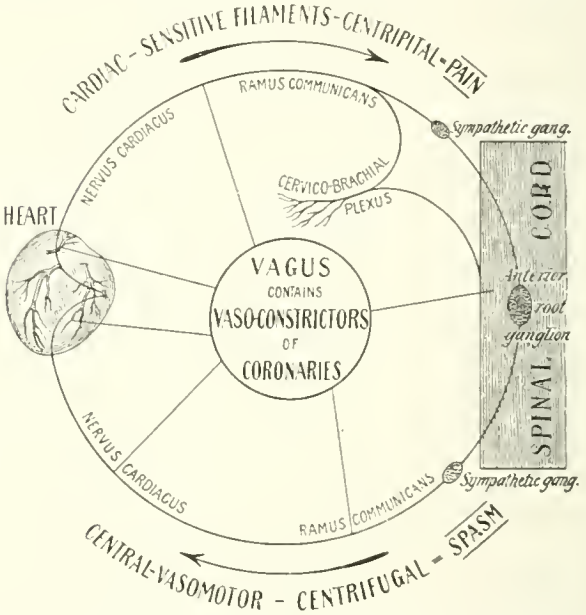
Above we touched upon the debt we owe to Traube for his studies in the pathology of the circulation. He laid down the basic principle of the rise of the blood-pressure in angina pectoris. This subject was then laid open to direct and accurate clinical observation by von Basch[20] of Vienna by means of the construction of the first clinical blood-pressure apparatus. Von Basch's work is of great value, because he controlled his clinical observations by animal experiments. That part of the work of Traube and von Basch which deals with the disturbances of the circulation is fundamental to the subject under discussion. It may be briefly stated in two words: The rise and the fall of the blood-pressure in angina; its control by the nervous system. Osler truly says: "If we understood the secrets of the rise and fall of the blood-pressure, angina pectoris would be an open book to us." Professor Pal of Vienna[21] has taken up the work of von Basch. On the basis of systematic clinical blood-pressure determinations, he has established a theory of functional disturbances of universal importance called by Collier and Pal the vascular crises. "In the course of certain diseases—nephritis, nephro-cholelithiasis, eclampsia, in the various types of arteriosclerosis, the cerebral, pectoral, abdominal, also in the arteriosclerosis of the extremities—there arise paroxysmal phenomena of the blood-vessels, spasms, and relaxations of these organs which may be termed vascular crises. They represent not a disease, but a symptom-complex on an anatomical basis; they are intercurrent phases of organic diseases." According to Pal, angina pectoris is a cardiac or a vascular crisis.

It is my opinion that the comprehensive theory of Pal in the explanation of functional disturbances is a very fruitful one in the clinic. The critical rise and fall of the blood-pressure in the anginas is one of the cardinal symptoms of these conditions, worthy of careful study, and of great practical value in therapy. Still there are cases of angina pectoris without any rise of the blood-pressure and a number of cases in which blood-pressure fluctuations are a minor feature. In my opinion the vascular crisis is a coordinated symptom of a disturbance in the nervous centers.

A complete acceptation of the arterial or cardio-vascular and *angioneurotic* theories is the work of William Osler.[9] Osler defines angina pectoris as "a disease characterized by paroxysmal attacks of pain, pectoral or extrapectoral, associated with changes in the arterial walls, organic or functional. Between heart and arteries there is no essential difference—the arteries are a long-drawn-out heart; the heart, a bulbous expansion of the arteries. They represent a physical unit controlled by an elaborate system of nerves. Any operation of the arterial system may present the phenomenon of involuntary muscle-pain," and herein, Osler thinks, lies the key to the explanation of the anginal attack. Osler also considers some forms of pain in the chest-wall, in arms, and legs as a muscle-cramp due to vasomotor spasm.

In the treatise of Neusser[10] mentioned above, which, by the way, is a mine of subtle clinical observation, that author has elaborated the paths of transmission of pectoral pain from the heart to the nervous centers and back again. This scheme is a sketch or outline of a neurogenic theory of angina pectoris. I think that I am justified in trying to establish this scheme by a name. I will call it *Neusser's anginal ring:*

"Take your starting point from the cardiac plexus of the heart, with the vasodilators and vasoconstrictors of the coronary arteries, which merge into the ganglia of the sympathetic nerve, and stand in connection with the spinal cord by means of the rami communicantes of the sympathetic. In the gray substance of the cord are found centers or paths of pain perception which in their turn communicate with the rami communicantes of the sympathetic. In this way a complete ring is formed through the connection of the cord with the sympathetic nerve in the paths of the rami communicantes. As the vagus is also included in this system, and as the vagus contains vasoconstrictor filaments of the coronary plexus, and as, furthermore, rami communicantes stand in connection with the sympathetic on the one side and the cervico-brachial plexus on the other, any irritation in this system may give rise to a typical angina pectoris, or may be produced by reflex from any part of the nervous system which stands in connection with the above. The irritation of the sensitive end-apparatus of the coronary and aortic plexus will be answered in the central organs by pain. The irri-



tation of the centrifugal vasomotor paths will give rise to ischemia of the myocardium. The anguish is produced in the centrifugal paths, including the vagus and the irritation of the medulla. Every kind of irritation in this closed ring will produce alarm in the heart and thus spinal lesions, injury to the dorsal, communicant, and cardiac nerves, neuritic affections of the aortic and the coronary plexuses, aneurysm, embolism, and thrombosis of the coronaries may produce the same symptom-complex. To this can be added the various reflexes transmitted in the paths of the vagus nerves. The result is always the same: In the center pain and fear, in the periphery vasomotor cramp and ischemia of the heart-muscle."

The difficulty of arriving at a satisfactory conclusion as to the nature of angina pectoris arises, among others, from the following considerations:

1. Angina pectoris, a clinical complex, resolves itself into a more or less definite type of functional disturbance, based upon pathological substrata of diverse kinds and various values.

2. Because heart-physiology, being a very intricate subject, is dominated from time to time by

various theories. The part played by the nervous system in the origin and control of the functions of the cardiovascular system is a matter of controversy. Yesterday we were swayed by the neurogenic theory; today by the myogenic theory.

3. Because the subject under discussion can only to a small degree be subjected to experiment.

4. Because our conception of pain, its physiological interpretation, its causal relationship as to its origin in the various tissues, its transmission from the periphery to the centers, the reflex actions produced by its emanation in the various organs, etc., are hardly understood. All this is especially the case with visceral pain. The work of Head, Ross, Mackenzie, and others has led our conception of visceral pain into new channels. The nature of visceral pain, as it is projected on the integument has been explained by Head as follows: The sensory and localizing power of the surface of the body is enormously in excess of the viscera, and thus, by what might be called a psychical error of judgment the diffusion-area is accepted by consciousness and the pain is referred to the surface of the body instead of the organs actually affected.

5. Because we possess only a superficial knowledge of the various irritations which come into play. Little is known of the rôle played by the internal secretions and their chemical modifications. An attempt has been made to explain angina pectoris on this basis. The heart and aorta, may, under certain circumstances, secrete a specific hormone which belongs to the group of sympathicotrope substances. This is supposed to exert a spastic influence on the coronaries.

6. Because what is generally called arteriosclerosis is the result of manifold biological influences and changes; it carries in its train many functional disturbances which are only being studied at the present moment.

Lastly because angina pectoris is a clinical concept. This is as it should be. It contributes to our clinical understanding to widen its scope. But at the same time it must not be forgotten that it is nothing but a symptom caused by a variety of etiological and pathological factors.

From all that has been stated above, it becomes apparent that we will never be able to understand this intricate subject unless we attempt to apply a wide clinical experience, based on searching pathological study, upon the explanation of functional disturbances in the nervous and the cardiovascular system. If we do so, we at once recognize that pectoral angina loses some of its perplexity, as it is not, as may appear on superficial observation, an affection *sui generis*, but only one of a group of similar ailments and functional import. Its workings are reducible to the same principles as the cerebral, the abdominal, the pelvic anginas. In all of these forms of anginas there must be primarily irritations of the nervous system which bring forth subjective and objective disturbances in the sensory, motor, and vasomotor centers of the cardiovascular system. The best proof of this is: Given a healthy central nervous-system and an intact cardiovascular system, anginas may be induced either directly through psychic shock or by means of certain poisons, extraneous or indigenous. Thus lead will produce abdominal and pectoral angina. Tobacco, more often than any other toxic agent, causes pectoral angina. The climacteric angina is caused by toxic substances of the internal secretions of the genital organs in the female. The result of these irritations is shown in what Solis Cohen has described as vasomotor instability or vasomotor ataxia. If the action of these poisons is eliminated perfect restitution may supervene, although it is the common experience that systemic organic changes in the cardiovascular system develop under the chronic influence of the above-named poisons. Of great interest in this connection are certain forms of anginas, pectoral and abdominal, which are of central origin, emanating from systemic disease of the cord in the tabic. They are accompanied by irritations of the anterior nerve ganglion and nerve roots. I find that they have a certain rhythmic character. The angina of the tabic may accompany, or take the place of tabic crises, and present striking vasomotor phenomena.

Summing up, I have mentioned the psychic, the toxic, the tabic, the climacteric anginas, as a proof of the primary neurogenic forms of angina. These forms are sometimes called pseudo-anginas, a name which is indispensable in practice. But that does not change the principle of their constituting forms of angina of a primary neurogenic origin.

Notes on the Pathological Aspect.—Angina pectoris is mainly associated with changes in the right side of the heart and the aorta. The work of Heller and Doehle on specific disease of the aorta has lately received well-merited attention. Specific aortitis is a frequent source of breast-pang. Specific neuritis of the plexus and nerves of this portion of the aorta occurs relatively early in luetic disease. Rheumatic infection on this site, though denied by some, frequently leads to anginoid attacks. Allbutt[22] has gone so far as to point to root affections of the aorta as the universal cause of angina pectoris. Two observations have been repeatedly noted: in aortic insufficiency the anginoid pains tend to subside when compensation has set in. In aneurysm the sharp pain diminishes when the specific process in the intima has passed the acute stage. I always look for anginoid pains in acute pericarditis. These pains are more often localized in the shoulder. This is important, because in stout individuals the diagnosis of a pericarditic exudate may be difficult, and shoulder pain may give the first clue to the condition.

The Importance of the Infectious Element as the Immediate Cause of the Attack.—In my personal observations, I have been struck by the frequency of the infectious or post-infectious element in producing the attack of angina. You will find only scant reference to this subject in the literature. In many instances anginoid symptoms are the introductory signs of an acute infection. Pneumonia, typhoid fever, enteritis, but above all influenza or pseudo-influenza, gave the impetus in my cases in predisposed individuals. The statement that angina pectoris is a non-inflammatory complaint must be modified in the sense I have just mentioned. Careful measurements will elicit temperature fluctuations of one, two, and three degrees, preliminary to and during the course of the attack. The so-called status anginosus—the recurrent phase of angina—is accompanied by a low temperature movement, indicating an inflammatory process in the cardiovascular system and elsewhere. Leichtenstern,[23] Sansom,[24] and others mention the frequency of angina during the great epidemic of influenza. Sansom has post-mortem findings of recent aortitis. I would accord to the infectious element the most important intercurrent rôle in bringing on the attack of angina.

Therapeutically, I consider morphine a specific. The nitrites are indicated in the spastic forms which are associated with high pressure. Repeated doses of the nitrites should be carefully controlled by the blood-pressure apparatus. When heart-failure threatens all the heart-stimulants are indicated. Traube thought that digitalis may cause angina pectoris. I have seen at least one fatal case after long-continued use of digitalis in a predisposed individual. Neusser administers it in cases with low pressure. I have used it again and again with good result. The blood-pressure apparatus should be used constantly as a gauge of the pressure fluctuations, as a guide to prognosis and therapy. I have also used Nauheim and Pyrogen baths with excellent results

In conclusion I give a brief statement of my conception of angina pectoris:

Angina pectoris is a syndrome or clinical complex, made up of pectoral and extrapectoral symptoms, subjective and objective. These symptoms are the expression of disturbances in the nervous system. They are called forth by irritations of various kinds, which act directly or by reflex upon the nerve complexes—peripheral, regionary, and central—of the sensory, motor, and vasomotor apparatus of the cardiovascular system.

Angina pectoris is a symptom of great dignity clinically, on account of its effect upon the heart. The heart is directly or indirectly implicated, and will, in the last instance, determine the outcome. A degenerated heart, a heart with degenerated coronaries, will react, in proportion to the amount of reserve force it is able to exert. If the reserve force is small, death follows from heart insufficiency either directly by syncope or more gradually by heart decompensation, cardiac asthma, hypostasis, pulmonary edema. On the other hand, angina pectoris may originate in, be transmitted to, disfunctionate, play itself out in the nervous system, and kill by vagus inhibition, or paralysis of the nerve-centers.

I am not able to follow Osler[9] when he says angina is a disease with a definite morbid anatomy. To my mind angina is a clinical complex with the characteristics discussed above, which is superimposed upon divergent structural changes in various tissues of the pectoral viscera, the most common of which is arteriosclerosis of the coronary and the aortic system. Neusser[10] has taken great pains to bring forward remarkable cases of angina pectoris, the lesions of which were exclusively in the pectoral system of nerves.

There is no reason in my opinion why we should not consider angina pectoris, first and last, as a disturbance of neural values. There is no organ more rich in nerve fibers than the heart. The heart contains sensory nerve filaments. A cardiac angina in the true sense is therefore not only possible but probable. The cardiovascular system is under direct control—from within and from without—of the vasomotor system, regionary and central. The vasomotor system reacts directly upon the sympathetic, as well as by reflex, and vice versa. Abdominal, cerebral anginas originate in the same way. The heart itself, though it is the most important link in the chain of the mechanism of angina pectoris is primarily not essential in the causation of the attack.

Osler bases the angioneurotic theory, in part, on the analogy with Raynaud's disease, and Buerger's[25] work on vascular disease. Raynaud's disease, according to Osler, affords the best illustration of disturbance of sensation as a direct result of angiospasm. The paroxysmal character of the attacks, the intensity of the pain, the direct association with angiospasm, suggest its vascular origin. Most investigators are agreed that the vascular changes in Raynaud's disease are intercurrent and primarily have no bearings on the etiology of the disease itself. According to Cassirer and Buerger, Raynaud's disease is an affection, the lesion of which resides somewhere in the central nervous system. The pathological process in Raynaud's disease, according to Buerger, is to be sought in the vegetative system, the vasomotor apparatus. The vasomotor and trophic disturbances are the outcome of irritative and exhaustive processes of the sympathetic system.

Mackenzie[26] brings an interesting example of a case due to excitability of the vasoconstrictor mechanism in insufficiency of the aorta, due to an irritable focus of the central nervous system at the origin of the nerves whose peripheral ends are hyperalgesic. Verdon [27] looks upon angina pectoris as a tetany of the gastroesophageal sheet of muscles, a habit-neurosis due to the presence of foci of irritation at the segmentary centers of the cord. Schmoll's[28] observations led him to the same conclusions. Gibson[29] cites cases of trophic disturbances in angina pectoris in the muscles of the arm and forearm as well as dilatation of the pupil and prominence of the eyeball, all symptoms pointing to sympathetic involvement.

And now I come back to my introductory remarks. Heberden first recognized a distinct functional disturbance of the chest and looked into the cardiovascular system for an explanation of this strange spasmodic complaint. Edward Jenner, with the eye of the genius, at once accounted for it by the organic change in the coronaries. Both conceptions, spasm, and sclerosis have been deepened and widened by the research and experience of a century and a half.

No doubt we have learned a great deal. But let us be fair and confess, are we any nearer to the essence of the matter? When Jenner says how the heart must suffer, and when we try to express the same thought by the terms, cardiospasm, angiospasm, vascular pain—are we any nearer to a real understanding of the subject? I am inclined to reply in the negative. I would say, spasm of the heart—if that was in Heberden's and Jenner's mind—still awaits positive proof. It is my opinion that the visible spasmodic symptoms of the sthenic form of angina pectoris are probably nothing more than an Abwehrbewegung—a defensive movement called forth by pain, so vividly presented by Crile[29] in his latest work on the emotions. And as to spasm of the vessels—angiospasm—let us grant that with a mental reservation. We are dominated to-day by the myogenic theory: we ascribe functional disturbances in the cardiovascular system mainly and primarily to the irritation of the muscle-fiber. This is, I think, a one-sided view. In speaking of the heart-nerves Mackenzie says there is a great deal of evidence which is entirely lost to the physiologist, but which is open to the clinician. The changes that result from the stimulation of the cardiac nerves cannot be ascertained by experiments on animals, he says, nor as far as I myself know by the histologist.

To my mind, the essential element in angina pec-

toris, as well as in all anginas, lies in the irritation of the nervous system. What we generally understand when we speak of angina pectoris probably belongs to the group of diseases which go under the heading of exhaustive diseases of the nervous system.

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A STUDY IN THE INTERNAL THERAPEUTICS OF RADIUM.

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In connection with this summary of the first Boston application of radium emanation therapeutics, it ought to be borne in mind that nothing has been used alongside that could in anyway influence results; neither drugs, nor in general any of those physical adjuncts such as change of air, of scene, of regimen, or of habits, that are so often pointed to as the real efficient agents in treatment at spas.

One important particular distinguishes this series from previous ones, viz., the mode of exhibiting the radium (*sc.* radium emanation). Radium emanation may be introduced in several ways, viz., by injection, by inhalation, by bath, and in solution by drinking. But rarely, however, has it been given conjointly with its source, radium, because this yoking up has not until now been generally available.

Loewenthal in his "Grundriss" endorses this, however, as the most desirable method of exhibiting emanation, viz., a radium salt in solution, which, after sealing, has produced the emanation within its own precincts.

In such a case there is present, after a month, that amount of emanation which is in equilibrium with the radium salt (what may be called the maximum-equilibrium-constant) and there is also the radium salt as well. This last has an infinite capacity in emanation and must give off a further amount in its passage through the body.

One microgram of radium referred to (abbreviated 1 mcgm. = 1/1000 of a milligram) means a solution of enough of a radium salt to yield that equivalent of radium element. The amount of emanation in equilibrium with this one microgram of element is a microcurie, the measurement of which is 2,700 Mache units.

The cases are not in any sense selected. On the contrary, it seemed worth while to take them as they fell—failures, successes, slight or complete. This, because of the novelty of the subject and the meager use as yet made of radium emanation in this country.

Moreover, even if some of the cases are very thin in clinical results, they at least show that radium can be taken without untoward effects. In this connection, too, it may be said that the earliest cases have been observed for a period of eighteen months.

Rheumatism and Gout.

Case I.—*General Debility with Gouty Tendency.*—F., æt. 54. Pain in back of head—great toe reddened and sensitive—some eczema about foot, of long duration. Took 2 mcgm. radium daily and 3 radium baths a week. After about a month much improvement with disappearance of local signs in foot. Radium markedly diuretic and laxative. After four months, repeated for tonic action only. Then again in eight months with a swollen finger joint. On the third treatment writes, "There is no doubt that for me radium is a good tonic."

Case II.—F., æt. 46. Pain in back of neck with creaky vertebræ and knees. Had persisted good while—other treatment ineffective. Two micrograms of radium, sometimes three daily—60 altogether. No creaking in knees—very much improved—markedly laxative effect. Three months later remains in unusually good health without symptoms.

Case III.—*Gout.*—M., æt. 46. Previous history of three attacks of gravel with two small stones—large patches of eczema—pruritus ani for a year. Intestinal putrefaction with very loose discharges—foul breath and tongue—neuritis in shoulder for a year. Radium at three different times—(60 micrograms over space of six weeks) in course of year—completely freed from pruritus and eczema; marked tonic action; better condition of bowels and sweet breath. Had radium by cataphoresis for shoulder; neuritis has disappeared.

Case IV.—*Chronic Rheumatism Four Years.*—M., æt. 24. Motorman; pain in back, toes and wrists; interfered with work; much treatment including Mt. Clemens; 36 micrograms radium and one dozen radium baths in three weeks' time. At expiration of this time showed much improvement; gain in weight; amelioration of dyspepsia. Six months later continued well.

Case V.—*Rheumatoid Arthritis.*—M., æt. 72. All joints especially hands and knees; distortion and increase in size; unable to sit down in a chair, dress himself, or go downstairs. First week sharp reaction; seventh day, "first good day"; in three weeks, after 36 micrograms radium and 12 radium baths, dressing himself every morning, coming downstairs alone, getting down in chair and up, and going out. Marked diuretic effect, interfering with sleep; also excitant. Lost sight of.

Case VI.—F., æt. 50.—*Recovering from acute rheumatism.* Patient in bed but with normal temperature; radium produced reaction with temperature 100°. Patient soon up, which the physician attributes to radium.

Case VII.—F., æt. 82.—*Sciatico.* Headache, depression of spirits; under radium (two micrograms increased to six) in all 384 micrograms over period of ten weeks. Nurse reports enthusiastically; absence of pain and headache; much better look; more energy and able to do more. The physician reports that patient "bothers" him much less.

Case VIII.—Physician, æt. 50. *Rheumatism in hip;*

painful and an inconvenience. Orthopedist, after exhaustive examination, called it rheumatism. After month, patient reports many good days; says radium certainly stirs him up; produces reactionary pains in other joints; distinctly diuretic; is now taking larger doses. Second report: after taking 288 micrograms over eleven weeks; thinks it has done him good because less acute pain.

Case IX.—F., æt. 55. *Chronic progressive rheumatism;* swelling of wrist; example of postponed action. After 36 micrograms radium over a period of three weeks, physician thought there was not much result, though swelling of wrist was less in a few days. Four months later reported very enthusiastic over radium; "had cured her rheumatism" and sent word to Case VIII to persist.

Case X.—F., æt. 50. Wife of physician; mild *arthritis deformans* (chronic progressive) of fingers; took 24 micrograms radium without admitting benefit.

Case XI.—F., æt. 55. School teacher; over weight; pain and lameness in hip, making it difficult to get about; some months duration; took 36 micrograms radium and one dozen radium baths; three months later writes as if benefited.

Case XII.—A peculiar affection of hips characterized by adduction of the thighs. Took 24 micrograms radium and 2 radium baths. Physician reported after several months that treatment had apparently produced an improvement.

Case XIII.—F., æt. 65. *Chronic progressive rheumatoid arthritis.* All joints affected; enlarged even to twice normal; one and a half years duration; has been lifted out of bed in morning and placed in chair where she sat until put back at night; fed for six months. Complete atrophy of muscles; contraction of ham strings; parchment condition of skin; pronounced an "impossible case" by an experienced clinician. Radium by intravenous injection; four of 50 micrograms over a period of four months. Immediate improvement showed itself; able to feed herself using both hands on tenth day. Improvement continued fairly steadily with some interruption; in three months got out of bed alone; seven months from date of first injection—having had no radium for three months, the hands and feet are free, with much more movement in shoulder and knees. There is an absence of pain in joints, but patient is troubled by a stitch-like pain in back, which interferes with her rising or sitting up as much as would be otherwise possible. Remarkable improvement has occurred in general condition; color; nutrition of skin and hair; appearance again of perspiration in feet; gain in weight with a stimulated appetite from the outset. She is able to use a needle; the very latest developments have been (8 months after the first radium) appearance of perspiration of feet and cracking of shoulder joints. Much freeer mobility of knees without resistance of hamstring; absence of pain complete; feet natural; as far as joints are concerned, could walk, but very little muscle development yet; greater degree in arms. This a hospital case, observed by five physicians.

Case XIV.—F., æt. 60. *Chronic rheumatism* with much pain; took 24 micrograms radium distributed over three weeks; well-marked improvement and relief of pain. One month later her physician reports her as marveling "that so much benefit could have followed use of what seemed merely water"; diuresis in this case.

Case XV.—F., æt. 54. *Rheumatoid arthritis.* Took 72 micrograms radium distributed over three weeks; patient had no faith and was reluctant to take. Was not observed very much but the physician said that two months later he could not get patient to admit more than an early and passing improvement. Four months after radium treatment patient had uterine hemorrhage; polyp was removed; on further hemorrhage, scrapings were reported on adversely, and to give benefit of doubt, an hysterectomy was done and a virgin uterus removed.

Case XVI.—M., physician. æt. 57. Weight 225; inherits rheumatism; his own form is of chronic progressive type; shoulder and hips. Took 48 micrograms radium by mouth over space of six weeks. Felt that it stirred him up; was markedly diuretic; had many ups and downs as to pain. At end of four weeks better than for long time; where he could not get leg across to put on slipper can now almost shoulder the limb; marked improvement in digestion in respect to flatulency which had been very marked and annoying—an enormous appetite which he has to restrain. Verdict six weeks after, was that he was better than he had averaged and that radium had done him good. [Note:—The amount of radium seemed by no means proportioned to the case or the man; it may have been just enough to keep condition stirred up well without proportionate curative effects.]

Case XVII.—F., æt. 48. Heavy person; *sciatica* and pain in hip; under care of osteopath. Took 24 micrograms radium and one dozen radium baths over space of about two months with intermission. The physician's conclusions were that the treatment had a favorable effect. The stimulant action was noticeable and care had to be taken as to overmuch excitation.

Case XVIII.—The patient middle-aged club man; accustomed to liquor; full of fugitive pains; was well relieved by radium (36 micrograms in three weeks), which in a way took the place of liquor; six months later he wanted the physician to order radium for his wife.

Case XIX.—Physician's wife, æt. 40. Painful knee; not incapacitated; was decidedly relieved by 24 micrograms over three weeks; well marked laxative action, missed by patient after leaving off.

Case XX.—F., æt. 70. Took 48 micrograms radium over six weeks; nurse reported very enthusiastically over results. The patient reported she had no "catarrh" while taking (previously constantly complained of); influenced by results in this case, another person in the house resorted to radium.

Case XXI.—F., æt. 40. Pains in fingers; took 60 micrograms radium over space of three weeks; reported much relief, though physician remarked that he did not think much was the matter.

Case XXII.—M., æt. 28. *Chronic progressive rheumatism.* Fingers and ankles swollen; had had vaccine; when seen, dilated heart, excited action; souffle; well-marked cyanosis of nails and prolabia. Took 36 micrograms radium over space of four weeks; in ten days marked improvement. Heart down to normal dimensions, steady at 70; very much improved color. On a slight relapse became discouraged and his physician had him go to a hospital and have tonsils removed as the primary source. But, two months after leaving hospital, he again wanted radium for its tonic effect and took some. After four months is about free and in improved condition but says he will have radium intravenously in case of recurrence. In this case it is certainly open to doubt whether the cure may not be placed to radium.

Case XXIII.—M., æt. 32. An acute exacerbation of *gonnorheal rheumatism* affecting especially wrists; 36 micrograms radium irregularly over four weeks. A very undependable patient, but the verdict of his physician was that it had been of benefit.

Case XXIV.—M., æt. 30. Ball-player; arm crippled with pain; took 12 micrograms radium; was immediately better and both his physician and himself ascribed the cure to radium.

Case XXV.—M., æt. 25. *Gonorrheal rheumatism* of three or four years' duration, with remissions. This attack of six months' duration; quite crippled, swollen tarsus and toes and tendo Achillis; painful hips and shoulders; marked anemia and loss of weight; not worked for four months; vaccines and other treatment. Fifty micrograms intravenously; after reaction, first improvement in a week; in two weeks so much benefit that patient "crazy for another." Another 50 micrograms given at twenty days' interval from first; quite pronounced reaction again but in six weeks very great improvement with no swelling of foot and almost no lameness, but swelling and tenderness of clavicular joints. At this time a rheumatic iritis developed; was given 15 micrograms radium and at date of writing has been at eye hospital; improvement in joints continues; on leaving hospital reported improvement.

Case XXVI.—M., æt. 25. Very severe *gonorrheal rheumatism* of six months' duration; not worked for four months; thickening of one knee; swelling of tendo Achillis and of tarsus, pain in insteap making it impossible to stand; treatment by specialist including much vaccine. Fifty micrograms intravenously; thought a little improved and wanted another. Fifty micrograms given at three weeks' interval. At six weeks the physician and himself found difficulty in seeing improvement; no change in weight but laces his shoe tighter and knee, perhaps, a little less swollen but cannot stand; therefore cannot resume work.

Case XXVII.—Elderly woman with *rheumatic arthritis,* especially affecting neck which was painful and offered difficulty in moving. Twenty-four micrograms radium over three weeks and radioactive earth ef-

fected much improvement according to both patient and doctor.

CASE XXVIII.—F., æt. 35. *Infectious rheumatism* after birth of child; seven years duration. Chronic progress leading to ankyloses; knees bent to almost right angle (these have been operated on at Johns Hopkins Hospital). Right arm has very little motion (from shoulder) so that she can just get it to mouth; with left, this is impossible. Fingers distorted; some flexed, some extended. One hundred and fifty micrograms radium; three injections over space of three months. Improved after first with mitigation of pain and better nights; wanted another. Three months after beginning of treatment there is a little improvement. Is having 10 micrograms injected about left elbow. One cannot speak of much result in this case after a longer observation.

CASE XXIX.—F., æt. 40. Wife of physician; had been much troubled with pain in joints; no other (objective) symptoms. The physician had tried many things but said she had improved much under radium; 36 micrograms over four weeks; it was markedly diuretic.

CASE XXX.—Patient an old lady with *rheumatic arthritis* and double senile cataract. The case may be related in the doctor's own words. Five weeks from inception he writes: "There was in this case a marked reaction in the joints and muscles lasting four or five days, severe enough to keep her awake nights, attended with a slight fever and marked anorexia. This reaction was followed by a rapid and very decided improvement in all the joints so that she was soon walking about and down to the dining room (by elevator). However, coincidently with the arthritic improvement she developed a state of most intense nervousness and irritability which was most trying. From being most considerate, sweet, and patient she became utterly unreasonable, wakeful, extremely nervous, and 'touchy.' This change of disposition was quite persistent so that I finally omitted the radium after having reduced it to 2 micrograms a day. The nervous excitation gradually subsided, so that lately she has been in that resnect about as usual. After leaving off the radium, however, her joint symptoms became worse again and after a few days I resumed its use, giving 2 micrograms a day. About a week ago we were out of the radium for two days. To make up for that I gave her 4 micrograms a day for two days when starting it again. That has been followed by a moderate joint reaction. but without so far any reaction on the part of the nervous system and I have reduced the dose again to 2 micrograms daily." One week later the doctor writes: "My patient continues to gain now without further reaction, slowly to be sure but gratifyingly." Two months later: "She has improved immensely; from being practically helpless, goes out for short walks every few days, dresses herself all but her hair and except for more or less aches at night, feels fine."

CASE XXXI.—F., æt. 70. Physician's mother; general arthritic pains; no objective signs; chronic; accustomed to daily dose of deodorized tincture of opium, as high as 90 minims. Ten micrograms radium given twice subcutaneously at weekly intervals. Six weeks after the doctor reports the patient had experienced relief.

CASE XXXII.—M., æt. 50. Gout; right great toe swollen and tender; leg swollen; confined to bed; two previous attacks; one lasting six weeks. There is already some improvement under other treatment. Intravenously 25 micrograms radium; 12 micrograms by mouth; in four days resumed work and improvement was continuous and lasting. Twenty-five micrograms intravenously repeated in ten days; reported well on sixth week. Complaint of palpitation at night.

Neuritis and Neuralgia.

CASE XXXIII.—M.; *Neuritis* of arm; of some duration and some time under treatment. Took 12 micrograms radium; 1 microgram daily; physician said patient reported entirely cured.

CASE XXXIV.—F.; *Neuritis* of arm; three weeks duration with pain, tenderness, and paresthesia; 24 micrograms internally; also locally three different injections of 10 micrograms each; at expiration of ten days patient so much better she did not want the third injection. A month after, no recurrence and the doctor prescribes radium for another patient.

CASE XXXV.—M., æt. 35. *Neuritis;* previous attack of neuritis eight years ago, when in bed four months; present attack seven months' duration. Severe pain in left arm requiring anodyne and making nights sleepless; arm markedly swollen; hanging at side; entirely immobile at shoulder; (has been advised by surgeon to have operation on bursa and joint); fingers glazed and tense; jaundice six weeks ago; sugar reaction in urine (also for four years). Two micrograms radium daily with radium compress; after four days swelling decidedly reduced; fingers wrinkled; bones of elbow showing; arm can be moved from side sufficiently to cleanse axilla (before impossible). After this, continued use of radium internally, of compress, and in addition three different injections about shoulder of ten micrograms of radium each. Steady improvement with rapid subsidence of pain; out in eight days; back to business in twelve days (away from business six weeks); in a month rarely pain; arm now discloses atrophy of muscle from disuse; can now button shirt and tie scarf; marked improvement in sleep, looks, digestion, tongue, and breath (odor). In six weeks joint quite movable. Has taken 144 micrograms radium with 30 injected. In two months continued increased motion; pain absent. Six months later the patient has remained well. The arm has free though not perfect motion at the shoulder.

CASE XXXVI.—Neuralgia; with postoperative conditions after excision of glands. Patient had local process in cheek; ulcerated plaques cauterized several times. Finally submaxillary gland removed by incision; histological report malignant. Injection of alcohol for facial neuralgia produced paralysis of fifth nerve. This patient had fresh scar of recent operation (two lymphatics), facial paralysis, and neuralgia. Had radium pad of 50 micrograms; scar retracted and organized unusually promptly; developed another enlarged gland; had improvement in neuralgia for three weeks with some relapse in fourth; recovered use of facial muscles; three weeks later recurrence of pain; ten weeks after commencement of treatment had taken 240 micrograms radium. In fourth month the case looks like recurrent malignant disease of jaw.

CASE XXXVII.—M., æt. 55. *Epigastralgia* and chronic neuralgia radiating to arm; angina; brother of physician; number of years duration; last six weeks very severe in morning; interferes with exertion; has to stop; much belching of gas which relieves pain. Diagnosis, calcification of coronaries and angina (with bad prognosis, by prominent consultant. Heart is small, at apex second sound accented; no impulse felt by hand; nothing about aorta; no general atheroma; blood pressure 120; chronic scaling eczema of face. After four weeks (96 micrograms radium) apparent improvement; has days of entire freedom; eczema much less evident. Heart has enlarged, there is some impulse and first sound has some booming character and carries the accent. Pressure increased as high as 220; artery much fuller to touch. Pain recurring, patient left off radium. After six weeks of increased suffering, sudden death supervened.

CASE XXXVIII.—F., æt. 35. *Neuritis*, arm; has had several attacks and they last several weeks. This attack quite similar to the others and for a few days used other remedies. Then radium was substituted. Took 24 micrograms radium and used radioactive earth locally. Both doctor and patient were of the opinion that the case was controlled by radium; both because of relief and short duration.

CASE XXXIX.—F. *Facial neuralgia.* Took 24 micrograms radium and used radium compress without relief. *X*-ray showed unerupted wisdom tooth which seemed an efficient cause for the neuralgia.

Nephritis and Metabolism Cases.

CASE XL.—*Interstitial nephritis marked arteriosclerosis.* F., æt. 70. Chronic invalid for some years; confined to room; increasing edema of ankles; decreased amount of urine; very marked anemia. Under radium continuously for three months, about 190 micrograms being taken. There was the most remarkable improvement; edema disappeared; urine increased from 15 to 45 ounces and maintained itself; great improvement in appetite, color, and spirits. Urea also was measured and showed increase. The patient got enough better to go out riding. The radium was omitted for a couple of months. Patient had suddenly uremic convulsions with pulse of 150 of great irregularity, and complete suppression: she seemed about to die. Radium was resumed cautiously and her condition rapidly improved. The doctor and the family paid the greatest tribute to the treatment.

CASE XLI.—M., æt. 68. *Catheter-life case.* A year previously the question of prostatectomy had been

raised but decided negatively on the ground of poor work by kidneys. There was an analysis made immediately previously to taking radium. Two micrograms daily was given for a week; at the end of that time the urea and uric acid showed an increase of 50 per cent. For some reason the radium was omitted but the physician inquired some time later if the radium was cumulative inasmuch as the urea and uric acid and amount had continued to increase and the showing became quite satisfactory. The patient, however, was seized by an obstinate singultus to which he later succumbed.

Case XLII.—M., æt. 12. *Essential diabetes* with accompanying parenchymatous inflammation of the kidneys. The patient was lethargic, moped, and it was for this that the radium was prescribed in the hope of getting a stimulant effect; it was an unqualified success so that it was kept up for a couple of months. The effect on the sugar excretion was also appreciable; a quantitative analysis was not made, but the somewhat increased amount of urine was reduced to normal and the qualitative test was less marked. The patient was lost sight of.

The story of these cases recounts not much more than the simple, familiar, clinical facts of everyday practise. To some, the glamour of laboratory tests being wanting, they may appear not complete—perhaps not scientifically precise. But there is still a large place for empiricism in medicine.

Radium can reduce blood pressure, but there was no opportunity for such specific applications of it. So likewise radium has marked effects on the blood picture, but no cases of pernicious anemia or leucemia offered themselves. For the cases in general, then, observations along these lines would not be likely to add much of value. So our cases are clinical pure and simple. No doubt many will scent a strong "psychical" odor in them. In quite a proportion of the cases, however, there were decided features of an objective character, whose disappearance concided with the general relief.

In our quest for greater socalled scientific precision in the shape of objective laboratory findings we are in danger of making "subjective" tantamount to "psychical." No doubt it is much to be desired that the highly complex phenomena of radium's action be coordinated. But this consummation, though devoutly to be wished, appears to be a long way off. But many disturbances of the economy of sufficient proportions to constitute a morbid state and to make a patient of a person, are purely subjective, *i.e.* divorced from objective phenomena. The disappearance of these states is no less an ostensible cure, without quibbling as to its demonstration, or classifying it as psychical.

And yet it may be that in the case of radium emanation we are face to face with a greater consonance of behavior, outside and inside the body, than in all drug therapeutics put together. For radium is unique in being a force and in expressing itself by liberating energy, which in turn is capable of measurement. This idea of introducing a force into the body and more particularly in the form of a solution, is more or less puzzling because unfamiliar; but the "idée mère" of radium internally is to make the blood radioactive through the presence of radium emanation—a radioelement characterized, as all radioelements are, by its instability and its certainty of passing over, according to its own law, into the next radioelements in the scale—this transmutation, decay, or resolution, to be attended by the liberation of rays and energy.

This idea of a force, once seized upon, not only makes the effects of radium seem consistent, but it puts radium therapeutics into the category of natural and physical means, as contradistinguished from drugs—nay more, it even links up the use of emanation internally with the use of radium for irradiation, since they both have the common purpose to produce a biological recoil on the part of the tissues.

Radium emanation we ought to challenge with three distinct interpellations: in its use, there are three distinct propositions involved, viz., Does it do anything, what can it do: and can it do harm?

Those who have assumed to think of radium-emanation-therapeutics as a myth, a mere piece of emptiness, are entitled to another guess. Radium internally is a real remedy? It is not inert! It has potentialities that make it both useful and beneficent, though its action may at times be mystifying, indeed, a bit uncanny.

It is to be emphasized, however, that we have in mind a solution of a radium salt, which alone gives an assurance of permanence and dependability. Much of the disappointment and contradiction of the past hinges on the unreliability of emanation as divorced from its parent and source, viz., radium.

What can radium emanation do as revealed in this series?

1. *It is diuretic.* This is, perhaps, the most consistent single effect of radium. The ratio is, perhaps, in seven out of ten cases. This feature may be rather rapidly produced or show in any pronounced way only after three or four weeks. It would not seem to be ascribable to direct action on the kidney because radium is not excreted to any extent by the kidney. Some investigators have altogether denied the possibility of radioactivity in the urine. A recent very reliable estimation gives (after intravenous injection of a soluble salt) a recovery of 1.88 per cent. only, after three days: most of which is on the first day. If diuresis is not to be ascribed to local action, it can be referable only to general influences, such as systemic effects or changes in the constitution of the urine.

2. *It is laxative*—not so often as it is diuretic, but in a good percentage of cases. This does not mean that it procures loose motions but only what seems ascribable to quickened peristalsis. A recent investigation of great accuracy shows that after intravenous injection of a soluble salt there was recoverable in the feces on the first day 17.9 per cent. and in four days 43 per cent. This item of excretion by the intestine has a somewhat important bearing because of the possibility of irritation. The same holds true of thorium X (the radioelement of the thorium series, which is used internally). This has been accused of doing much damage by producing congestion, hemorrhage, and gangrene with, it is alleged, resulting death in some cases.

Nothing of the sort has been observed by us. One case, however, pointed in this direction:

Case XLIII.—F., æt. 70. In the last years much pain of a rheumatic nature; enormous varicosity of abdominal veins; in last two months two outbreaks of purpura, legs and abdomen, spots size of silver dollar, now fading; took only 18 micrograms radium over space of two weeks, when an ounce of bright blood escaped spontaneously from rectum; never had had any hemorrhago. [Of course there is the possibility of connecting this with the purpura, which however, was not active.]

Cases XIII and XXVIII, in which the largest amounts of radium were used, and that intravenously, both had, about six to eight weeks after the first injection, almost a week of colicky diarrhea; they were both in bed at the time. This phenomenon was very suggestive of the elimination of radium.

3. *It is tonic and stimulant.* Remarkable is it

with what consistency one may predict that radium will make a patient look and act better. As a direct hematinic it is indisputable that radium will stimulate a pronounced increase of red cells and hemoglobin, so that cases of pernicious anemia rapidly lose their perniciousness (if we may not speak of cure). This direct effect on the blood would not, however, seem to be the whole story, inasmuch as there appears to be an independent stimulant action. Some patients have spoken of a heating influence, and in Case XLVIII, even after a long period of use, the dose had to be reduced on that account.

Case XLIV.—M., æt. 60. Physician; very nervous; had some pains and got an idea of trying radium; took 36 micrograms radium in a month's time; it was during extremely hot weather which was particularly trying to him; the verdict was that the immediate effect of the radium was to increase nervousness.

See also Case XXX for a remarkable observation along the lines of ultrastimulant effect. Even more striking is the following:

Case XLV.—M., æt. 85. Senile with marked atheroma; the senility was of the harmless variety and the patient went about the house and to meals. Radium was ordered and four micrograms given in two days; the patient became violently excited, singing and shouting; a nurse had to be retained and the patient restrained. There had never been any manifestation of this sort before and the condition passed promptly on suspending the radium.

This tonic and stimulant effect, while not to be regarded as reflecting the most essential physiological activity of radium, is, nevertheless, a very important and satisfying exhibition. It seems to distinguish radium from drugs, where the by-play is, to speak broadly, depressant and harmful. Thus, to take that chief of alterants potassium iodide (this being in a measure analogous to radium) in securing our effects from the iodine we have to submit with patience to the deleterious influence of the potassium.

The effect of radium in the matter of increasing sexual vigor (a part of its reputation that is historical and on which von Noorden lays stress) has not been observed, though not specifically inquired into. One case was treated with this attainment in view:

Case XLVI.—M., æt. 40. Complete sexual incapacity for a matter of fifteen years, during which he had been under observation by a specialist; from 48 micrograms of radium over a month's period he had no change to report.

4. *Metabolism and nutrition.* Here we are approaching the copestone of the arch of radium's psysiological action. While it is true that the physiological action of radium may not have been so thoroughly studied as perhaps it some time will be, there is not much dispute as to its increasing the nitrogenous metabolism. Outside of the body it is marvelous in catalysis and autolysis and in the intensifying of fermentative and digestive processes. What it does on the laboratory table it would seem likely to repeat inside the body (which so often is not the case), because it is present in the system in the same unchanged form.

Radium from this standpoint may be looked upon as stimulating to the innumerable ferments of the body: as supplying a goad, so to speak, to the vital processes. A corollary to this would be that it ought to be an equalizer, tending to restore the balance of forces. Very interesting in this connection are the observations on the heart in Cases XXII and XXXVII. If these observations are correct (the reporter is responsible for them) then, while taking radium, one heart very obviously increased its dimensions while the other decreased—with a correspondence of collateral signs that was strongly corroborative. Granting that the fundamental effects of emanation are on metabolism, this would give it a very wide range of applicability with which it seems proper to credit it; especially, it may be repeated, as it does not have the disturbing by-play of drugs.

Its action on rheumatism and neuritis is probably through its attacking the inflammatory conditions and promoting absorption and excretion. Bactericidal action within the body, though demonstrable to a good degree outside, is probably not to be reckoned with. It would not be surprising if in the future some relationship of radium to the ductless glands were to be made out, as for example, to the adrenals.

The effects of radium on nutrition of the skin seem to me very happy. Old skin brightens up and looks younger. In Case XIII (under observation ten months) this feature was very pronounced. At the outset, the patient could have been pronounced a mummy; the skin was atrophic and parchment-like; it is now soft like a child's. The nails commenced to grow and require attention and the feet to perspire. One observer using radium for rheumatism found an acne rosacea improve; and in an old lady (where the tonic effects were pronounced) brown spots on the face cleared up.

Case XLVII.—M., æt. 55. Apothecary; *General eczema* (called psoriasis because so scaly); two months previous treatment with arsenic; on 36 micrograms radium cleared up absolutely in three weeks.

See Case III for eczema and pruritus. A case of psoriasis of 17 years' standing, now being observed by a specialist and under treatment by intravenous injection (95 micrograms radium thus far) has shown a remarkable and immediate improvement.

In our series of neuritis and rheumatism cases the results have been such as to point to a considerable degree of control by radium over the conditions. As in so much of the task offered to radium (and this is even more true of the radiation of neoplasms) nothing is bequeathed to radium until it is wellnigh hopeless. Many of the cases have been rheumatoid with much change in the anatomy. Perhaps the time will come when radium will be offered something easier. Falta uses emanation in acute rheumatism and prefers it to the salicylates.

In general it may be said that the nearer the joint is to a "juicy" stage—periarticular or intraarticular edema or effusion, the more pleasing the prospect.

The neuritis cases have all done well. Case XXXV was really brilliant. The more of an inflammatory element the better.

As a pain killer radium has great power, but in the case of nuerotic neuralgia in highly nervous individuals the outlook is not so good.

Case XLVIII.—Fractured hip in an old withered limb; patient up and about in spite of it, but suffered much pain at night; was much relieved by radium and took it for six weeks or more; it was quite excitant.

5. External and topical. Even a weak solution (2 micrograms to 2 ounces) is anodyne. We can testify from personal experience to its instant relief of toothache; this a dentist has confirmed in

several instances. Held in the mouth for a few minutes a small quantity of the same solution will produce, not immediately, but after some hours, stiffening of the mucous membrane, swelling and blanching of the lip, viscidity of the pharyngeal mucus, and it almost seemed, a little clumsiness in speech.

Saliva diluted with water will be very foul in forty-eight hours; diluted with radium solution (amount of radium 1 15,000 mgm.) it will remain unchanged a week.

Case XLIX.—F., æt. 10. After incising a fat boil on the lip (size of the tip of the little finger) I applied solution of radium (2 micrograms to 2 ounces) as a moist dressing. The boil was entirely dry, scabbed, and insensitive in eighteen hours. The patient later volunteered the information that "the scab was white."

Case L.—Ivy poisoning; the rash failed to mature and the itching was much relieved; in this case also; there was a dry white skin at the point of greatest intensity.

Case LI.—Pyorrhea alveolaris; a tooth inflamed to extreme tenderness, very loose with gum beefy and with an alveolar abscess, which two dentists said would be lost, is now relatively firm and entirely serviceable. In this case a solution of radium (25 micrograms to 2 c.c.) was packed beneath the gums and this same solution was used in the nerve cavity after excavating. Solution of radium (2 micrograms to 2 ounces) was used to rinse the mouth.

In a metropolitan surgical clinic all pus cases have been trated with solution of radium (2 micrograms to 2 ounces) and the control of radium over the process has been surprising.

Chronic empyema of the accessory sinuses (cures of which by radium internally have been reported) have been treated in two instances.

Case LII.—*Purulent catarrh of the antrum and ethmoid;* a year's duration; operation advised by several observers, but refused; treated for a number of months by injection without improvement; put on radium solution internally with injection of the same (2 micrograms to 2 ounces); after four weeks the doctor reported the amount of pus in the wash water as reduced one half with the advent of what was apparently cholesterin; the patient said she felt better. For some reason in spite of this improvement (which was confirmed by nurse assistant) treatment was not persisted in.

Case LII.—M., æt. 45. *Empyema of antrum causing vertigo.* The patient, a physician, was obliged to relinquish work; abscess drained and washed out with solution of radium (2 micrograms to 2 ounces). The attendant says the case did extremely well. The vertigo promptly disappeared and the patient has no symptoms. After two months there is a very slight discharge in the washings.

Dosage.—In making a radium salt form the basis of dosage, it must be borne in mind that the amount of emanation present is subject to a definite law—it cannot be more than the equilibrium quantity, which is a fixed constant. Quite otherwise is it with emanation *per se*—the amount of which present can be increased ad infinitum. The basis of comparison between a solution of a radium salt and a merely radioactive water (emanation) is quite unequal. For, the moment the emanation of the raidum salt solution is separated or transmuted—more will be furnished to take its place. Thus a solution of a radium salt has potentially a reserve supply of emanation which for the time being yields no units of electrical measurement.

In the preparations used in this series the maximum of emanation had already collected and thus in association with 1 microgram of radium we have one microcurie of emanation or 2,700 Mache units by measurement.

Some of the radioactive springs of Europe have an almost ridiculously small emanation strength (a few Mache units to the liter). Results have been claimed from them nevertheless. When now we turn to such doses as 1,000,000 to 1,500,000 Mache units of the London Radium Institute, no wonder that the older observers are inclined to apply the term "psychical" to their early results.

From this wide range of extremes it might seem as though there was nothing fixed about the dosage of radium. No doubt the dose is more or less flexible. The very high doses came about through the influence of thorium X, the cheapness of which gave the desired opportunity for forcing the pace. But the experience was a thorny one. Injury and death were confessed to and warned against by the very users. Since then the tendency has been towards lower dosage just as in the use of radium salts for irradiation. Moreover, the men of longest and largest experience are saying that they obtained equally good results with the small as with the larger quantities.

Our own experience in the above cases has shown that the adjustment of quantity to the case is a matter of nicety and calls for judgment.

Of the very large doses it may be said that, if radium is selective, a really superfluous and unutilizable quantity may have been introduced with the bare result of a mere waste of ammunition. One has to be on the look-out, no doubt, for something corresponding to the action of radium in irradiation, viz., in one case stimulation, or absorption, and disappearance of morbid processes in another.

One puzzling part of the application of dosage is the production of reaction either to an undesirable degree or prolonged. It then becomes a nice question whether to leave off or to increase the dose.

The cases related had many of them this essential drawback, that the treatment could not be prolonged or the dosage pushed at will on account of the expense. So that in of many of them, we may say there was no proper try-out and that results are merely fragmentary. The duration of a radium cure, if for well-established and intrenched conditions, ought to be from two to three months. Moreover, the maximum effect does not always coincide with treatment and there may be even a delayed improvement setting in only after cessation.

Without any question we have seen some such exhibitions. This is, perhaps, more likely to occur where a radium salt is taken, because of the greater possibility of accumulation. None can be predicted as possible with emanation simply, but only the retention of some of the later radioelements in the scale.

Proescher and Viol have shown that, following injection of a radium salt, radioactivity may be demonstrated in the organism after at least three months, and that by far the largest amount of radium may be recovered from the bone and bone-marrow, where it has been deposited in the form of an insoluble salt.

The average dose with which we have tried to work has been about 4 microcuries daily, viz., about 11,000 mache units. (In Kreuznach, where radium treatment has been most systematic, the daily dose is from 5,000 to 15,000). A smaller dose and for a shorter period has seemed to render service in some mild conditions. It is quite clear that the attempt to crowd the dose, in a certain proportion of cases at least, may throw the patient into a decidedly upset state. There may be lassitude and a decided lack of energy or a mere state of ner-

vousness. The experience with these cases has seemed to teach the lesson of approaching the maximum dose very gradually.

But nothing is to be expected from a low dose and short period of administering in serious chronic conditions. Thus there had been four cases of paralysis agitans which it did not seem worth while to include because there was no really serious or consistent employment of the treatment. It is to be said, however, that in two of them a stimulant action could be noted and a rally from the extreme depression. I have seen one case under much longer radium treatment in which the patient so far improved as to be able to feed himself and to go about, neither of which things was possible at the commencement.

The object being to introduce the emanation into the blood, lodging it there by the immediate route of the vein is, of course, the method par excellence; hypodermic or deep injections would come next and giving by the mouth last. Here, owing to the extreme diffusibility of the emanation, there is a considerable portion of it lost without passing into the systemic capillaries. Subcutaneous or deep injection gives some share to local action, although it has been shown that a soluble salt does not linger long.

Can radium internally do any harm? We have not been able to detect any traces of damage. Under the skin and intravenously there is nothing in the way of local reaction and it is certain that we can introduce into the blood good large quantities without particular reaction. Pains may be touched up, but of constitutional disturbances there is no evidence. Cameron and Proescher have given 1,800 injections of radium salts over a space of two years and in quantities up to a milligram without observing the slightest injurious effects.

Administering *per os* has perhaps one advantage, viz., its local action on stomach and digestive tract. The influence here is undoubtedly considerable and favorable.

In conclusion it may be said that this experience has served to teach that radium emanation (and the same thing is true of irradiation) calls for one requisite that makes it in a way ill-adapted to the American temperament, viz., patience. That one should attempt to disturb a profound, well-intrenched chronic state, with a week's use of radium is as puerile as to set off firecrackers and assume to call it an assault on the citadel.

The impression which it is desirable to make, whether we are using radium externally or internally, is essentially biological, *i.e.* morbidity is to be made to reform itself by a process originating in its own bailiwick. Here the initial performance would undoubtedly be to set in motion just those processes that could acquire momentum and propagate themselves, viz., a cellular recoil. In either case, within or without, radium is to be looked at as just the goad or stimulus to the self-regenerating apparatus.

At all events, the radium question is here and it will be settled and settled right. That will take time and a heap of patience. To this end open mindness is a great desideratum. Above all, systematic use of it after every fashion on an ample scale is to be hoped for. To be this, in respect to emanation, the above series could, of course, scarcely make claim, but as an initial try out it may prove of interest and we hope a little importance.

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OPERATIVE ORTHOPEDICS AS ILLUSTRATED BY A HOSPITAL SERVICE.*

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Modern orthopedic surgery begins, it seems to me, with the plaster jacket and the traction hip-brace, since these were the means of demonstrating in a popular sense that the only remedy for deformity was the effective treatment of the deforming diseases. In the development of this larger field of activity so many unsuspected or neglected causes of disability have been identified that tuberculous disease has become, numerically at least, of minor importance in orthopedic practice.

As a necessity of comprehensive treatment, operative methods have been utilized and devised to supplement or supplant mechanical correction and support, and as a consequence, braces of the complicated and cumbersome type once associated with the purely mechanical treatment of deformity are no longer in common use.

At the present time it is, I think, generally recognized that orthopedics is the mechanical specialty not because it is restricted to mechanical methods in treatment, nor because its field is limited to actual deformity, but because it is concerned with the mechanics of the body, and particularly with the diseases of the locomotive apparatus.

Many of these affections appear in early life and are of a chronic character, consequently their remote effects upon the disabled part and upon the development of the body must be considered in selecting the immediate treatment. Thus one who practises orthopedics should be familiar with the mechanism of the body and with the natural history of the diseases that disable it.

Such knowledge can be acquired only by actual experience and long continued observation, and this is perhaps the most reasonable explanation of the growth of a specialty which has no definite boundary from medicine or surgery.

The earlier orthopedists, as a class, were content to demonstrate the merits of "mechanico-therapeutics," and some of their successors continue the same practice, supplemented, it may be, by subcutaneous operations, or by so-called bloodless surgery. On the other hand, operative treatment is often undertaken by those who are unfamiliar with the characteristics of the deforming diseases, and untrained in natural mechanics. Under such conditions the immediate effect of an ill-advised operation may be mistaken for a lasting one, or if of proper design it may fail for want of subsequent care and protection. Thus because of lack of training or inclination, lack of experience, and above all, lack of opportunity for comparative tests, this branch of orthopedics is still in the tentative stage.

It has been suggested that an analysis of the operative routine at representative hospitals would present the subject in a manner favorable for discussion from the comparative standpoint, and that this might be a step toward the more general acceptance of certain basic principles in treatment. As a contribution to this end a report of a recent service at the Hospital for the Ruptured and Crippled is presented.

*Read before the New York Academy of Medicine, March 18, 1915.

The founder of this hospital, both by inclination and conviction, represented what is called conservatism, and for many years it had no provision for operative work. At the present time neither adult males nor children under four years of age are admitted to the wards, a restriction that limits traumatic cases and congenital deformities in early life, notably club foot and dislocation of the hip. Otherwise every facility for immediate treatment and subsequent supervision is assured.

The service to be reported (June to November, 1914), including the vacation season, when the wards are usually free from contagious diseases, is a very active one, and while a review of the entire year would be more representative of the hospital, it would lack the personal element so essential in the discussion of the comparative merits of one or another operative procedure.

In this period of four months the entire number of operations was 609. Of these 198 were in the hernia service, and 16 were on the nose and throat, leaving 399 classified as orthopedic. One hundred and forty-three of these were open operations. In 136 the cutting operation was of a minor character, including osteotomies, tenotomies, and the like, and in 120 the deformity was corrected by the so-called bloodless methods.

Many of the operations are sufficiently standardized as to require no special comment. For example, 45 patients were operated on for rachitic deformities of the extremities by osteotomy, and 12 by osteoclasis. Osteotomy is preferred for the correction of the resistant and localized distortions, and osteoclasis for those of the more yielding type.

There were comparatively few important operations for tuberculous disease, since a large proportion of such patients were in the country. Two of these were resections of the knee in adults, and one a resection at the hip in a child, incidental to securing proper drainage.

There were four Albee transplantation operations for Pott's disease. All of these were for well-marked and progressive deformity in the dorsal region, requiring the removal of curved sections of bone from the tibia, for which, in my opinion, the electric saw is almost a necessity. Three of the patients were adults who had never been treated, one of whom was paraplegic. I prefer this operation to that of Hibbs in cases of this type, because of its more positive assurance of immediate and permanent support. It is especially indicated for disease of the dorsal region in patients of advanced development. I do not think the operation will ever supplant mechanical treatment, or that the results of an ankylosing operation can equal the natural cure in cases of the favorable class, in which almost perfect motion is sometimes retained. The routine treatment of Pott's disease in early life should be rest on the convex stretcher frame during the active stage of the process, supplemented by efficient support when ambulation is resumed. If the plaster jacket is to be used the Calot modification is to be preferred.

There were twenty-one operations for the correction of deformity complicating tuberculous disease of the joints, including seven osteotomies of the Gant type.

The common distortion at the hip is flexion and adduction. This in uncomplicated cases—that is to say, quiescent cases free from suppuration—is immediately reduced under an anesthetic, the limb being fixed in a long plaster spica in hyperextension and about 15 degrees of abduction. As a rule, there is but little pain or other reaction after the operation. If the head of the femur is destroyed, with upward displacement of the trochanter, osteotomy is indicated, since otherwise recurrence of deformity is inevitable. Correction of deformity by the weight and pulley, although satisfactory if the distortion is due chiefly to muscular contraction, is not usually effective in securing what may be termed over-correction. In these resistant cases the traction force, if effective, must be so great that it is, in itself, an irritant, as indicated by the increased sensitiveness of the joint.

Manipulative correction has the great advantage of enabling one to fix the limb immediately in the desired attitude, whereas the traction treatment requires long confinement to the bed even for incomplete rectification.

When the limb is placed in marked abduction pressure is removed from the diseased area, and is transferred to the outer border of the neck. The importance of this attitude in relieving pain and preventing the destructive influence of pressure and friction during the progressive stages of the disease is, I am sure, not generally appreciated.

In the routine of outdoor treatment the limb is fixed in complete extension and about 15 degrees of abduction by a plaster support of the Lorenz type. Ambulation is permitted if it causes no discomfort, long spicas, rest in bed, traction, and the like, being employed at discretion during the acute phases of the disease. The principles of treatment, as regards activity, are those in force for the similar disease of the lungs. Locomotion, if properly regulated, is of great value in preserving the nutrition of the limb, which in the days of the traction hip splint was often neglected.

Flexion contraction at the knee is corrected by what I have called reverse leverage, which prevents subluxation when the limb is straightened. If the deformity is of long standing the contracted tissue should be divided as a preliminary measure.

There were twenty operations for congenital dislocation of the hip, twelve by the Lorenz method, and eight by arthrotomy. It is apparent that the congenital dislocations should be treated, and in the large proportion of the cases cured before the age of four, the majority of the cases admitted being, in this sense, of the unfavorable type. I shall consider only the open operations. In six of these the cause of failure of previous treatment apparently was anterior torsion of the femur. In all the Hoffa operation was performed, the acetabulum being made more capacious, especially at its upper margin, with the aim of assuring retention. The results in such cases are usually good, in the sense of security and comparative freedom of movement, apparently because the forward twist which prevents accurate adjustment lessens the danger of ankylosis. Osteotomy with the aim of restoring the normal relation of the neck and shaft without arthrotomy is not usually successful because the acetabulum is too shallow to contain the head. One operation on a large girl fifteen years of age was for the relief of disabling pain on use. Reposition in this case was very difficult. The last was for dislocation complicating anterior poliomyelitis. In this case the capsule was overlapped in addition to deepening the acetabulum.

There were two operations for ununited fracture of the neck of the femur in adolescents, both of

whom had received treatment in other hospitals. In one the neck had been almost completely destroyed by friction. The surfaces of the fragments were freshened and they were apposed and fixed by a spike driven through the base of the trochanter.

This is the sixth case of non-union after fracture of the neck of the femur in early life due to inefficient treatment that has come under my observation and under this head I class all methods except that by abduction. The other fracture was of the epiphyseal type, the neck, still adherent to the head, being displaced forward and upward. In this case in the absence of friction there was no bone destruction—"spontaneous absorption." The normal relation was restored by separating the fragments with a chisel and by abducting and rotating the limb inward.

The third arthrotomy was in a boy of twelve who had for several months limped and complained of pain in the limb, apparently as a result of injury. The *x*-ray picture showed what was interpreted as incomplete fracture and displacement. This on inspection proved to be an actual distortion or flattening of the head with no evidence of injury or disease—an example, apparently, of what the Germans call incongruity.

There were two operations of arthroplasty at the hip. The first was on a young woman, both of whose hips were fixed by bony anchylosis with the limbs crossed, as a result of disease in childhood. The head on one side was chiseled free from the acetabulum and a pedicled flap of fat was interposed. The adduction deformity and an accompanying equinus were corrected two weeks later. Treatment of the other hip is to be deferred until the control of the new joint is established. The second case was also one of bilateral fixation in flexion and adduction in a girl of twenty, the result of an open operation for congenital dislocation in pre-Lorenz days. One side had already been operated on by another surgeon with the insertion of pig's bladder. This one was treated by the fat flap method.

There was also an arthroplasty for bony ankylosis at the elbow in a girl of 19, following tuberculosis. In this case a free flap of fascia from the thigh was inserted. The free fascia method is to be preferred in cases of this type because the tissues about the joint are insufficient for the purpose.

There were three other arthrotomies, one for correction of deformity following fracture at the elbow and two for chronic synovitis at the knee.

There were six operations for torticollis. The contracted muscles and resistant fascia were, in all cases, divided through an oblique incision just above the clavicle. The deformity was then thoroughly over-corrected by forcible stretching and the head was fixed in the over-corrected attitude by a plaster Minerva. The support is retained for several weeks until the new attitude is thoroughly impressed upon the tissues. The after treatment consists in methodical manipulation, stretching, and exercises. No brace is required, except in the treatment of young children.

The only other operation of importance on the upper extremity was the transplantation of the trapezius for deltoid paralysis. This aids in supporting the arm and increasing the power of abduction, although it cannot replace the function of the deltoid.

A large proportion of the remaining operations were in the lower extremity. Three of these were for ununited fracture of the leg bones, two being treated by bone transplantation—the so-called inlay method. It would seem that eventually fractures will be treated by those who are qualified by technical training and knowledge of natural mechanics. Under such conditions the legitimate field for operative intervention will be much restricted and the operations will be performed under more favorable conditions than at present.

There were 63 operations of forcible correction of deformities of the foot combined in many instances with subcutaneous division of contracted parts. Of these 9 were for congenital club foot, 12 for rigid flat foot, and the remainder for paralytic distortions. In many instances the correction in this latter group was preliminary to other operations, such as tendon transplantation.

Forcible correction, or rather over-correction of club foot followed by fixation for a sufficient time to permit reconstruction of the internal structure and the restitution of normal function is most satisfactory in its results if properly performed. Operations on the bones of young children, at least, should be of a supplementary character.

There were two Phelps' operations for resistant varus, one so-called "evidement" of the interior of the resistant bones to permit collapse, and two cuneiform osteotomies.

There were a large number of tenotomies incidental to the correction of deformity. Twenty-six of these were of the tendo achillis, which is usually divided subcutaneously because of the ease of performance and slight disturbance of the tissues. The deformity having been corrected, the foot is fixed by a plaster support. Functional use is encouraged as early as possible, since weight bearing aids in adapting the foot to the new attitude and stimulates repair. Under ordinary conditions there is practically no danger of non-union or of an elongated or weakened tendon, although this must be considered in spastic cases, or if the contracted muscle is weak or paralyzed.

Most important numerically is a group of 60 operations for paralytic deformity of the foot, grouped for convenience under the author's name as the Whitman operation. Its basis is astragalectomy and backward displacement of the foot. The displacement is of vital importance since without it the removal of the astragalus would be of little value. Tendon transplantation and the like are supplementary procedures.

The first essential in the operative treatment of paralytic distortions of the foot is to assure security, since uncontrolled movement causes instability and deformity. By removing the astragalus the malleoli may be implanted on the basic structure of the foot, thus assuring lateral stability, and by displacing the foot backward the scaphoid may be brought into direct contact with the tibia. This checks dorsal flexion at a right angle and provides a resistance that restores the lifting capacity of the limb. This operation is curative in the sense that it restores stability without ankylosis, improves function, and enables the patient to discard mechanical support.

The preservation of motion, as compared with arthrodesis, which in cases of extensive paralysis is the only other method that may assure stability, is of great advantage since it enables the patient to wear a shoe adjusted to an attitude of plantar flexion that will compensate for shortening of the limb due to loss of growth. The most common criticism that I have heard is that removal of the astragalus

shortens the limb. This is only partly true, since the typical operation is on a hollow foot to which symmetry is restored. In any event the shortening is but slight and of little importance compared with the obvious advantages that could not otherwise be secured.

The operation was originally designed for deformity of the calcaneus type, but it has since been employed for every form of paralytic distortion of the foot. In fact, of the 60 operations, but 16 were for calcaneus, in which the typical transplantation of the peronei tendons into the tendo achillis was carried out.

In 28 cases the paralysis included practically all the muscles, and there was no tendon transplantation. In 8 of these the deformity was of the varus, and in 8 of the valgus type. In 16 cases the operation was combined with tendon fixation, the paralyzed peronei tendons being sewn into a groove or grooves cut in the fibula, according to the Gallie method, with the aim of checking the inclination toward varus. This, however, is of comparatively slight service because if the foot is properly displaced backward even the insertion of the brevis is but little in advance of the external maleolus while that of the longus is below it.

In certain of these cases the paralysis was practically complete of one or both limbs, the object of the operation being to restore the symmetry and stability of the foot, so that a brace might be worn with comfort.

This procedure, which was first described in 1901 (*Am. Jour. Med. Sci.* Nov., 1901), has steadily grown in favor, since it has the great advantage over all other operations for paralytic distortions of the foot that both its immediate and remote results are practically assured, even if the after treatment is neglected, and that it enables the patient to discard support even if the paralysis of the foot is practically complete. The method has been carefully described (*Annals of Surgery*, Feb., 1908; *Am. Jour. Orthopedic Surg.*, Aug., 1910; MEDICAL RECORD, Jan. 10, 1914) and these details should be followed.

The joint must be exposed by the long external incision, so that the foot may be completely dislocated inward, to prepare the new articulations, and to free the malleoli completely in order to permit backward displacement sufficient to bring the external malleolus directly over the calcaneo-cuboid articulation.

This displacement, which is the keynote of the operation, is apparently rarely carried out to the proper degree, except by those who have received direct instruction on the subject and frequent admonition.

The last group to be considered is of 42 cases of tendon and muscle transplantation. Five of these were of the biceps, three for paralysis of the quadriceps extensor, and two for spastic contraction. The insertion of the biceps is separated from the fibula, and the muscular substance dissected from the femur as high as the middle of the thigh, in order that the full length may be obtained, and that the line of pull may be as direct as possible. An incision is then made above the patella through the quadriceps tendon and the underlying capsule, without disturbing the synovial sac. A second lateral opening is made in the capsule through which the tendinous insertion of the biceps is passed, and is then drawn out between the divided quadriceps tendon, to which, and to the periosteum of the patella, it is firmly sewn with silk. No silk prolongation of the muscle is required, as the tension is not greater than is desirable, nor can there be danger of detachment or stretching. This operation is of great value in increasing the stability and resistance of the limb when it is extended in standing and walking, and it usually enables the patient to dispense with support.

In spastic cases the chief cause of deformity is removed, and the balance of power is in some degree restored. The two operations for this ability were on one individual, and were combined with other transplantations of the muscles of the feet. In one case of extreme spastic constriction excision of the knee and astragalectomy were combined in order to make the limb useful as a support.

There were 20 operations for varus deformity, in 4 of which it was a remote result of the operation just described for calcaneus, the direct cause being the transplantation of the peronei into the tendo achillis. The power in these cases was rebalanced by transplanting the tibialis posticus into the tendo achillis, and the tibialis anticus to the outer border of the dorsum of the foot. There were several operations in which both the tibialis anticus and posticus were transplanted to the outer border of the foot for the relief of spastic varus, and others in which the tibialis posticus was displaced forward of the tibia to serve as a dorsal flexor and adductor in cases of valgus. The peroneus brevis also in connection with the tibialis posticus may be displaced forward of the malleolus as an aid to dorsiflexion. In several cases the longus hallucis was transplanted to take the place of a paralyzed tibialis anticus, which was either shortened, or fixed to the tibia. In operations of this class the astragalo-scaphoid joint is opened, and the ligament overlapped, or if the bones are sufficiently developed an arthrodesis is performed at this joint, as an additional safeguard against valgus.

There were also three independent tendon fixations for paralytic varus. This operation, recently advocated by Gallie, consists in implanting the peronei tendons into a groove or grooves cut in the fibula, and there sutured into place under sufficient tension to hold the foot in the desired position. Thus a useless tendon is transformed into a useful ligament. This operation is somewhat on the line of the silk ligament, but in my opinion greatly to be preferred. Assuming that a silk cord attached to an active muscle may be transformed eventually to fibrous tissue, it by no means follows that one joining bone with bone as a passive support will undergo such transformation. On the contrary the change to be anticipated in buried silk is disintegration, as has often been demonstrated by later examination. Silk ligaments may be serviceable as temporary supports in connection with braces, but it seems unlikely that they will be sufficient independently and permanently to resist the tendency to deformity.

This completes the list of operations that it has seemed desirable to analyze in a paper of this length. They are of course so recent that they can only serve as a text for suggestions and conclusions based on previous experience. It is obvious also that a report of a single hospital service cannot adequately represent the field of operative orthopedics, although it may seem to illustrate in a general way its scope and character.

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PUBLIC HEALTH OF OTHER AGES.

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THE common law of health, the Christian law, "Thou shalt love thy neighbor as thyself," is coeval with man and society. In fact, the problems of public health were as well known to the Ancients as to the present day observers. It is a well accepted axiom that no epidemic can gain headway with clean houses, clean air, and clean water. Sickness and death, like the evil demons of old, shun cleanly places. In olden times, as among the Jews, evil spirits dwelt in filthy places, especially loving tombs and ordure. Every latrine contained a special demon of its own, and does to the present day in a different sense. It is quite evident that the chamber of Sara, the daughter of Raguel, as described in the book of Tobit, overlooked a dunghill, otherwise she would not have been so grievously afflicted by Asmodeus, who, out of love for her, strangled her seven husbands. But Tobias, her eighth husband, for whom her father-in-law considerately dug a grave as soon as the marriage was performed, obviously knew that there might be smells even too bad for a demon, for, on the bridal night, he threw the putrid heart and liver of a fish on some burning embers in her chamber, and, as the narrative tells us, "the which smell, when the evil spirit had smelled, he fled into the uttermost parts of Egypt." Without question, the book of Tobit is a distinct hygienic allegory. The good Tobit had a craze for burying dead bodies, and had all his troubles in consequence of his hygienic propensities. Sleeping in a foul place, the sparrows muted warm dung into his eyes, and rendered him blind. But Raphael, whose name, by interpretation, means "the medicine of God," comes as an angelic guide to his son Tobias, and puts all things right by his hygienic knowledge—conquering even the foul demon Asmodeus and curing Tobit of his ophthalmia.

The ancients combated evil odors more vigorously than the moderns. Sometimes, indeed, they simply tried to mask them with perfumes. Thus, when we hear that ancient Capua had whole streets filled with perfumer's shops, we are certain that it must have been a foul smelling and ill-governed city. If you were to ask a present-day sanitarian the best means of deodorization he could not give simpler or better ones than those of Ulysses, as described in Homer. After slaughtering Penelope's suitors, and scattering their blood and brains over her spacious halls, he first makes a thorough cleaning:

"With sponges they rub the tables o'er
(The swains unite their toils); the walls, the floor,
Washed with the effusive wave, are purged of gore."

And it is only after thus thoroughly removing every origin of bad smells that he uses a disinfectant to destroy any foul gases which might still lurk in the room:

"Bring sulphur straight, and fire, the monarch cries:
She hears, and at his word obedient flies,
With fire and sulphur, cure of noxious fumes,
He purged the walls and blood polluted rooms."

Contrast the proceedings of the wise Ulysses with those of Eidothea, the daughter of the old sea-god. She fell in love with Menelaus, who, with his two companions, was cast upon the island of her father. To conceal them from the old sea-god, she wrapped them in the skins of fresh flayed seals, and made them lie among the flock. Menelaus groaned under the horrid smell of his disguise, till the divine lady brought a powerful scent to mask the putrid odor:

"Dire was the ambush, and the scent severe,
Who could a rank sea-beast at such close quarters bear?
But she, delivering us, a great help planned,
And placed ambrosia near the lips of each,
Which in our nostrils breathed an odor bland,
And the sea monster's stench did overreach."

Ulysses was an excellent hygienist, but Eidothea was not. The first went to the root of the matter and removed all sources of impurity; the latter merely concealed a stench by perfume. Hercules, too, was one of the oldest and most thorough of the ancient sanitarians. He saved the Eleans from pestilence by draining their marshes, and executed a thorough sanitary operation when he cleansed out the Augean stables by turning into them the waters of the Alphaeus. But of all sanitary reformers, Moses was among the most practical. He was learned in the wisdom of the Egyptians, and they, as we know, were hygienists. One of their commandments, though it does not remain among the ten which Moses brought down from the Mount for our guidance, was, "Thou shalt not pollute rivers." The hygienic laws of Moses, supplementary to his ten moral commandments, are full of wisdom. The purifications required by religious observances were in the main hygienic precautions. The ceremonial part still remains in the East as a survival of a purpose which is now forgotten. Moses gave to us the principle of the modern earth closet, and excellent rules for isolating and disinfecting diseased patients and their excreta. He established health-officers, or, rather, gave to the high priest the function of an officer of health. Today we have been obliged to enact, or, strictly speaking, reenact the ancient laws of Moses relating to the isolation of infectious diseases.

During the best times of Greece and Rome, public health was much studied. The anatomical and pathological examination of the intestines of sacrifices was a hygienic precaution to ascertain whether the locality upon which a city was to be founded or a camp pitched was in healthy condition. The supervision of hygienic arrangements was an office of dignity among the Greeks and the Romans. Epaminondas, one of the greatest military geniuses that Greece produced, did not refuse the office of "telearch" at Thebes, though its chief duty was to supervise the cleansing of the streets. For this Plutarch justly commends him. In like manner, at Rome, the cleansing and disinfection of streets and sewers were placed under a high officer of state, because as Justinian tells us, "uncleansed and unrepaired sewers threaten a pestilential atmosphere, and are dangerous." Of the surviving works by which the greatness of Rome is still evidenced, perhaps, the first is the civil law, but second stands its sanitary works, as manifested in the great aqueducts, the cloaca maxima, and other hygienic appliances. It is, then, clear that the ancients knew as well as the moderns the main conditions of public health; viz., that dirt is the source of disease, and that cleanliness is its preventive. And so the sum and substance of all our sanitary science accumulated by ages may be summed up in the pregnant advice of the prophet—*Wash and be clean.*

A few illustrations of the consequences attending

the neglect of the hygienic maxim—*wash and be clean*—are, at this juncture, timely and interesting. When the civilization of the Egyptians, the Jews, the Greeks, and the Romans faded, the world passed through dark ages of mental and physical barbarism. For over a thousand years there was scarcely a man or a woman in Europe that ever took a bath. How diñerent that time was from the times which preceded it—when daily baths were common among the poor—one may gather from the praises of personal ablution which abound in ancient authors. Take, for instance, Martial's address to his friend Oppian, on the limpid and unpolluted water in the Virgo and Marcian wave, in which it was rapture to bathe:

"Water so bright, and clear, and fair,
You think no liquid can be there;
You're not attending, Oppian,
You'll die without once having washed, poor man!"

But only think what must have been the state of Europe when thirty-three generations were like Oppian, and never once washed, if their historian Michelet is to be believed. Small wonder then that there came the ravaging epidemics of the middle ages, which cut off one-fourth of the population of Europe. But even when the middle ages had passed away, and the sun of civilization was again rising over the gloomy darkness of these centuries, what a heritage of filth-produced disease still remained. Ponder over Defoe's or Montaigne's description of the plagues of their day. It is not a pleasing task to dwell on the filthy habits as practised in those dark days. Go back only to the time previous to the Reformation, and one can have no difficulty in understanding why luxury and squalor produced the plagues of the times of the Tudors and the Stuarts. Filth, instead of being abhorred, was almost sanctified. The monks imitated the filthy habits of early Christian times, for the early fathers commended them. Even St. Jerome used to praise the filthy habits of hermits. He especially commends an Egyptian hermit who combed his hair only on Easter Sunday, and never washed his clothes at all, but let them fall to pieces by rottenness. St. Antony never washed his feet. St. Thomas à Beckett, when martyred, had undergarments in a state which makes one shudder in the remembrance. And so the monks up to the time of the Reformation thought, or professed to think, that by antithesis, pollution of the body indicated cleanliness of the soul. Practically, indeed, it helped to it; because the odor of sanctity, which infested these old monks and hermits, served to keep them apart from worldly temptations; for the world cared not to come into too close contact with them.

Hippocrates, who was the first hygienist that wrote a book on public health, took as his text pure air, pure water, and a pure soil, and to-day we have arrived at nearly the same view of the essential conditions of health. Later, much later, Coleridge, who evidently had some ideas of his own anent stream pollution, commented in this strain on the foul smells of the city of Cologne:

"But tell me, Nymphs! what power divine
Shall henceforth wash the river Rhine?"

Congress must enact for this country the ancient commandment of the Egyptians, and say to all municipalities and manufacturers, "Thou shalt not pollute rivers." If Congress achieves the purification of our rivers, the Government can be assured an amount of applause, which can best be expressed in the words, if not in the meaning, of Macbeth, when he says:

"Come, sir, despatch; if thou couldst, doctor, cast
The water of our land; find its disease,
And purge it to a sound and pristine health,
I would applaud thee to the very echo
That should applaud again."

In ancient as well as modern hygiene the importance of an adequate ventilation of streets and houses was well known. It was also a matter of recognized experience that even efficient ventilation of these would be of little use unless the ground on which they were built was also ventilated—that is, drained of underlying water. Zeno ordered that houses in Constantinople should be twelve feet apart, and not more than nine stories high. Augustus limited their height to seventy feet, and Trajan to sixty feet. High-handed Queen Elizabeth was so horrified with the growth of her capital, London, although it then contained only 160,000 people, that she forbade the erection of any more buildings within three miles of London and Westminster, and she prohibited the division of a house into tenements for various families, "because great multitudes of poor people inhabiting small rooms, and those very poor, and such as must live by begging or worse means, being therein heaped together and in a sort smothered, with many families of children and servants in one house or small tenements, it must needs follow that if plague or sickness came amongst them, it presently spread through the whole city and confines."

A DIAGNOSTIC SIGN IN INFLAMMATORY CONDITIONS AND TRAUMATISMS IN AND ABOUT THE LIVER.

By MILTON R. BOOKMAN, M.D., F.A.C.S.,
NEW YORK,
ADJUNCT ATTENDING SURGEON, LEBANON HOSPITAL.

THE liver, situated as it is beneath the dome of the diaphragm, does not lend itself readily to the touch of the palpating fingers except at its free border and when the organ is enlarged, but with the method herein described some of the inflammatory and traumatic conditions in and about the organ may be rendered more easy of recognition at the bedside.

The falciform ligament (broad or suspensory ligament) is a broad and thin anteroposterior peritoneal fold, falciform in shape, its base being directed downward and backward, its apex upward and backward. It is attached by one margin to the under surface of the diaphragm, and the posterior sheath of the right rectus muscle as low down as the umbilicus; by its hepatic margin it extends from the notch on the anterior margin of the liver as far back as its posterior surface. It consists of two layers of peritoneum closely united together. Its base or free edge contains the round ligament between its layers.

The round ligament (ligamentum teres) is a fibrous cord resulting from the obliteration of the umbilical vein. It ascends from the umbilicus in the free margin of the falciform ligament to the notch in the anterior border of the liver, from which it may be traced along the longitudinal fissure on the under surface of the liver; on the posterior surface it is continued as the obliterated ductus venosus as far back as the inferior vena cava. (Gray.)

Thus it is seen that in the round ligament of the

liver we have a natural tractor as evinced by an operation in the upper abdomen and traction on this ligament causes some motion and displacement of the liver bulk so that in the presence of any inflammatory or traumatic conditions in this region this will cause pain at the affected site.

To elicit this sign the patient's shoulders should be elevated on pillows to relax the recti muscles, the examiner stands on the patient's right and facing him, the right index finger is hooked in the umbilicus, and with gentle traction forces the umbilicus *downward in the direction of the pubis*. Should the umbilicus be too shallow the finger may be reinforced by a damp cloth or a strip of adhesive plaster with the adhesive surface outward. The mechanism involved in this maneuver is to put the round ligament on the stretch, causing some traction on the liver and slightly rotating it downward and forward.

This sign has proven positive in some cases of acute cholecystitis, cholelithiasis, abscesses of the liver associated with suppurative pylephlebitis, and in a case of traumatic laceration of the right coronary ligament. From a theoretical standpoint it may be of value in cases of subphrenic abscess, but fortunately or unfortunately no cases have presented themselves to us lately on which to attempt to demonstrate it.

Of course this sign is not claimed to be pathognomonic of any condition or conditions and the fact that it may prove negative in any of the conditions mentioned has no absolute significance; but its ease of application may serve at the bedside in a goodly number of cases to accentuate correlated signs and symptoms.

473 East One Hundred and Forty-first Street.

HYPNOTIC DRUG POISONING.

By A. S. TEPPER, M.D.,

Far Rockaway, New York.

Despite the general use of hypnotics in medicine, very few cases of poisoning are recorded. In the last three months, two cases have come under my observation. In the first case, that of a child, 40 grains of veronal were taken at one dose, while in the second case, that of an adult, approximately 100 grains of monobromated camphor, in the course of 24 hours, were taken.

Case I.—A. D., male, white, æt. 7, usual diseases of childhood, meningitis (epidemic) at age of 4; recovery good; no sequelæ; well built, well nourished; physical examination negative. On February 12, about 7 P. M. I received a call to the house. On arrival I found mother immersing the child in a tub of cold water, in an attempt to arouse him, with no success. The following developed from the history. Just before lunch, about 12 noon, the child complained of being sleepy so the mother advised him to go to bed. At about 6 P. M. the mother went to the bedroom to arouse the child but was unable to do so. She then placed him in the cold tub, but finding no results, called in the physician.

The child was in a deep coma, respirations, 30, very light and similar to natural sleep; pulse 102, and very shallow. Drastic measures to arouse him proved of no avail—pulling the hair at the back of the neck; pressing on the supraorbital nerve, and sitting him up and slapping him. At this time the father arrived and remarked that his box of capsules were missing—(veronal grains 10 in each capsule). The box was then found and four capsules were missing. A cup of black coffee was prepared and this administered, teaspoonful at a time by mouth. The patient would swallow it, grunt, and then return to unconsciousness. At 9 P. M. an enema of two cups of coffee and a hypodermic injection of strychnine sulphate gr. 1/60 were given, as the pulse had gone to 140, was fluttering, and very feeble. The patient responded to this, opened his eyes, cried out,and became very restless, throwing off the bed clothes and swinging his arms and legs. After about 10 minutes he again became unconscious. The family were instructed to watch him during the night and the next morning, by slapping him, he could be aroused for a moment but he would then relapse into sleep again. Milk and broth were administered by mouth for two days, after which his periods of consciousness became longer until at the end of five days he was fully conscious, none the worse for his experience. It later developed that the patient and his brother were playing "doctor" the brother being the doctor, who gave him four capsules of veronal 10 gr. each. At the present time the patient shows no ill effects, going to school daily and in perfect condition.

Case II.—J. H., æt. 19; drug clerk; previous history negative, neurotic temperament. On March 24 he presented himself at office suffering with an acute balanoposthitis. This was treated and on April 3 a circumcision was performed under general anesthesia. On April 4 he was told to take monobromated camphor, gr. 5 every 4 hours to prevent erection. Instead of following instructions he took the drug at very frequent intervals, most probably taking in all 100 grains in the course of 24 hours. On April 5, at 9 P. M., I received a hurry call to the drug store where the patient was employed. The history developed that the patient was standing behind the counter talking to one of the other clerks, when suddenly he cried out, threw his arms up, and fell backward on the floor striking on his head. He was then carried into a rear room and placed on the floor where the physician found him. He was markedly cyanosed, pulse slow and bounding and respirations labored. He showed typical signs of brain irritation, kicking his feet about, throwing his arms around, striking the floor with his fists, and crying out. The attack resembled epilepsy very much, but there was no history of any previous attack. After about ten minutes he became more quiet. He could be aroused by shaking, when he would look around, ask where he was, and then fall back again. He was allowed to remain there for half an hour, when he was lifted and feeling a little better he was taken home, walking three blocks. He was put to bed where he again became unconscious but very restless; this continued for 24 hours after which he felt better except for a violent headache and extreme drowsiness. He was kept in bed for 48 hours and then allowed to get up. At present date he shows nothing unusual.

ARCH SUPPORTERS FOR FALLEN ARCHES.

By MAX STRUNSKY, M.D.,

New York.

If a law prohibiting the sale of plates for fallen arches were passed and the sale restricted to the making of plates on the prescriptions of physicians with experience in foot trouble, it would be a boon to suffering mankind. The present fad of the public of prescribing arches for itself when there is trouble with feet has led to untold suffering, and even to irreparable damage to tissue, invalidism, crippling, amputation of limb, paralysis, and premature death. This is not an hysterical statement and one can easily see in our clinical material the evil of this self-prescribing habit and how it leads relentlessly to the above catastrophes. When a patient buys and wears arches he feels naturally that the trouble which causes the pain in his feet is being cured. Often he gives himself plenty of time for the arches to "work." Thus delays occur before a physician is consulted with the result that constitutional diseases perhaps of the most serious order of which the pain in the feet is but a symptom, have progressed untreated and undetected to the point where one of the above catastrophes may occur.

Let me give an example. Take for instance the most common type of patient who eventually comes to us for the relief of foot trouble. In his shoes he wears arches, and he tells us that he has already

worn several different makes. His face is clouded and puzzled, not seeming to understand why his feet still ache. An examination shows that he has an infectious arthritis of the metatarsophalangeal joints or midtarsal joints, and often even larger joints are involved. In his system somewhere there is a distinct focus of infection, either a faulty bridge in his mouth, under which oozes pus, or there is a sensitive tooth under a crown, or crypts in the tonsils, etc. Of course the scientific link between focal infection and joint diseases has not yet been completely forged. Yet clinically we know that treating focal infection has given better results in inflamed joints than all the previous methods for "rheumatism" that have ever been used. Also, we now know that to carry a pus cavity in the system is not as harmless as was formerly thought, but is fraught with danger. In the long run it breaks down the patient's resistance, causing metastasis, and the parasite often has been proven to change its strain and to set up an endocarditis or a pneumonia. It is a question worth while pondering, how often patients' lives have been lost through disease while they were waiting for their arch supporters to cure the pain in their feet? If, however, they had gone to a physician and the focus of infection had been discovered and treated, might not the premature death perhaps have been prevented?

Here is another example: A patient for months has experimented with various kinds of plates. The pain in his feet is terrible, so that he has forgotten all about the still persistent "morning drop." It is so frequent an occurrence to find patients with Neisser infection of the feet and spurs of the feet due to the same cause, wearing plates for a long time, often for years, while their focal infection was left undetected and untreated, that we are almost surprised when this is not the case.

The diagnosis of foot trouble is a difficult art. For how otherwise can one account for the fact that patients frequently come to us carrying plates which, from a mechanical standpoint, are well made and perfectly fitting and were prescribed by even well known physicians, who on examination reveal Romberg's sign, the Argyll-Robertson pupil, etc. Lately a patient with endarteritis obliterans came to our notice who had a Wassermann 4 plus reaction and whose limb was finally amputated for gangrene, and this man had been treated for eight months with plates! If it were not for the fictitious frequency of flat feet as a cause of painful feet, the true nature in the above cases would have had a greater chance of recognition, and different results would have undoubtedly ensued from prompt treatment. While all this time the patients were being treated with plates, the *Treponema pallidum* in the one case was eating away the true motor cells in the spinal cord, or causing in the other thickening and thrombosis in the arteries of the leg.

236 West Seventieth Street.

The Sex Distribution in Rickets. — J. Priestly concludes from the analysis of school statistics that rickets is more prevalent among boys than girls, the ratio being 27.3 to 16.3; and that this disease must be included with rheumatism, pulmonary tuberculosis, all the graver nervous affections, and some other disorders, as diseases the incidence of which is influenced to a considerable degree by sex.—*British Journal of Children's Diseases.*

Medicolegal Notes.

Licensing of Non-Drug-Giving Physicians. — The North Carolina Supreme Court holds that under Laws 1907, Chap. 764, as amended by Laws 1913, Chap. 92, providing for the examination and licensing of non-drug-giving physicians, and making it a misdemeanor for an osteopath or other non-drug-giving practitioner to practise without a license, one practising chiropractic and also a practitioner of suggesto-therapy must obtain a license.—State vs. Siler, North Carolina Supreme Court, 84 S. E. 1015.

Blood Stains on Accused's Clothing — Preliminary Proof.—To render blood-stained clothing admissible in evidence in homicide cases its identity must be established, and it must appear that it had not been interfered with either purposely or otherwise. In other words, to render such evidence admissible there should be preliminary proof that the clothing was worn by the accused at the time of the tragedy and that there has been no change in its condition between the date of the tragedy and the time of the test of the blood stains or the time when the clothing is admitted in evidence. It is not essential that this preliminary proof be made by positive or direct evidence, but it may be shown, as any other controverted fact, by evidence circumstantial in its nature. However, the proof should be such that the inference may be fairly drawn that the clothing was worn at the time and that the blood stains were there received. Tests for blood stains on the clothing of an accused charged with murder were not made until six months after the murder, and the evidence did not show the condition of the clothing during the interval or that it had not been interfered with, but showed that it had passed through the hands of several persons during the interval. It was held to be error to admit in evidence the clothing and the testimony of a physician that on making a scientific test he had found human blood stains thereon.—State vs. Ilgenfritz, Missouri Supreme Court, 173 S. W. 1041.

Malpractice in Reducing Fracture of Collar Bone—Sufficiency of Evidence.—In an action against a surgeon for negligence in reducing a fracture of the plaintiff's collar bone the negligence charged was that the defendant failed to use ordinary care in treating the fracture by carelessly and negligently bandaging and placing the ends of the bone in such position that they overlapped by more than an inch and causing them to be held in that position until they adhered and solidified. The evidence showed that the fragments of the broken limb had not healed in a proper position, which had caused a deformity and condition which rendered the plaintiff a cripple; but counsel for the defendant contended that there was no testimony to establish that this condition was the result of negligence on the part of the defendant.

In the absence of a special contract the law implies that a surgeon employed to treat an injury contracts with his patient that he will exercise reasonable and ordinary care to accomplish the purpose for which he is employed. He does not warrant a cure and is not responsible for want of success unless it results from a failure to exercise ordinary care, or from want of ordinary skill. The failure to exercise ordinary care in treating a fracture is not established by proof of the result alone but must be shown by other evidence. Other evidence than the condition of the plaintiff, bearing on the question of negligence in treating the fracture, was introduced.

Several surgeons testified that the position of the fragments ought to have been discovered by the defendant while treating the plaintiff, that an examination would have disclosed the overlapping, and that the position of the shoulder indicated that the fracture was not healing in the proper position. The plaintiff also testified that he complained to the defendant, about a month after the bone was set, that it hurt him to breathe, which, from the testimony of the physicians, must have been caused by the clavicle not being in a proper position. So that there was substantial testimony from which to deduce one of two conclusions: either the defendant did not place the fragments in proper place in the first instance, or, if he did, he failed to exercise ordinary care from time to time to ascertain whether they remained in place and in keeping them in proper position. A verdict for the plaintiff was sustained on appeal. — Craghead vs. McCullough, Colorado Supreme Court, 146 Pac. 235.

MEDICAL RECORD.

A Weekly Journal of Medicine and Surgery

THOMAS L. STEDMAN, A.M., M.D., EDITOR

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MATERNAL METABOLISM AND MONSTROUS DEVELOPMENT IN THE OFFSPRING.

EXPERIMENTAL biology has helped a good deal in the solution of many of the problems in human pathology. One of the most promising fields of research is that dealing with the causation of defective and monstrous development in the offspring. Some of the factors in the production of atypical intrauterine growth have already been clearly established; for instance, the effects of traumatism, uterine malformations, and disease, amniotic bands, etc. F. P. Mall has assumed that the defective development of an embryo is the result of the faulty implantation of the ovum in the wall of the uterus, which occurrence is in turn caused by a diseased condition of this organ. Another theory is that which attributes the origin of monstrosities to chemical or toxic effects on the developing ovum. O. Hertwig produced spina bifida in amphibian embryos by subjecting the fertilized eggs to the action of 0.6 to 0.7 per cent. solutions of sodium chloride, and suggested that the influence of alcohol or toxins in the maternal blood may account for some instances of monstrosity in the human being. Féré, Stockard, and McClendon obtained one-eyed monsters by submitting developing eggs to the action of magnesium chloride, alcohol, ether, alkaloids, etc.

Many of the above facts are cited by E. I. Werber in prefacing the report of his own interesting experiments along this line in the *Bulletin of the Johns Hopkins Hospital*, June, 1915. At the Marine Biological Laboratory of Woods Hole, Mass., he performed a number of experiments on the fertilized eggs of the teleost fish *Fundulus heteroclitus*. The eggs were submitted in the early cleavage stages to the action of solutions of a number of toxic substances known to be found in the urine of persons suffering from disturbances of metabolism. Only two of these substances, butyric acid and acetone, have so far given definite results. When fertilized fundulus eggs were exposed to the action of a 1/12 to 1/14 gram-molecular solution of butyric acid in sea water for about 15 to 20 hours and then transferred to pure sea water, a very large number of them gave rise to monsters. The same occurred with the use of a gram-molecular solution of acetone, 20 to 50 c.c., of which were added to 50 c.c. of sea water. The relative number of monsters increased with the strength of the solution up to 40 c.c. of acetone and decreased in solutions still stronger, which caused the death rate of the eggs to increase.

Among the monstrosities experimentally produced in the above manner there occurred very abundantly cyclopia, asymmetric monophthalmia, and microphthalmia. Coloboma, total blindness, the presence of lenses only, or the presence of supernumerary lenses were quite frequently found. Anterior half-embryos were also produced. Some embryos had enormously swollen ear vesicles, others were hydrocephalic, and others showed various deformities of the heart and blood-vessels. There was only a slight tendency to the production of twins. On the basis of the above findings the suggestion is made that many of the monstrosities found in nature are the result of the action of substances, such as acetone and butyric acid, the products of a disturbed or pathological metabolism. It is quite possible also that many congenital defects of the sense organs, of the central nervous system, etc., are to be attributed to the same cause. These defects may not be manifest morphologically, but may consist in slight chemical alterations, the effects of which may be latent until some advanced period of life.

This conception of intrauterine poisoning of the developing ovum is one of profound significance in pathology. The problem readily lends itself to experimental investigation. The results promise to elucidate many of the obscure metabolic disorders, such as diabetes, arthritism, etc. Many instances of so-called inherited disease may eventually be shown to be the result of intrauterine intoxication.

PYLEPHLEBITIS COMPLICATING APPENDICITIS.

THAT this complication of appendicitis has not received the attention that it merits has recently been pointed out by Babler (*Annals of Surgery*, May, 1915). He states that pylephlebitis occurs with greater frequency than we have appreciated; that many of the cases recover without our having recognized the presence of this complication; and that many patients die without our having correctly interpreted the clinical picture. In 1903 Gerster reported 1,189 operative cases of appendicitis, in 9 of which pylephlebitis was present, while in 1905 Munro reported 15 cases of undoubted portal infection; Körte cites 16 cases, and others have reported smaller numbers.

The abscesses in the liver are practically always multiple, vary greatly in size, and the right lobe is more frequently involved than the left. The most frequent clinical manifestations of multiple abscesses of the liver complicating appendicitis are repeated chilly sensations or distinct chills, followed by very high temperature and profuse sweating and associated with the presence of urobilin in the urine and persistent icterus. There is also pain in the hepatic region.

In a typical case of multiple abscesses of the liver complicating appendicitis the diagnosis should not be difficult. In any given case the diagnosis must rest on (1) the history showing that the ap-

pendix was the primary seat of trouble; (2) the shifting of the symptoms from the appendix to the hepatic region; (3) the progressive increase in the severity and character of the symptoms; (4) the repeated chills followed by high pulse rate and marked elevation of body temperature; (5) the jaundice; (6) the persistent pain in the hepatic region; (7) the urinary and blood findings; (8) the change of liver dulness; (9) the picture of marked toxemia, and (10) the absence of the signs and manifestation of extensive peritonitis. With Munro, Babler lays emphasis on the fact that the most important clue in making a diagnosis is the recognition of the causative appendicitis, and he says that the fact that an appendicitis patient is suffering from repeated chills followed by high temperature and profuse sweating indicates clearly the gravity of the situation and points to a septic condition somewhere, and when the physical findings point to the liver it is time to consider immediate exploration.

The prognosis with this complication is necessarily grave and depends on: (1) the size, multiplicity, and location of the abscesses, as well as their accessibility from a surgical standpoint, (2) the time of their discovery, and (3) the general condition of the patient together with the character and time of the treatment. Regarding treatment Babler says that the appendix should be removed, the infected lymphatics leading from the appendix to the liver should be incised and drained, and the liver should be exposed and the abscesses located and drained.

This is one of the complications of a neglected or medically treated appendicitis, and it is a very dangerous complication (Babler reports three more cases with three deaths). Acute appendicitis usually demands immediate operation while infection is limited to the appendix, for then the operation is simple and the mortality is practically nil.

PSEUDOREACTIONS WITH THE SCHICK TEST.

Numerous articles during the past two years have testified to the value of the Schick toxin test for immunity in diphtheria and the various investigators have exhibited a rather remarkable agreement in the essentials of the technique and interpretation of the reaction. The one source of trouble, one not infrequently present with other skin reactions, has been the tendency of some individuals under certain conditions to develop a condition of hypersensitiveness of the skin, the so-called "Umstimmung." In such patients the skin reacts excessively to the mere trauma which necessarily accompanies the application of the test and it may be extremely difficult to distinguish between a positive and a negative reaction.

Kolmer and Moshage (*Jour. Am. Med. Assn.*, 1915, lxv, 144) have investigated this phenomenon and presented a number of conclusions which should tend to clear up the confusion surrounding it and measurably to increase the value of the test. They found that this hypersensitiveness was most evident in patients in the various stages of scarlet fever, and more evident in those with measles than in normal individuals. At the end of eighteen or twenty-four hours they were often unable to distinguish between the pseudoreaction and the true, though the former was usually of less extent. After this time, however, the great majority of the false reactions subsided while the true toxin reactions persisted for several days and left a pigmented area and well-defined scaling of the epidermis. Increase in the amount of fluid injected produced a slightly larger number of pseudoreactions while increase in the concentration of the toxin had much the same influence. They therefore advise the use of a highly potent toxin and a minimum amount of fluid. Schick used a toxin having a minimum lethal dose of 0.005 c.c. and injected one-fiftieth of this amount so diluted as to be contained in 0.1 cc. The percentage of tricresol should not be more than 0.25. "When time permits it is better to read the reactions after forty-eight than after twenty-four hours, although in the presence of exposure to diphtheria it may be advisable and necessary to inspect the reactions and immunize nonimmune or positively reacting persons at the end of twenty-four hours." The use of a control fluid, a dilution of bouillon of 1:10 or 1:100, will aid materially in the detection of these pseudoreactions and is especially important when testing patients suffering with scarlet fever or measles.

The error introduced by these false reactions is, however, on the safe side, for a positive reaction indicates that the patient is not immune and should receive a dose of ontitoxin and, as the authors say, it is probably better in the presence of exposure to diphtheria to err on the side of giving antitoxin to an immune person than to withhold it from a nonimmune.

Tubercle Bacilli in the Gastric Contents

One of the routine pocedures in the endeavor to establish the diagnosis of pulmonary tuberculosis is, of course, the examination of the sputum for tubercle bacilli. Such an examination is naturally impossible in small children who do not cough up their sputum, and in those early cases in which the sputum is absent or inappreciable in amount. The examination is unsatisfactory when the patient is too stupid to bring a suitable specimen of sputum or produces a mixture of saliva and food remnants in an attempt to deceive the physician. In those instances in which the patient is unconscious it is often impossible to obtain any sputum. In all of these cases the bulk of the sputum is swallowed, and it is but reasonable to suppose that a satisfactory examination may be had if the material is recovered from the stomach. Levy and Kantor (*Archives of Diagnosis*, 1915, viii, 154) have been able to demonstrate the tubercle bacillus in two instances in the material extracted from the stomach. The tubercle bacillus is very resistant to the action of digestive ferments, and there is no good reason to doubt the possibility of its recognition even after a stay in the stomach of several hours. The authors recommend that the material be extracted in the morning before the taking of any food, with the aid of a suction bulb. This

method would seem to be especially well adapted for use in infants in whom the time-honored method of tickling the throat with a feather is often ineffectual.

Polyneuritis of Rubber Vulcanizers.

Among occupation neuroses, one not often heard of is polyneuritis due to bisulphide of carbon in connection with vulcanizing rubber. There is in reality more to this affection than a toxic neuritis, for evidences of general intoxication coexists to some extent. Mild cases of this affection are not so rare, but cases of the severest type appear to be very infrequent. At a clinical session of the Leipzig Medical Society last March (*Muenchener medizinische Wochenschrift*, May 4), Schröder described a case of severe type. The patient had been a vulcanizer for six years before symptoms of poisoning appeared. Numerous sensory disorders were present —paresthesiæ and lightning pains in the legs. Headache seems to have been the earliest symptom, and was associated later with vertigo, excitability, and failing memory. The patient had lost much weight, was anemic, with swollen feet and shedding of hair. Motor troubles were numerous, including pareses and ataxia of both upper and lower extremities and there was also muscular atrophy in the hands. Locomotor ataxia was closely simulated, the Romberg sign being positive, but the patella reflex was heightened and the pupils were normal. The sensory disturbances had the hysterical distribution. Direct evidence of neuritis was easily obtained (tenderness on pressure, etc.). Some improvement has followed cessation of occupation.

Paravaccine.

That keloid should develop occasionally in vaccine cicatrices has never seemed other than a natural phenomenon, since this condition may develop in the predisposed in any recent cutaneous wound and hypertrophic cicatrices are common enough in the absence of predisposition. There is, however, another condition which has doubtless been included under vaccination keloid, termed by von Pirquet paravaccine. At a meeting last March of the Royal Imperial Medical Society of Vienna (*Berliner klinische Wochenschrift*, May 3) this author presented two cases in which vaccination apparently did not take. Instead small nodules developed having a raspberry color. They increased very slowly in size and presented a delicate areola. Vesiculation never occurred, and the lesions underwent involution very slowly. They were entirely harmless and were significant only because they might be regarded falsely as a successful take. Von Pirquet believes that paravaccine is more frequent now than in former years. It should not occur if vaccination is properly performed. The incisions should be ample and the thick portion of the vaccine well rubbed in. In these cases the failure to take raises the question of impure lymph as well as poor technique.

News of the Week.

Committee of American Physicians for the Aid of the Belgian Profession.—Dr. F. F. Simpson, treasurer, 7048 Jenkins Arcade Building, Pittsburgh, Pa., reports the receipt of the following contributions for the week ending July 17, 1915:

Muskegon Oceana Medical Society, Muskegon, Mich	$25.00
Dr. Robert F. Taylor, Philadelphia, Pa.	5.00
Dr. Francis Reder, St. Louis, Mo.	10.00
Dr. Charles D. Lockwood, Pasadena, Cal.	5.00
Dr. J. W. Ellenberger, Harrisburg, Pa.	5.00
Dr. Charles N. Dowd, New York, N. Y.	25.00
Receipts for the week ending July 17	$75.00
Previously reported receipts	7,625.84
Total receipts	$7,700.84

Health of the Canal Zone.—Dr. William F. Mason, chief health officer, reports that during May, among a population of 34,560 in the Panama Canal Zone, there was a total of 36 deaths; of these 30 deaths were from disease, giving a rate of 10.41 per thousand, as compared with 5.71 for the preceding month and 12.93 for the corresponding month of last year. Of the total deaths from disease the percentage under 5 years was 60, compared with 69 during April. There were 44 births reported, giving a rate of 15.28 per thousand. Of these births 10 were of white and 34 of colored children. There were 12 deaths of children under 1 year of age, all of whom were colored. In Panama City, with a population of 60,373, there was a total of 132 deaths. Of these 127 deaths were from disease, giving a rate of 25.24 per thousand, as compared with 25.44 for the preceding month and 32.31 for the corresponding month of last year. Of the total deaths from disease the percentage under 5 years of age was 63, compared with 51 in April. In Colon, with a population of 29,331, among whom there were 47 deaths; of these, 44 deaths were from disease, giving a rate of 18.00, as compared with 19.64 for the preceding month and 30.25 for the corresponding month of last year. Of the total deaths from disease, the percentage under 5 years was 37, compared with 52 in April.

Epidemic of Measles in New York Declining.—According to figures compiled by the Bureau of Records of the Department of Health, the outbreak of measles which has prevailed in New York City for the past few weeks has passed its height and is now declining. The decline is clearly reflected in the death rate 11.02 per 1,000 of population as compared with 11.24 for the corresponding week of 1914.

Pellagra in Texas.—Warnings to guard against pellagra, now declared by the State Board of Health to be prevalent in Southeast Texas, have been sent to all the local health officers in that part of the State.

Cholera in Austria.—It is reported that cholera is prevailing to an alarming extent in many districts in Austria, in some parts of which it has been declared epidemic. In the four days from July 8 to July 12, 723 new cases of the disease were reported in Austria, and in Hungary there were 543 cases in one week.

Typhus in Serbia Under Control.—Dispatches from London credit Sir Thomas Lipton, who recently returned there from his second trip to Serbia, with the statement that the work being done by the American physicians is marvelous. While the French and British medical corps are doing splendid work, he said, the credit for sanitation must go to the Americans, who, "as usual, excel in organization and preventive measures." At the height of the typhus epidemic, Sir Thomas said, there were upward of 300,000 cases, and the country was overridden with vermin. Owing to the sanitation reforms inaugurated by the Americans the plague of lice has been overcome and the typhus epidemic is well in hand.

Sir Felix Semon, the well-known laryngologist

of London recently wrote to the *Times* in reference to the *Lusitania* murders, expressing his righteous indignation at "Germany's barbarous warfare." In reply the Berlin Laryngological Society dropped his name from its list of honorary members and the *Internationales Centralblatt*, which he had founded, removed his name from the title page, which, of course, destroyed the journal's claim to be international in character. When the German professors come to they will wonder what made them so irrational and so unable to dissociate science from politics.

No Coroners for New York City.—Last winter the Legislature passed a law abolishing the office of coroner in this city, but the friends of the system have been trying to nullify this action by having the office included among those in the Constitution which the Legislature cannot disturb. The committee having this amendment in charge decided, however, by a vote of 9 to 4 to report it to the Constitutional Convention adversely.

Street Accidents in New York City.—Figures prepared by the Bureau of Records of the Department of Health show that during June, 1915, 34 persons were killed upon the streets of New York City by automobiles, an increase of 70 per cent. over the number of similar accidents that occurred during June, 1914. This increase, the report of the Health Commissioner states, is not at all exceptional; it is, on the contrary, only a reflection of the steady increase in this class of accidents that has been going on for several years. During the first six months of 1915, 152 lives were sacrificed. A conservative estimate is that one person in ten injured dies. Assuming this ratio to have held good in this city during the six months of 1915, there were 1,520 persons injured by automobiles. The remedy for this needless sacrifice of life, the department holds, is the adoption of a State law or a city ordinance which will compel those who desire to operate motor vehicles on the streets of the city to submit to an adequate test of fitness as a condition precedent to the obtainment of a license or permit. Under the present Highways law of the State of New York, any owner or any member of the family of an owner is permitted to drive a motorcar. The question of mental or physical capacity does not enter.

A Symposium on Rheumatism.—A special number of *American Medicine* dealing with rheumatism was published as the June issue. The twenty-nine contributors made up in their papers a very full and interesting symposium on the subject. Ten of those who contributed papers hailed from Great Britain, among them being Sir Dyce Duckworth, Sir Arbuthnot Lane, and Drs. Tanner Hewlett and F. G. Poynton. The contributions from American physicians and surgeons fitted in excellently with those of their British confrères and the entire number is a credit to American medical journalism. The issue can be profitably studied by one wishing to learn of the most recent views regarding that congeries of affections classed under the head of rheumatism, for the subject is discussed from all standpoints, special attention being paid to the question of treatment.

A Four-County Medical Meeting.—One of the largest medical meetings held in Western New York in recent years was the joint meeting held at Glen Iris, Letchworth Park, Yyoming County, by the medical societies of the counties of Allegany, Genesee, Livingston, and Wyoming on July 15. Over 300 guests were present. In addition to the members of the four societies there were others from Monroe, Erie, Ontario, Niagara, Cattaraugus, Steuben, Seneca, Schuyler, and Wayne counties. Dr. L. F. Bishop of New York City read a paper on Cardiovascular-Renal Disease, and Dr. William S. Bainbridge of New York City one on Chronic Intestinal Stasis. It was voted to make this joint meeting a permanent affair and to invite other counties in Western New York to join, the presidents and secretaries being delegated to make arrangements for a permanent organization.

State Medical Examinations.—At the recent State license examination in Ohio 160 candidates passed, only five being rejected.

In South Carolina the successful candidates in the examination held in June numbered 36.

At the June meeting of the Virginia State Board 127 recent graduates presented themselves for examination to obtain a license to practise medicine in that State.

Obituary Notes.—Dr. CHARLES UPHAM SHEPARD of Summerville, S. C., a graduate in medicine of the University of Göttingen, Germany, in 1867, died at his home on July 4, age 72 years. Dr. Shepard retired from the practice of medicine some years ago, and by his success in the growing of tea on his plantation, the Pinehurst Tea Farm at Summerville, won for himself the title of "Father of the Tea Industry." He was said to be the only person in America who had been able to grow tea for the market. This work had been watched with great interest by the Department of Agriculture.

Dr. JOSEPH REDFEARN of Marlboro, Mass., a graduate of the College of Physicians and Surgeons, New York, in 1873, and a member of the American Medical Association, the Massachusetts Medical Society, and the Middleboro District Medical Society, died at his home from apoplexy, after a short illness, on July 1, aged 65 years.

Dr. GEORGE W. STEPHENS, formerly of Montgomery City, Mo., a graduate of the St. Louis College of Physicians and Surgeons in 1883, died at the home of his daughter in St. Louis on June 24, aged 66 years.

Dr. BENJAMIN C. WOODBURY of Patten, N. H., formerly of Lewistown, Me., a graduate of the Homeopathic Medical College of Pennsylvania, Philadelphia, in 1866, died at St. Petersburg, Fla., on June 8, aged 78 years.

Dr. POWHATAN BLEDSOE of Hylas, Va., died at his home on June 26, aged 87 years.

Dr. EDWARD C. SCHOONMAKER of Mercedes, Tex., a graduate of the University of Minnesota Medical School, Minneapolis, in 1899, and a member of the American Medical Association, the State Medical Association of Texas, and the Hidalgo County Medical Society, died suddenly on July 4, aged 44 years.

Obituary.

FRANCIS DELAFIELD, M.D., L.L.D.

NEW YORK.

DR. FRANCIS DELAFIELD of New York, emeritus professor at the College of Physicians and Surgeons, New York, and consulting physician to the Roosevelt, Bellevue and St. Luke's Hospitals, died at the home of his sister in Darien, Conn., on July 17, aged 73 years.

The son of a physician, Dr. Edward Delafield, president of the College of Physicians and Surgeons, Francis Delafield was born in New York in 1841, and was graduated from Yale University in 1860 and from the College of Physicians and Surgeons in 1863, continuing his studies in London and Paris, and interesting himself especially in the study of pathological anatomy so that he soon became one of the most prominent workers in scientific medical research. In 1875 he was appointed adjunct professor of medicine at Columbia University (College of Physicians and Surgeons), and in 1882, on the retirement of Prof. Alonzo Clark, he became professor of pathology and the practice of medicine, holding this chair until 1901, when he also retired. In 1877 the Association of the Alumni of the College of Physicians and Surgeons organized a Pathological Laboratory on a plan suggested by Dr. Delafield, and he was made director, which office he held for four years, being then succeeded by Dr. T. Mitchell Prudden. Dr. Delafield at different times had served as pathologist to the Roosevelt Hospital, surgeon to the New York Eye and Ear Infirmary, and physician to several other hospitals. Besides his membership in many medical societies, including the New York State and County Medical Societies, the New York Pathological Society, of which he was one of the incorporators and president in 1875, the Association of American Physicians, of which he was the first president (1886), and the New York Academy of Medicine, he was a member of the Century Association and the Yale Club of New York.

Dr. Delafield's contributions to medical literature have been landmarks in scientific work. His first work, "A Handbook of Post-Mortem Examinations and Morbid Anatomy," was published in 1872; and in 1882 the "Studies in Pathological Anatomy" appeared. Delafield and Prudden's "Handbook of Pathological Anatomy and Histology," which was first issued in 1885, reached its fifth edition in 1897, after which Dr. Delafield retired as a collaborator.

R. H. M. DAWBARN, M.D.

NEW YORK.

Dr. Robert Hugh Makay Dawbarn of New York clinical professor of surgery in the Fordham University School of Medicine, New York, and emeritus professor of surgery in the New York Polyclinic Medical School, visiting surgeon to the City Hospital, and consulting surgeon to the New York Polyclinic, died at his home on July 18, aged 55 years.

Dr. Dawbarn was graduated from the College of Physicians and Surgeons, New York, in 1881, and in 1890 was appointed professor of surgery and anatomy at the New York Polyclinic Medical School, having previously served as instructor in minor surgery at the College of Physicians and Surgeons. He had served as visiting surgeon to the New York Hospital and consulting surgeon to the Greenwich Hospital, and was a member of the American Medical Association, the New York State and County Medical Societies, the New York Surgical Society, the American Association of Anatomists, the New York Academy of Medicine, the New York Society of Medical Jurisprudence, and the West End Medical Society. In 1902 the Philadelphia Academy of Surgery awarded to Dr. Dawbarn the Samuel D. Gross prize for the best original work on surgery during the previous six years.

Correspondence.

OUR LONDON LETTER.

(From Our Special Correspondent.)

ALIMENTARY STASIS, CAVENDISH LECTURE—X-RAY LOCALIZATION, ROENTGEN SOCIETY—NATIONAL MEDICAL UNION—CASUALTIES AND HONORS IN WAR—HEALTH OF THE FORCES.

London, July 2, 1915.

The Cavendish lecture was delivered this day week by Prof. Arthur Keith, F. R. S., at the West London Hospital, his subject being "Alimentary Stasis"—not confining the term to stasis of the larger intestine, but extending it to include the canal throughout. Examining Auerbach's (mesenteric) plexus, he showed that at all parts of the canal it was a composite tissue, containing nerve cells, numerous fine nerve fibers, and an abundant third element—a form of branched cell, apparently intermediate between nerve and muscle, as if the plexus acted on them through the third element. Auerbach's tissue was specially abundant where movements commenced. Physiologists teach that every point in the canal has its own rhythm, being always in a state of rhythmical contraction and in the proximal part of the colon as well as in the duodenum, jejunum, and ileum the rhythm diminishes on to the end of each segment. Professor Keith looked upon the canal as made up of seven such segments or zones, just as the heart may be looked upon as consisting of two zones—auricle and ventricle. At the junction of the heart's two zones there may occur some interruption of rhythm, in which case there will follow back-pressure in the veins. The usual sites of stasis have been observed to be just such junctions—esophagus and stomach, stomach and duodenum, and this with jejunum; other instances are ileum with cecum, proximal with distal colon, and colon with rectum.

At the annual meeting of the Roentgen Society a paper was read on X-Ray Localization Methods by Captain Shaxby, R. A. M. C., deserving the attention of all called upon to determine the depth of foreign bodies; for ordinary methods do not often enable us to decide whether such a body is above or below a broad flat bone, such as the scapular. This contribution having been duly honored, a discussion was opened by Dr. Sidney Russ on the protection of *x*-ray operators from the dangers of *x*-ray screen examinations. It had been attempted to protect operators by enclosing the *x*-ray bulb in a box covered with an absorptive material, except in the path of the vertical rays used, and other devices had been resorted to. It must be difficult for those working with the rays to realize the enormous amount of radiation given off, and Dr. Russ mentioned in this respect that the methods of measuring the rays in use are rather gross methods. There is always some stray radiation to be detected—it leads to the air becoming highly ionized—and this effect is not influenced by ventilation. Perhaps more attention will soon be given to the atmosphere in which the radiologist works. Dr. Finzi showed experimentally that though the usual protective box cuts off most of the primary rays, the secondary ones must be considered as they might prove equally dangerous to the radiologists. Mr. Gardiner, F. C. S., told of his experiments as to secondary radiations given off by different materials. He thought any efficient method of estimating must

take account of the secondary rays. Dr. G. B. Batten considered *x*-ray protection of the greatest importance, while radiologists were at work many hours a day in military hospitals and in the absence of definite rules it was probable outfits supplied to the war office often fell short of the desirable. He advised that a committee of the society should lay down rules for *x*-ray protection for users and others—in fact, all brought in contact with the rays. His suggestion was adopted by the meeting and the council of the society have undertaken to carry it out.

The National Medical Union held its annual meeting on Saturday, when the chairman, Dr. Greenyer, congratulated his audience on the fact that sixty-three of the members were on active service, of whom two had just been mentioned in dispatches for gallant conduct in the field. Professor Russell of Edinburgh moved and Dr. Comber seconded a resolution expressing belief in the value of military training for young men of all classes. He said the union was ready to assist in the organization of the country's forces for a more vigorous conduct of the war and urged an immediate census of the adult population. He also took the chair at the annual dinner in the evening when he said, while not sympathizing with every part of the insurance act the union recognized certain bedrock principles, on which medical help should be provided for the most necessitous. Other speakers predicted a great increase in the number of members of the only body, said one, to maintain the traditional freedom of the profession and prevent its degradation to the level of commercialism.

Prof. F. Howard Marsh, F. R. C. S., died on the 26th ult., aged 76. He was consulting surgeon to St. Bartholomew's Hospital, member of the Council of the Royal College of Surgeons, president of the Clinical Society, and held many other important posts during his great surgical career. On the reestablishment of the professorship of surgery at Cambridge in 1903 he went there to take the duty and was made a Fellow of King's College. Four years later he succeeded the late Alexander Hill as master of Downing College. The funeral took place on Tuesday at Cambridge, when there was a large attendance of eminent persons representing the university and colleges, the senate corporation of the city, and the county; the sister university of Oxford, the Royal College of Surgeons, St. Bartholomew's Hospital (London), the National Health League, and other medical and scientific institutions were also represented.

The casualty list in this terrible war, issued from time to time, includes many names of military surgeons who have fallen from wounds or gas poisoning or maladies incidental to the contest. On the other hand, we have still longer lists of medical officers mentioned in dispatches, or awarded honors, compensations, pensions, or other marks of distinction earned in active service.

Sir. J. Williams has been made Honorary Fellow of the Royal Society of Medicine.

Sir A. P. Gould has been elected vice-chancellor of the University of London for 1915-16.

The Leconte prize, a highly esteemed French distinction, has been bestowed on Sir Almroth Wright.

The Victoria Cross has been conferred on Captain Scrimger of the Canadian Army Medical Service. Dr. Purves Stewart has been appointed consulting physician to the forces in the Mediterranean and has started on the service.

In reply to questions in Parliament it has been asserted that the health of the forces in the present war is not merely favorable in comparison with former campaigns, but nothing equal to it has ever been attained.

EXPERT MEDICAL TESTIMONY.

To the Editor of the Medical Record:

Sir:—I believe Judge Hendrick's statement in the Thaw case, as regards the opinions of experts for pay, will be supported by the majority of all-around practitioners of medicine. They look upon such cases from a broad and sane standpoint. They have seen in Thaw's act, not evidence of insanity, but simply of a disposition prone to crime, by reason of bad influences and moral delinquency. The State prison and an indeterminate sentence would be the right way to punish such a crime against society. Then length of the sentence should depend upon conduct in prison, but conviction must be *swift* and *sure* to obtain good results to the State and to the criminal. All criminal trials should be enlightened and helped with the knowledge of a general physician of large experience and unblemished character. The court should appoint such a one in every case. Politics or pecuniary reward should not be in any way a factor in such an appointment.

Beverley Robinson, M.D.

SODIUM CHLORIDE SOLUTION.

To the Editor of the Medical Record:

Sir:—There being so much use of Fischer's solution, which I believe is sodium chloride and sodium carbonate, it might interest you to know that in the *Medical Herald* of March, 1908, I published under the title, "The Soil for Pneumonia, or the Condition That Allows of the Pneumococcus to Lodge," the following:

℞ Sodium chloride, 60 grains.
Sodium carbonate, 12 grains.
Boiled water, 1 pint.
Honey or glucose, 7 grains.

Sig.: One pint by enteroclysis two or three times a day.

The above formula was published some years before Fischer published his.

Charles F. d'Artois Francis, M.D.

Brooklyn, N. Y.

Progress of Medical Science.

Boston Medical and Surgical Journal.

July 8, 1915.

1. The Use of Magnetism for Localizing Needles in the Tissues; with Report of Cases. G. H. Monks.
2. Pollen Therapy in Hay Fever. J. H. Goodale.
3. Leprosy and Its Relation to Massachusetts. J. A. Honeij.
4. The Relation of Leprosy to the Community. G. M. Katsainos.

1. Use of Magnetism for Locating Buried Needles.—G. H. Monks finds that this physical agent is of value in some cases even though an *x*-ray examination has been made. The method comprises the use of an electro-magnet or an ordinary magnet to magnetize the buried needle, and of an indicator consisting of a very fine magnetized needle suspended by a delicate silk thread. The method is of value in cases in which the needle fragment is large enough to receive and to retain a charge of magnetism sufficient to attract the indicator needle. Cases in which the needle fragment is near enough to the skin to be strongly magnetized,

and also near enough to attract the indicator needle; and cases in which, during the progress of an operation, the incision opens up the tissues in such a manner that the indicator needle may be brought very close to the foreign body.

2. **Pollen Therapy in Hay Fever.** — J. H. Goodale states that serobiological methods have shown the phylogenetic relationship of the different plant orders and families. The application of these discoveries to the treatment of hay fever by injection of plant proteins promises to assist in the selection of the specific material required for a given case. Definite reactions are elicited in hay fever by the pollen of the exciting plants when brought into contact with an abrasion of the skin. The intensity of these skin manifestations may be sensibly diminished by the repeated parenteral administration of the proteins in question. Coincident with the diminution in the skin reactions, there seems to occur an increased tolerance of the exposed mucous membranes to the pollens of the plants employed. Pollen therapy in hay fever may be regarded at the present time as a promising method of treatment, but its value and the permanence of its results remain to be definitely established.

3. **Leprosy in Relation to Massachusetts.** — J. A. Honij notes that leprosy is exceedingly prevalent in Mexico, Brazil, and Latin-America in general. Boston is building up a South American trade and booming Boston as a port of entry. The Panama Canal gives a more direct route to countries in which the disease is endemic. Russia believes that because she has acted as a sieve for the East in past generations, the disease is so prevalent there today. Germany claims she gets her cases from Russia, France from her colonies and her southern neighbors, Hawaii and other islands from China and Japan. In America there are a few states in which the disease is prevalent and a few others in which the disease is endemic. The author advocates a more tolerant and sensible attitude toward lepers; a greater familiarity with the disease; a more sympathetic and true interest on the part of the State in their cases and a less complete isolation; and the provision of a modern hospital and of modern buildings for the proper care and treatment of leprosy. In treatment much can be done, and reports of arrested cases are frequently made. The prevention of disfigurement, toxic febrile attacks, pain, and general discomfort is successful in a great many cases.

4. **Leprosy and the Community.** — G. M. Katsainos believes that leprosy is inherited, and that the microbe exists in the spermatozoa and ova at the time of conception. Contagiousness is also possible, for otherwise one could not explain the existence and development of the disease in certain times and places. Nevertheless transmission by contagion is only a rare exception, taking place in a way that escapes detection The analysis of a number of family histories of lepers shows no case of transmission from the husband to the wife or from the wife to the husband; no case of contagion between neighbors, however close their relations with a leper may have been; that no person related to a leper by any marriage ties, but not of the same blood, has been affected; and that even when a child is the suckling of a leper woman it remains unmolested, if not born of her.

New York Medical Journal.

July 10, 1915.

1. Senility, Premature Senility, and Longevity. H. M. Friedman.
2. Vaccine Therapy in Diseases of the Nose, Throat, and Ear. G. M. Coates.
3. Abdominal Tuberculosis. A. Bassler.
4. Cancer of the Bladder and Kidneys. V. C. Pedersen.
5. Uterine Cancer. S. Dahl.
6. A Simple and Efficient Head Bandage. G. O. Jarvis.
7. Elephant Hydrocele. A. H. Peacock.
8. Increased Responsibility for Private Physicians. L. I. Harris.
9. El Gebir, the Visionary. I. L. Nascher.
10. A Surgical Course for Hospital Internes. A. E. Chace.

1. **Old Age and Longevity.** — H. M. Friedman reviews the biological, physical, and mental aspects of old age. He notes that brain workers live longer than muscle workers and that clergymen are the longest lived individuals. Women live longer than men in spite of the morbidity of childbearing. Marriage tends to favor longevity and so does religious life. Heredity is an important factor in senility and longevity.

2. **Vaccines in Diseases of Nose, Throat, and Ear.**— G. M. Coates notes that the use of vaccines for prophylactic immunization against acute rhinitis, or common acute colds, has come into quite general use and is often very effective. On account of the number of different organisms causing these attacks, a mixed stock vaccine should be used. In suppurations of the nasal accessory sinuses vaccine therapy does not give permanent relief until adequate drainage has been established. Recurrent furunculosis about the alæ nasi and close to the alar cartilages are usually caused by one of the staphylococcus group, probably the albus most frequently, and yield in a most satisfactory manner to vaccine treatment. Practically all middle ear diseases have their origin in the nose and throat. If one can abate the catarrhal condition of the nose and epipharynx by the use of vaccines, one can feel some degree of assurance that the benefit will extend to the tube and tympanum. This is also true of the acute cases, but then one can usually take care of these by other means and in about the same time. For acute cases which fail to respond to ordinary measures and tend to become subacute and chronic, the use of vaccines produces good results in a short time. Marked success with vaccines in chronic suppurative otitis media was first obtained by Nagle, of Boston, who reported some seventy cases of long duration, in all but a few of which dry ears were obtained by the use of autogenous vaccines.

10. **A Surgical Course for Hospital Internes.**—A. E. Chace advocates the use of written regulations which should specify the hours of duty and the lines of authority; a definite schedule of the hospital practice in each department; and the ideals of scientific character at which the interne should aim, and the methods planned to attain them. The internship should be planned to stimulate scientific character. There are four elements of this to be developed: (1) *The attitude*, which compels one to surround each statement with proof before making it. Conscientious history taking and physical examinations, the laboratory, the operating room, and the autopsy, followed by well planned discussions of the cases, will soon convince the interne of the futility of snap diagnoses and premature statements of therapeutic efficacy. (2) *The habit* of systematic work; the planning of the best use of method and time toward efficient treatment. (3) *The energy* to review constantly the theory of practice in its relation to each concrete instance; and to practise under supervision upon the lower animals that manual dexterity which is essential to successful surgery. (4) *The ambition* to originate and to study in new fields; to prepare papers of scientific value and with some degree of rhetorical merit.

Journal of the American Medical Association.

July 10, 1915.

1. The Use of Words. T. McCrae.
2. Syphilis of the Brain. Its Occurrence, Symptoms, and Prevention. J. Collins.

3. A Note on the Occurrence of Pseudoreactions on the Skin, with Special Reference to the Schick Toxin Test. J. A. Kolmer and Emily L. Moshage.
4. Tuberculin in Surgical Tuberculosis, with Special Reference to the Use of Sensitized Bacillary Emulsion. A. C. Burnham.
5. A Clinical Contribution to Our Knowledge of Chronic Pancreatitis. M. Einhorn.
6. Frontal Sinus Suppuration with Results of New Operative Procedure. H. A. Lothrop.
7. The Postoperative Antiseptic Treatment of the Tonsillar Fossæ. George Paull Marquis.
8. Calomel Poisoning. A Case of Some Value to Our Fellow Practitioners. J. H. Bufford and C. G. Lane.
9. A Further Study of the Chemical Composition of Urinary Calculi. J. Rosenbloom.
10. Surgical Measures in Apoplexy. Report of a Case. C. M. Remsen.
11. Gastropyloroduodenostomy, with Excision of the Ulcer-Bearing Area for Acute Perforated Ulcer in the Pyloric Canal. V. A. Lapenta.
12. Acute Articular Synovitis of Cryptic Nasopharyngeal Origin. W. Sohier Bryant.
13. Report of Case of Unilocular Ovarian Cyst. Agnes M. Edmonds.
14. Discussion on Blastomycosis of the Eyelids, with Report of Cases. E. Jackson.

1. **The Use of Words.**—By T. McCrae. (See MEDICAL RECORD, June 26, 1915, page 1089.)

3. **The Schick Test.**—By J. A. Kolmer and E. L. Moshage. (See page 152.)

5. **Chronic Pancreatitis.** — By M. Einhorn. (See MEDICAL RECORD, June 26, 1915, page 1090.)

10. **Surgical Measures in Apoplexy.**—C. M. Remsen states that while it may appear radical to advocate operative procedures in cerebral hemorrhage there are two positive operative indications, namely, to relieve pressure of the clot and remove it if possible, and to relieve the brain from the secondary changes. A case is reported in which there was manifest an increased intracerebral pressure and in which an operation for decompression was made six days after the beginning of the attack. The brain was edematous and tended to project through the opening. The cerebral lateral fissure was demonstrated and posteriorly there was found a clot about the size of a golf ball, suggesting a lenticular hemorrhage which had worked out through the surface of the insula. The patient recovered.

12. **Acute Articular Synovitis of Nasopharyngeal Origin.**—W. Sohier Bryant reported the case of a young man suffering from a severe type of acute multiple synovitis affecting the knees and hips. The pharynx was red and there was nasal obstruction from a deflected septum. There was a large, soft adenoid, bleeding freely, but there were no subjective symptoms in the throat. The treatment began with postnasal applications of hydrogen peroxide through the nose, followed by a 10 per cent. solution of silver nitrate and an antiseptic nasal douche. The patient reported the following day that he felt relieved within half an hour after the treatment, and he was able to walk without crutch or cane and could sit down normally. His general appearance was no longer that of a serious invalid. Palpation detected scarcely any fluid in the knee. A saturated solution of ferric ammonium sulphate and menthol and eucalyptol was applied. On the fifth day all pain was gone and he felt much better and on the twenty-third day, after eleven treatments, there were no signs left of the arthritis.

The Lancet.

July 3, 1915.

1. Trypanosomes Causing Disease in Man and Domestic Animals in Central Africa. Sir David Bruce.
2. The Right-sided Murmurs of Mitral Stenosis: Their Bearing on the Course of the Disease. Sir James F. Goodhart.
3. A Case of Congenital Hemihypertrophy. J. M. Fortescue-Brickdale.
4. Leprosy and Kedrowsky's Bacillus. H. Fraser and W. Fletcher.

1. **Trypanosomes.**—By Sir David Bruce. (See page 159.)

2. **The Right-Sided Murmurs of Mitral Stenosis.**—Sir James F. Goodhart states that there occurs in the later stages of mitral stenosis a regurgitant murmur over the right ventricle, and, as the author believes, at the tricuspid orifice, as a result of hypertrophy and dilatation of the right side. These changes may be so extreme that the right ventricle comes to occupy the place of, and thus to simulate, the left ventricle at the surface, and therefore to get at the left it is necessary to go round to the inferior angle of the scapula. Further, not only is the ventricle dilated but the pulmonary artery also, and the sigmoid valves are more or less incompetent and then there is generated a peculiar diastolic murmur at the orifice of the pulmonary artery that often has something in it of the quality of a venous murmur; it is long and sustained and sometimes musical. This murmur is quite distinct from the diastolic murmur that is supposed to be a long or early presystolic bruit. Among the notes of eighty-four cases of mitral stenosis the author finds one or other of these murmurs to be present in seventeen of them—the tricuspid murmur alone in seven; the pulmonary artery diastolic alone in six, and the two in company in four others. It may be said that if the quasi-mitral murmur be tricuspid, as the author maintains, the regurgitation would necessarily produce a reflux in the veins and appear as a pulsation in the neck, with other evidences of backward pressure, but it is a fact that in some of these cases there may be no such pulsation. The outlook in mitral stenosis is in most cases good for a number of years. As regards treatment the author believes that digitalis often does harm in mitral stenosis and that convallaria is as a rule more useful. Opium is often better still, by steadying the heart's action, and perhaps better than all in bad cases come leeches or venesection. Diet also needs consideration. Many of the patients are comfortable only when the meals are of the smallest. A patient suffering from mitral stenosis should never be laid up if it can be avoided, for if once he takes to the recumbent posture he is probably in for a slow decline of a very distressing kind.

3. **Congenital Hemihypertrophy.** — J. M. Fortescue-Brickdale reports the case of a male infant nine months of age in whom several months after birth the whole of the right side of the body was noticed to be larger than the left. The condition was recognized as one of congenital hemihypertrophy, of which there are the following groups: (1) Congenital elephantiasis or trophedema; (2) simple congenital hypertrophy of one or more limbs or of one side of the body ("true" or "false"); (3) intermediate cases, in which there is some general hypertrophy of a segment of the body and also a congenital tumor of a special tissue, and (4) congenital tumors involving a limb. The case described falls into the second group, the main characteristics of which may be summarized as follows: The condition is congenital and may involve a large or small area of the body, from a few digits to the whole of one side. The hypertrophy involves all tissues, but is more marked in the soft structures than in the bones, and thus usually affects the girth more than the length of the limbs. In one remarkable case reported by Reissmann the right side of the body and the left side of the head were involved, while in Ballance's case there was hemihypertrophy of the left side of the face with enlargement of the second and third toes of the left foot, and the third and fourth of the right. The boy was also said to be "rather simple." In Friedrich's case the opposite arm and leg were involved. The appendages of the skin, nails and hair, may or may not be involved; and in some instances the temperature on the affected side is higher. The right side is said to be more frequently enlarged

than the left and the lower extremity than the upper. Males are more frequently affected than females, and there is very seldom any family history of other congenital deformities, though occasionally a neurosis has existed in the parents. Thus, in Hornstein's case the mother was insane, and in that of Adams the father was dissolute. In one instance cited by Leblanc several members of a family exhibited congenital hypertrophy of the left hand.

British Medical Journal.

June 26, 1915.

1. Trypanosomes Causing Disease in Man and Domestic Animals in Central Africa. Sir David Bruce.
2. What Mankind May Have Lost Through Evolutionary Development. A Moral Enthymeme. W. A. Hollis.
3. The Early Treatment of Projectile Wounds by Excision of the Damaged Tissues. E. T. C. Milligan.
4. Non-tuberculous Hip Disease Successfully Treated by Double Splint and Over-Abduction. R. Parker.
5. A Case of Concealed Accidental Hemorrhage: Spontaneous Delivery: Recovery. R. B. Johnston.
6. Technique of Analgesia in Intranasal Surgery. W. Wilson.

1. Trypanosomes.—Sir David Bruce, in discussing the geographical distribution of these parasites, states that they are found in most parts of the world—from South America through Africa,. Southern Europe and Persia to India, Burma, China, and the Philippines. In Africa there is a broad equatorial band, representing the trypanosome diseases carried by tsetse flies. It shows the distribution of *Trypanosoma gambiense*, the cause of the ordinary or Congo sleeping sickness, and of *Trypansoma brucei*, the cause of nagana in animals and the Rhodesian and Nyasaland form of sleeping sickness or trypanosome disease in man. Further north out of the tsetse fly region there is *Trypanosoma equiperdum*, the cause of dourine, which is widely distributed in Europe. The area of *Trypanosoma evansi* or surra spreads out of Africa along the camel caravan routes into India and China.

3. Excision of Damaged Tissues in Treatment of Projectile Wounds.—E. T. C. Milligan advocates the extirpation of the devitalized tissues in the early treatment of projectile wounds. Under local or general anesthesia the wound of the skin is boldly cut out with a sharp scalpel. It should be so completely removed that a clean healthy incised wound replaces the contused and infected wound made by the projectile. There should be nothing of the old wound remaining. The wound of the superficial and deep fascia and of the muscle is dealt with in the same fashion. The removal of loose and fixed bits of obvious foreign and dead matter is, of course, essential. Ample exposure and drainage of the wound is necessary, and those wounds which are too extensive after the above treatment to retain a drainage tube do better than those in which a tube is necessary on account of their depth and narrowness. By this procedure the wound is put in the best possible conditions for the bactericidal actions of the tissues and the outpoured lymph. It is not wise to impair the resisting and offensive powers of the artificially obtained healthy tissue surfaces by the use of strong or injurious antiseptics. This method, when combined with the surgical essentials of perfect rest, cleanliness, and frequent suitable dressings, has resulted in the healing of projectile wounds, without any appearance of pus in wounds of the skin and of the superficial fascia. In the treatment of some wounds of bone and muscle anatomical problems have prevented these principles of treatment from being thoroughly carried out, so that the results have not been as good. There have been no cases of generalized blood infection, nor of any spreading infection in the neighborhood of the wound.

6. Analgesia in Intranasal Surgery.—W. Wilson describes his technique as follows: One hour before the commencement of the operation a hypodermic injection of ¼ grain of morphine with 1/100 grain of atropine sulphate should be given and the nasal passages packed with gauze soaked in equal parts of 10 per cent. cocaine and suprarenal extract. This should be done with reflected light, so that narrow strips can in most cases be passed behind a marked deviation. The patient should be allowed to remain as quiet as possible for thirty minutes, when he is transferred to the operating table and the gauze strips are removed, a small portion of cotton-wool being inserted far back in each nostril to soak up any overflow from the following infiltration of urea-hydrochloride-quinine solution. In the case of an operation upon the nasal septum three points for injection will suffice on each side; these points are at the angles of a triangle with the base corresponding to the junction of mucosa and skin just behind the anterior nares and the apex over the vomer, its exact position being dependent upon the area infiltrated by the two injections in front. If the inferior turbinals are to be removed two injections will suffice on each side, one just behind the anterior extremity and the other at the junction of the middle and posterior thirds. The syringe employed should be all metal and the needle of the finest aperture procurable with beveled tip without point. Dental needles are most convenient. The solution employed should be 1 per cent. quinine-urea-hydrochloride, and the amount injected should not be stinted. The nose is again packed with gauze wrung out of the cocaine-suprerenal extract solution, and in about twenty-five minutes the operation is commenced. The hemostasis is perfect, and the analgesia is so thorough as to be truly anesthesia, even the tactile sensibility being in most cases destroyed. There is but little emotional distress. The analgesia persists as a rule for about eight to twelve hours. There is no subsequent distress, and the patient is free to go about his business in about twenty-four hours. In consequence of the exudation caused by the quinine-urea solution, there is some after-swelling, but this seems to minimize the possibilities of postoperative oozing. It is quite possible to drain and explore the antrum of Highmore by this method.

British Medical Journal.

July 3, 1915.

1. The Identification of the Pathogenic Members of the Typhoid-Colon Group of Bacilli. J. H. Smith.
2. The Croonian Lectures on Trypanosomes Causing Disease in Man and Domestic Animals in Central Africa. Sir David Bruce.
3. Nerve Suture for Bullet Wounds. R. A. Stoney and H. Meade.
4. Localization of Foreign Bodies by X Rays. J. H. Shaxby.
5. Note on the Treatment of the Symptoms Arising from Inhalation of Irritant Gases and Vapours. W. L. Symes.

3. Nerve Suture for Bullet Wounds.—R. H. Stoney and H. Meade conclude that the function of a nerve may be interrupted without material injury, in which case the loss of function is only partial and returns early, probably always within a fortnight or three weeks. When a nerve is partially or wholly divided loss of function is marked and permanent, and may even tend to increase. In these cases it is useless to expect spontaneous regeneration owing to the distortion and separation of the cut ends and the great development of dense fibrous tissue which appears to follow in all cases. When a nerve is divided, the sooner an operation for its suture is performed the easier it is and the greater the likelihood of an early cure. In cases, however, in which the wound is septic, it may be advisable to allow time for the wound to heal. Even when nothing has been done for several months, there is still a chance of a successful result if late suturing

is undertaken, so that no case need be looked upon as necessarily hopeless.

5. **Treatment of Irritant Gas Poisoning.** — W. L. Symes finds that of the drugs that have been tried stramonium has, so far, been the most successful. Mixed with a little niter it is readily ignited and smoulders freely. The fumes should, for obvious reasons, be inhaled through the nose rather than through the mouth. Overdosage from absorption of the active principles—atropine, hyoscyamine, hyoscine—through the pulmonary alveoli will be shown so clearly by thirst, by dilatation of the pupil, and by acceleration of the pulse, that dangerous dosage should be readily avoidable. Moreover, it may be anticipated that early and repeated administration will diminish the distressing bronchorrhea of the later stages of gas poisoning. Lobelia, tobacco, and perhaps opium, may fairly be tried, either alone or with stramonium. The objections to the use of opium fumes are obvious and serious. But in the absence of relief from other sources, and given adequate ventilation of the ward, these objections do not suffice to debar a careful trial. Chloroform and amyl nitrite appear to be objectionable, and their use, if adopted, should be carefully watched.

Berliner klinische Wochenschrift.

May 31, 1915.

War Aphorisms of a Dermatologist—Cold Feet. — Unna discusses the causes, prevention, and treatment of cold feet. Most soldiers on march who wear leather foot covering have cold feet when the ground is frozen or the weather wet and cold, and when the weather moderates their feet become warm again. Certain others have cold feet all the time and it is not easy to warm them. Not a few never know what it is to have warm feet from autumn to spring. Their feet have to be warmed artificially by wearing felt, or going into heated rooms, and at night they require hot bottles, etc. Such feet may also become warm after vigorous walking. The subject of cold feet has been shockingly ignored. Those who suffer from them have trouble in going to sleep and in concentrating their minds. There is apt to be congestion of the encephalon, and desire for frequent micturition. Cold feet become warm if one removes his socks and places the bare members in boots lined with felt or wool. The laity wrap their bare cold feet in newspapers. Paper is warmer than double socks. The most important requisite for cold feet is moisture; not moisture from without, but that from within, *i.e.* perspiration. This is exhaled from the skin as aqueous vapor, which condenses in the socks and transforms the latter into moist dressings. The constant evaporation of the perspiration necessarily produces cold feet. Dry feet and dry socks could not produce cold. The reason why one person's feet are cold and another's are warm lies in the different tonus of the blood vessels. If this is increased a free circulation of blood is prevented and vice versa. As a substitute for woolen socks, cotton or paper may be "sized" with some substance like resin to render them waterproof. A special sizing may be prepared from collodion, colophony, castor oil, alcohol, and ether. The sock should be inverted and the foot part saturated with the sizing. The soldiers say of them that they are the first warm socks they have ever worn. Their woolen socks may also be sized and are an improvement on unsized ones. In addition, the sole of the foot may be rubbed daily with some fatty ointment, such as tallow mixed with linseed oil. Boots should be worn a size or two too large, so that the empty space may be filled with paper. "Pulse warmers" over the ankle are as serviceable as those worn on the wrists. All these measures are of use in trench warfare.

Treatment of Wounds Due to Shell Fragments.—Israel states that in wounds due to shell splinters the latter should invariably be removed. The wound canal, whether this is penetrating or superficial, must always be freely exposed, and if possible before transportation. Unlike a bullet wound, which is presumably sterile, a shell fragment wound is to be regarded as presumably infected. Shrapnel bullets from this viewpoint are classed with ordinary bullets. It is from shell fragment wounds that we have to fear the development of tetanus and gas gangrene. Some of these wounds may appear benign. The canal is easily exposed and the shreds of dead tissue and clothing easily removed. The wound remains clean and the patient develops no permanent fever. This favorable course, however, is due entirely to the prompt and thorough treatment. In regard to dressings, moist ones are to be preferred, in contrast to the dry dressings indicated in bullet wounds. But the dry dressing must be used during transport. Moist dressings must be changed at least once daily, and, as soon as the wound has cleaned up, an ointment dressing gives much greater comfort than ordinary wet applications. The author does not discuss individual applications.

Münchener medizinische Wochenschrift.

June 1, 1915.

Ethylhydrocuprein in Pneumonia. — Mendel gives a number of case histories in which this substance under its shortened but proprietary name has been used in lobar pneumonia. It was originally introduced as a synthetic derivative of and substitute for quinine. Under its use recovery occurred in a man of 63 with marked arteriosclerosis and sclerosis of the coronary arteries. Like quinine ethylhydrocuprein has been known to cause amblyopia and tinnitus aurium. The latter can hardly be avoided, but amblyopia, although a transitory phenomenon, apparently does not need to develop. The author keeps the patients on milk and has never seen amblyopia in cases thus dieted. He regards the drug as an absolute specific against the pneumococcus in whatever kind of infection. To claim an efficiency without regard to local factors would be unwise before the remedy has been tested in remote localities, in epidemics, etc. It is not claimed that it is a true germicide, but it may be regarded as an antiseptic or disinfectant which hinders the multiplication of the pneumococcus and weakens its vitality. It must therefore be exhibited in such a manner as to meet fresh exacerbations of germ activity. In this way it acts as an aid to the defensive bodies in the blood, and the broken dose appears to be indicated in place of a therapia magna sterilisans.

Rupture of the Uterus from the Use of Pituitrin.—Züllig refers to the repeated reports of this accident in literature and adds a case in point. The cause nexus comprised abnormally large child, elderly woman (XIII-para) with narrow pelvis and forceps delivery and finally the use of pituitrin. History of artificial premature delivery and perforations. Previous reported cases include the following: Knoop's case, V-para, rupture of uterus after one injection; Herz's case, I-para, age 20, flat rachitic pelvis, rigid os, tetanus uteri and rupture; Espent's case, woman who had had seven normal labors, some disproportion between child's head and mother's pelvis; Stöcker's first case, generally contracted pelvis in a II-para; Stöcker's second case, normal pelvis, previous labors normal, cervix patent, his-

tory of recent abortions and curettings, general condition poor. This last case is seen to differ notably from the rest and gives a new contraindication to the use of pituitrin when the mechanism of labor is normal. In contracted pelves there is very often a history of premature accouchement, perforation of fetal head, etc., representing a vicious circle. Septic abortion also tends to impair the uterine musculature. Hence, next to mechanical impediments to labor the most important factor appears to be intracervical and intrauterine interventions, including dilatation of the cervix, curettage, induction of labor with bougies, etc., perforation of fetal head. The result of such interventions is a weak spot—a cicatrix—in a uterus perhaps already insufficient for the demands upon it. Add to this the violent inception of the pains as a result of the action of pituitrin, and it is evident that the uterus may tear at its weak spot. In the great majority of cases mechanical dystocia will be superadded.

Deutsche medizinische Wochenschrift.

May 27, 1915.

Neurasthenia Cordis. — Graul states that idiopathic cardiac neuroses arise on a substratum of constitutional neurasthenia. The nervous system is functionally inferior, and when local organs are subjected to stimulation a heightened irritability is seen, along with functional insufficiency. The heart is innervated by the vegetative nervous system—vagus-sympathetic—the center for which is in the floor of the fourth ventricle. This center is affected by psychomotor impulse and both organic and functional states of the brain may exert an influence on the heart. Aside from the vagus center the vasomotor center plays a prominent role in the cardiac activity by its action on the blood-pressure, and organic disease of the peripheral vessels likewise directly influence the cardiac activity. The idiopathic cardiac neurosis is equally distinct from organic heart disease and from the toxic and reflex functional anomalies of the otherwise sound heart. Not every neurasthenic has a neurasthenic heart. In fact, the latter may at times be attributed to a congenital imperfection of the vegetative nervous system, seen in connection with habitus asthenicus, lymphatism, etc., which in turn may be due to insufficiency of the endocrine glands. The vegetative nervous system in these patients is extremely unstable, irritably weak, and functionally insufficient as shown by its exhaustibility. The influence of the vagus over the heart, whether through stimulation or paralysis, has been extensively studied and a cumbrous nomenclature has come into use which refers in part to the action on various portions of the heart of the altered vagus innervation. For example, heteroptic stimuli give rise to the extrasystole. Whereas arrhythmia was once regarded as pathognomonic of myocarditis we now know that it may have a purely nervous mechanism. The well known respiratory pulse is so well marked in neurasthenic heart as to be arrhythmic and is almost pathognomonic of the latter. In estimating the relations of cardiac activity to blood pressure it must be remembered that while muscular exercise increases the latter and fatigue diminishes it, the psyche also modifies it through the vasomotor center. Also that in diminished tension the vascular wall is more supple and the pulse has a greater amplitude—just as in increased blood-pressure the amplitude is decreased. In other words, systolic pressure and pulse pressure vary inversely. The systolic pressure does not fall in cardiac weakness. When a subject lies down the pulse slows, but its amplitude is increased. Bodily effort first quickens respiration, increases systolic pressure, and both the amplitude and rate of the pulse. Upon cessation the healthy heart quickly becomes normal, while with insufficiency there is not only no increase of blood pressure, but often a fall. If the peripheral resistance is increased, as by compressing the femorals, the blood pressure rises without increase of frequency, while in an insufficient heart the bloodpressure falls and the pulse is increased. Pressure on the apex of the heart causes a smaller, more rapid pulse in insufficiency. Also in the latter condition standing up after previous recumbency causes considerable disturbance. There is persistent and considerable increase in frequency, arrhythmia, rapid, even dyspneic respiration. The latter may be of the asthmatic type, and then occur by preference at night when the pulmonary circulation pressure is increased as a result of recumbency. In cardiac neurasthenia small heart, "drop" heart and cor mobile are often seen as evidences of constitutional inferiority. There are also tender pressure points over the heart and vicinity—notably under the nipple—and pressure upon these may react as changes in the frequency of the heart beat or its rhythm. Further study of these subjects will show the pressure of a very unstable vasomotor system. The last may be so much in evidence that a separate form of neurasthenia cordis—the vasomotor—has been isolated. Whenever any one symptom common in neurasthenia cordis stands out very clearly above others the latter affection may be excluded. Thus extreme, persistent tachycardia would mean something more than neurasthenia. Neurogenic angina pectoris not a part of the syndrome of neurasthenia cordis. In the latter affection we often find an accidental systolic murmur, heard as a rule over the pulmonary artery, accentuated second pulmonic tone, and duplication of the latter—these indicating a stasis in the lesser circulation. In the present war neurasthenic heart greatly limits the soldier's usefulness if it does not destroy it outright. It is not enough to state that these men are "nervous." They are really ill and require treatment.

Hookworm in a Schoolboy in New York. — Recently while examining the children in a public school in Brooklyn, the attention of the medical inspector, Dr. Max Lederer, was called to a boy 14½ years old, who persistently fell asleep during school hours. Despite his age, the boy was only in the 3B Class and in response to questions made only indefinite replies. Dr. Lederer thereupon consulted the boy's mother and learned that the family had lived in New York only since November, 1914, prior to which time they had been in Jamaica, West Indies. It was further learned that the boy suffered with somnolence at home as well as at school; that he had a voracious and perverted appetite, that he was markedly constipated, and that his mentality was subnormal and sluggish. A physical examination showed a thin, markedly anemic, sleepy-looking, undeveloped boy. Examination of the blood indicated a high degree of anemia and revealed also an eosinophilia of 14 per cent. Examination of the stools was then undertaken and typical ova of the hookworm were found. In association with these were found a few eggs of the tricocephalus dispar. The boy was advised to submit to the approved treatment with thymol and epsom salts. After the second administration of this remedy, the adult hookworm was found in the stools. Since this treatment the boy has entirely lost his sleepiness, he has gained in weight and his mental sluggishness has disappeared.—*Department of Health Weekly Bulletin.*

Insurance Medicine.

Substandard Lives.—In the *Canada Lancet* for May, 1915, Dr. John Ferguson discusses substandard lives. He says that in the first place there are applicants who present a short-lived family history. The relatives that have died have fallen many years short of the expectancy. There is no special tendency to any disease, but there seems to be a lack of endurance. An estimate should be made of how far such family histories fall short of the expectancy of life, on some reliable recent table, such as that of the National Fraternal Congress. Suppose that the deaths of the applicant's relatives point to lowered expectancy to the extent of eight years. The applicant himself is in his thirty-third year and by the National Fraternal Congress table should have an expectancy of 35.4 years. Now, if we reduce this by eight years, we have an expectancy of 27.4 years, and this corresponds to age 43. The applicant, if accepted at all, should be charged the assessment rate corresponding with age 43 and not that for 33, his actual age of entry. His actuarial age of entry is 43. The reduction of eight years in his expectancy has the effect of rating him up ten years.

Turning now to another group of applicants, namely, those who have had syphilis. According to Gowers, Fournier, Florschütz, Blashko, and others the percentage of males infected throughout Europe ranges from 10 to 20. The results of investigations into the mortality experience of insured syphilitics in America and Europe show that it is at least 188 per cent. of the expected. To admit one who has had this disease on the same rate as a healthy person who has not been infected is clearly unfair to the latter. It has been advocated that the age of syphilitics should be rated up to five years, and a candidate of 35 years be called upon to pay as if he were 40. But this is clearly not enough to meet the extra death rate. When one considers all the dangers of the disease, such as gummata, paresis, tabes, arterial degeneration, and so on, Ferguson contends that the average expectation of life of syphilitics is reduced by at least ten years. Now, how would this apply. An applicant seeks admission at the age of 40 who has had this disease. The expectation of life at 40 is 29.9 years. If this be lessened by 10 years the real expectancy becomes 19.9, and this corresponds to age 53. The candidate would have to be charged for this age, if admitted at all.

The next group of applicants that should receive special consideration are those who use alcoholic beverages or are engaged in the manufacture and sale of alcoholic stimulants. Outside of those who use alcoholic stimulants in the most moderate manner, this class yields a much higher mortality than the strictly temperate and abstaining numbers. As a class these applicants must be rated up from 10 to 20 years, according to the amount consumed, and the kind of occupation they follow in connection with the liquor trade. Thus a man of 40 who admits that he consumes alcohol in moderation should be rated up to 50 and pay as of this age. Those engaged as bartenders, employed in breweries and distilleries in the manufacture of liquors, and travelers engaged in the sale of alcoholic products, should be rated up to 20 years. Those who lie between the moderate users and the bartenders or such as imbibe to the extent of periodic drinking bouts, should have at least 15 years added to their ages, so that a man of 30 would be charged the rate of one of 45.

As for overweights, an increase of 5 to 10 pounds over the average for the applicant's height and age will yield an increase of 3 per cent. over the expected standard, then the death rate will go up after mid-life at least 20 per cent. When the weight is 25 to 45 pounds greater than the average, the mortality for 43 years of age and upward will be increased to the extent of 40 per cent. If the person carries from 50 to 80 pounds too much weight the mortality for ages 40 and over will be increased about 60 per cent. Such applicants should be rated up so that the assessments they shall be called upon to pay will meet tihs extra mortality. In such cases they must be regarded as of such an age as will increase their assessments corresponding to their ages and by amounts ranging from 25 to 75 per cent.

With regard to underweights it may be remarked that they do not yield an extra mortality after mid-life. Prior to the age of 40 they yield a higher mortality than the expected. As a class they should be rated up so as to increase their contributions about 15 per cent. By underweight is meant from 20 to 45 pounds below the standard for age and height.

All applicants with a high blood pressure should be subjected to a very careful examination before admission. In the ages from 20 to 35 blood-pressure is not of much importance, but after 35 it becomes increasingly important year by year. A constant pressure of 150 mm. points to some pathological process, even though it may not be discovered. Fistula in ano is a condition that must receive careful consideration. Glycosuria is a form of substandard risk that must be dealt with firmly. The presence of albumin and casts in the urine must also be carefully dealt with. In mid-life when it appears the albumin should be tested several times. With regard to casts, Ferguson does not think so lightly of their presence as some authorities. Few cases call for more careful consideration than a history of pleurisy in the applicant or his family history. Cardiovascular disease calls for refusal in about all cases.

With respect to the acceptance of cases of inflammatory rheumatism, it might be laid down as a rule that if the applicant has had only one attack, not more recently than two years, and that the condition of the heart is quite normal, he may be accepted. On the other hand, if the attack is more recent than two years, or if he has had two or more attacks his application should be refused.

From what has been said it will appear that several plans might be adopted. One of these is placing a lien against the certificate. But societies cannot very conveniently adopt this method. A second plan is that of imposing an extra premium or assessment. The third plan is that of regarding the applicant as a certain number of years older than he really is.

Notification of Disease Occurring Between Application and Acceptance.—That an applicant for life insurance who has answered "No" to an inquiry whether or not he had ever had renal colic is bound to notify the insurer if he has such an attack before the policy is issued, is held in the Tennessee case of Harris v. Security Mut. L. Ins. Co. L.R.A. 1915C, 153.

Book Reviews.

FEDERAL NARCOTIC RECORD BOOK. A daily record of narcotics dispensed or distributed. Price 25 cents. Chicago: The Abbott Alkaloidal Company.

EVERY practising physician requires a narcotic record book of some sort. The present volume is of very handy size, and contains (besides the necessary blank pages) a form for inventory and affidavit. There is also a digest of the Federal Antinarcotic Law, as it affects physicians, pharmacists, veterinarians and dentists. It is a pity that it was thought necessary or advisable to insert advertising matter inside the cover and on the fly-leaf; the presence of such matter detracts from the value of an otherwise desirable volume.

THE CHEMISTRY OF CYANOGEN COMPOUNDS AND THEIR MANUFACTURE AND ESTIMATION. By HERBERT E. WILLIAMS. Price, $3.50. Philadelphia: P. Blakiston's Son & Co., 1915.

THIS book contains an account of the chemistry of the cyanogen compounds, their composition and properties, and a description of the manufacture, application, and estimation of such compounds as are met in commerce. The author has rescued much of the information on the subject that is scattered through the scientific press, and has added the results of his own work. The book is not one that comes within the range of reading of the average medical man.

THE BOOK OF PHARMACOPŒIAS AND UNOFFICIAL FORMULARIES. Containing the Formulas of the British, United States, French, German, and Italian Pharmacopœias, together with Formulas from Unofficial Sources, as the British Pharmaceutical Codex, the National Formulary of the United States, the Pharmacopœias of the Principal London Hospitals, etc., the whole comprising about 5,000 Formulas. By E. W. LUCAS, F.I.C., F.C.S., Pharmaceutical Chemist; late Examiner to the Pharmaceutical Society; Member of the British Pharmacopœia Reference Committee; Author of "Practical Pharmacy," "The Book of Prescriptions," "The Book of Receipts," etc. And H. B. STEVENS, F.I.C., F.C.S., Pharmaceutical Chemist; Lecturer on Pharmacy and Materia Medica in the Southwestern Polytechnic Institute. Price $3.00. Philadelphia: P. Blakiston's Son & Co., 1915.

THIS volume contains in a handy form a conspectus of the chief formularies and pharmacopœias. The work will be of special value to pharmacists; but physicians whose reading extends to foreign literature will find the work of use in enabling them to compare the preparations of other countries with those of their own. Thus, to take but one illustration, reference to page 320 will show the difference in the composition of Dover's powder in the Pharmacopœias of Great Britain, the United States, Germany and Italy, and in the French Codex. At the end of the book will be found an alphabetical table of the French, German and Italian vegetable Materia Medica, together with the common English equivalents.

SELECTED ADDRESSES on Subjects Relating to Education, Biography, Travel, etc. By JAMES TYSON, M.D., LL.D., Professor of Medicine, Emeritus, University of Pennsylvania. Price, $1.75. Philadelphia: P. Blakiston's Son & Co., 1914.

THESE addresses were delivered on various occasions between the years 1884 and 1912. Like most volumes of this class, the value of the contents is that of the occasions on which the addresses were made. The present collection is interesting and, while there are no oratorical flights, the "efforts" are all characterized by sturdy common sense and healthy and honest ideals. Two of the papers seem to us to be of more than ordinary value, namely, those on Hospital Organization and The Trained Nurse. Pupils and admirers of Dr. Tyson—and they are many—will be glad to possess this volume.

DIABETES MELLITUS. Designed for the Use of Practitioners of Medicine. By NELLIS B. FOSTER, M.D., Assistant Professor of Medicine, Cornell University; Associate Physician to the New York Hospital. Price, $3.00 net. Philadelphia and London: J. B. Lippincott Company, 1915.

THE amount of literature that has grown up about the subject of diabetes mellitus is nothing short of appalling to the man who is anxious to learn the essential facts about the disease. A great part of this literature consists in acrimonious criticism or undiscriminating support of some theory or other, so that only a trained and enthusiastic worker is able to separate the true from the false. Foster is apparently such a trained enthusiast, who has attempted to write "a critical presentation of the evidence as it exists at present." He attacks his problem in a logical, orderly manner and because he understands the subject so thoroughly is able to present it in a form that is easily understandable. His critical ability is nowhere more prominently shown than in the chapter on Acidosis, where he demonstrates how well he has learned from Pflüger how to differentiate between "what may be and what is proved to be" (note p. 47). He shows clearly that according to our present evidence, ketonuria is a result of carbohydrate deprivation whether due to a carbohydrate-free diet or to the inability of the body to use carbohydrates. "There is no essential difference between the ketonuria of sugar-starvation and severe diabetes." The chapter on History is but three pages long, yet covers the ground thoroughly. It is, however, in his discussion of the treatment of this disease that he will be of the greatest help to his fellow-clinicians. Patiently and in great detail he considers one point after another, giving sample diets and recipes, and leaving nothing to the imagination. Of equally great importance is a brief chapter on the Identification of Sugars, with which the book closes. There is no work which handles the subject as well or which will prove of such benefit to the clinician in the treatment of his diabetic patients.

TRANSACTIONS OF THE AMERICAN SURGICAL ASSOCIATION. Vol. XXXII. Edited by ARCHIBALD MACLAREN, M.D., Recorder of the Association. Philadelphia: William J. Dornan, 1914.

IN this volume we have the usual lists of officers and members, a section devoted to short biographical sketches of fellows deceased during the previous year, and the papers read at the annual meeting of the Association in New York, April 9, 10, and 11, 1914. The fellows deceased since the last volume of the Transactions was issued include Maurice H. Richardson, Nathan Jacobson, Arthur T. Cabot, Roswell Park, and Joseph D. Bryant. This volume, as usual, contains papers of a high degree of excellence, and it is also enriched by the contributions of a number of visiting surgeons from abroad—Nicolaysen, of Christiania; Henri Hartmann, of Paris; E. Panzi, of Vienna; H. Kümmell, Hamburg-Eppendorf; Richard Sparmann, Vienna; Robert Proust, of Paris; Antoine DePage, of Brussels, and Professor Rehn, of Frankfort. Since all the papers have been published elsewhere, comment on them is unnecessary except that their collection in one volume makes this copy of the Transactions a highly valued addition to one's library.

BURDETT'S HOSPITALS AND CHARITIES, 1915. Being the Year Book of Philanthropy and the Hospital Annual. By Sir HENRY BURDETT, K.C.B., K.C.V.O., author of "Hospitals and Asylums of the World," etc. Twenty-sixth year. London: The Scientific Press, Limited.

BURDETT'S Hospital and Charities is *sui generis* and an almost indispensable work of reference to the physician and surgeon, and especially to those who are interested in the progress and well-being of hospitals and charities. It is true that in this country, as in Canada, hospitals are not conducted on the system of charity prevalent in Great Britain, but at the same time the book is such a mine of information that it is nearly as useful to the American practitioner as to his British confrère.

The present volume is a revised form of the twenty-fifth volume and contains many important alterations and some useful additions. It is pointed out that national insurance in Great Britain has materially affected the admissions to and consequently the accommodation at and position of many infectious hospitals throughout the country. It is also worthy of notice that owing to the chaotic condition of hospital accounts in the United States and the difficulties experienced in acquiring accurate information regarding hospitals in the United States, Canada, and Australia, the information given concerning such institutions in these countries is neither so full nor so reliable as one could have wished. However, considered from all standpoints the book is unique and a credit to the painstaking zeal of Sir Henry Burdett and his collaborators.

Society Reports.

AMERICAN ASSOCIATION OF IMMUNOLOGISTS.

Second Meeting, Held in Washington, May 10, 1915.

THE PRESIDENT, DR. GERALD B. WEBB, COLORADO SPRINGS, COLO., IN THE CHAIR.

The Value of Vaccines in Certain Diseases of the Ear, Nose, and Throat.—Dr. GEORGE M. COATES of Philadelphia presented this communication, limiting his discourse to the more common uses of this form of therapy and to the cases in which one might expect success, mentioning briefly some of those in which success could not be expected. He stated that his conclusions were drawn largely from his own work and that of his friends and colleagues in Philadelphia, though he had had due regards to the reports in the literature. Successful vaccine therapy of the ear, nose, and throat was not as easy as it might seem. It did not consist in buying a bottle of mixed vaccines and giving hypodermics according to the label on the bottle. Some good results might be thus obtained, but there would be many sad failures. Close study must be made of the individual case and the reactions observed to determine all but the first dose. A good autogenous vaccine was usually superior to any other form, but it was not to be contended that a good commercial product was not better than a poor autogenous one, and a poor commercial one was no worse than a poor autogenous one. A stock vaccine could be kept ready for use at a moment's notice and was of value in cases in which an autogenous preparation could not be used, as for prophylaxis. For immunization against acute rhinitis where a variety of organisms were usually found, a commercial mixture or some or all of these organisms was selected, and three or four injections given at three or four days intervals, the dosage depending somewhat on the individual, the age, size, etc. Whatever the initial dose might have been it was usually doubled for each succeeding dose, unless there was too marked a local or general reaction. This should insure the ordinary person against an attack for some months, but in very susceptible individuals the entire course might have to be repeated. The failures as a rule were in those particularly susceptible to colds, and having one after another in close succession. Most of these, however, had the duration of the attacks lessened and the interval between them lengthened. The treatment of acute rhinitis was exactly the same as for prophylaxis except that it was pushed a little more vigorously and continued until the trouble had been conquered. Following the first dose, and this was true of all the conditions considered, there would probably be some exacerbation of the patient's condition with increased discharge which soon cleared up in favorable cases. This reaction was regarded as a favorable omen. Chronic rhinitis was to a certain extent also influenced by bacterins, but here the treatment must be extended and the patient closely watched lest he become overtreated. Suppurations of the accessory nasal sinuses were not much relieved by vaccine therapy until adequate drainage had been established. In chronic sinusitis it was usually necessary to enlarge the normal ostium or make a large artificial opening before much could be expected from the use of vaccines. In acute cases the results were good for the most part and a stock suspension might be used in order to get quick results, at least until an autogenous one could be prepared. It would not do to give vaccines for any acute headache that seemed to be of nasal origin; the diagnosis must be established. There were certain cases of chronic sinusitis in which vaccines prepared the way for operation. Recurrent furuncles about the alae nasi and close to the alar cartilages, usually caused by one of the staphylococcus group, yielded in a most satisfactory manner to vaccine treatment. Treatment was usually started in these cases by a stock suspension of staphylococcus aureus and albus, and if this was not successful, an autogenous vaccine was made later. This also applied to furunculosis of the external auditory canal. In atrophic rhinitis and hay fever the vaccine treatment had not been particularly gratifying. The treatment of diseases of the ear by bacterins had yielded surprisingly good results although some were still skeptical regarding it. Considering the close relationship between nasal and aural infections, it was only reasonable to suppose that if ear patients could be immunized against nose and throat infections one was in a much better position to treat the ear disease. In chronic catarrhal deafness astonishing results could not be looked for. In cases of acute suppurative otitis media of scarlatinal origin the writer was quite sure that by the use of autogenous vaccines the duration of the disease was materially shortened and many cases were kept from drifting into the chronic class. During the past winter the author and his assistant, Dr. M. S. Ersner, had made autogenous vaccines for about 42 chronic cases of suppurative otitis media at the Pennsylvania and Polyclinic Hospitals and so far they had obtained dry ears in about 40 per cent. These cases had all been carefully selected as having had and resisted all the usual forms of treatment and they took no account of improvements. An ear must have ceased entirely to discharge in order to be considered cured. They had also been successful in a number of instances in which the *Bacillus pyocyaneus* was the infecting agent. Improvement in general health and resistance to other forms of infection were observed in those that responded favorably to the vaccine treatment. There were many factors that mitigated against the potency of a vaccine, and in nose and throat work a frequent cause of error was in taking the culture. It took a trained aurist to take an uncontaminated culture from the middle ear or naso-frontal duct. The essayist said his method was as follows: The external canal, membranæ tympani, and middle ear were cleaned thoroughly by means of suction apparatus and cotton swabs. Alcohol or alcohol and bichloride were then rubbed back as far as the drum to sterilize the external canal. By inflation through the Eustachian tube or by suction to the external meatus pus was forced from the recesses of the attic by a tube mouth. The culture was then taken with a platinum pool, or a very small amount of cotton wound on a steel applicator thoroughly sterilized. If no results were obtained after a few injections of a vaccine it was considered impotent and a fresh one prepared. The organisms found in by far the greater number of their chronic middle ear suppurations were the *Staphylococcus aurcus* or *albus, Bacillus pyocyancus* and diphtheroid bacilli. The pneumococcus was found much less frequently; *Staphylococcus citrus* was found twice and the organism of Vincent's angina twice. Since employing the technique just outlined pure cultures were frequently obtained, whereas by the older methods it was not unusual to find two or three organisms in the culture. Streptococci were often found in the acute cases but rarely in the chronic ones.

Dr. FREDERIC E. SONDERN of New York said he was very much interested in the paper of Dr. Coates because it had been his fortune to see specimens of the type he described and he would like to agree with him in reference to what was said in regard to the use of the autogenous vaccines. He had seen repeatedly good results following their use. He was present when Nagel read his paper before the Triological Society in Washington and his results were astonishing in vaccine therapy. His description of the negative and positive phase interpreted clinically was beautiful and showed a very close observation. Dr. Sondern knew of many otologists who tried to follow out the methods of Nagel but with little or poor results. In ear cases the successful outcome following the use of the vaccines depended upon the condition in the ear. If there was dead bone present they would not get the results desired. The same thing applied in using vaccines in cases of sinus disease and inflammations of the mucous membrane in the nose. Dr. Sondern, however, had seen very gratifying results following the use of the vaccines; but if the nose was so occluded that the patient could not draw air through, especially if there was a sinus obstruction with pus present, he believed the use of the vaccines was useless.

Dr. MARTIN J. SYNNOTT of Montclair, N. J., referring to the use of the vaccines in hay fever, said he understood that there was no preparation of the stock vaccine in the market. This might be true in the United States but there was a stock vaccine from Wright's laboratory in London which he had been using for two years; it was called pollicin vaccine and was the result of the work of one of Wright's assistants. He had produced a diagnostic outfit which was to determine the susceptibility of the patient; it was used in the eye to test the conjunctival reaction. The dose was then determined upon. This method was found to be very troublesome because the patient objected to having the

vaccine instilled in the eye; they dreaded any possible injury to that organ. It had been Dr. Synnott's practice (he had had twenty or thirty cases which gave encouraging results) to give small doses of the vaccine, usually 0.1 c.c. This was given twice a week and then increased 0.1 c.c. unless there resulted results either focal, local, or constitutional.

Dr. A. Parker Hitchens of Glenolden, Pa., said that he had had but a limited experience in the treatment of hay fever but he had had a chance to use injections of the pollen extract in both the treatment and prevention of this malady and a few things he had been able to observe he thought might be of interest to the members of the Society. One of the most interesting things to be noted was the difference in the intervals necessary between the doses if they wished the patient to be entirely free from symptoms. He did not know what the pollen extract did, whether it used up the specific ferment or accumulated products which prevented the ferment from acting; just what it did he did not know; this remained for the future to explain. A dose of the pollen extract was followed he believed in nearly every case by a relief of the symptoms; that was, if they gave the specific pollen or protein. The majority of the cases of so-called hay fever were undoubtedly due to certain pollens. In the fall they met with the rag-weed; in the spring orchard grass and red top were chiefly responsible. He had one patient with hay fever which probably resulted from proximity to the magnolia trees. This individual had hay fever through both seasons. The first year Dr. Hitchens tried him on injections every seven days, but he soon noticed that he began to have symptoms about the end of the fifth day. He kept on giving these injections every seven days regularly but he continued to have violent attacks two days prior to the next injection. He then shortened the time to five days and the patient had no more symptoms. The giving of these injections at longer or shorter intervals depended upon each individual. Dr. Hitchens believed that every rational treatment for the prevention of hay fever should be preceded first by the diagnostic test. He believed that the experience of many men with the ophthalmic reaction as used in tuberculosis would cause them to hesitate using this method in the eye and he did not really think it was necessary to use the eye as a test at all. The intradermal test gave as good indications as the ophthalmic reaction. His experience with nasal and respiratory conditions was somewhat limited but interesting. He had under his care one young woman who had been afflicted with asthma the previous winter. Following the use of small doses of autogenous vaccine once a week, she was relieved of her asthma. He asked those present who had had experience in dealing with cases of hay fever if they could corroborate the statement of Dunbar who stated in the Journal of Hygiene that he had injected many normal persons with pollen extract and none had become sensitized. Did sensitization depend upon these injections or anything of that kind? Dr. Hitchens thought that one of the most important points brought out in Dr. Coates' paper was that the bacterial vaccine must be used with brains; that should be an axiom. About 90 per cent. of physicians did not use their brains when using the vaccines; if they got no results, they would say they were of no value. No good could come from the use of the vaccine unless the antibodies formed came in contact with the bacterial factor. Every practicing physician should take this into account. They were amused at the horrible things which might happen if one who was an expert in the use of the pollen extract did not use it. Dr. Hitchens said he had given about 1500 injections and never had he the slightest cause for alarm.

The results often left one with the suspicion that there was something else in the vaccine besides the pollen. Vaccines were valuable before operations for infections of the upper respiratory tract; a shorter or longer course of vaccines should be given before these operations were performed. They had seen no harm result from anaphylaxis. In the tissues were antibodies and proteins; any proper antigen placed in the tissues exerted a favorable influence. If the ferment did not exert a specific function, helping to get a reduction of the infecting bacteria, not coming in contact with the infecting bacteria, or something else, there was some fault somewhere.

Dr. E. C. L. Miller of Richmond, Va., said that certain observations made it appear as though hay fever caused an anaphylactic reaction. After the injection of protein the patient appeared to be desensitized and more or less stimulated; after desensitization possibly other symptoms might occur. If they continually injected patients with the same antigen he asked if the patient would not become worse than he was before.

Dr. Gerald B. Webb of Colorado Springs, Colo., said it was a reproach to the medical profession that it never dealt with the so-called "common colds." He thought that all of them had seen benefit result from the plan outlined by Dr. Coates. Perhaps and possibly the colds were not all caused by the organisms they thought they were. It had lately been stated that these colds were due to filter passers. In London they found many cases of pseudo-diphtheria which were called colds. It was well known that influenza came in waves; in Colorado they had not met with the influenza bacillus for some five years. During this time, however, they met with cases that looked like grippe but there were present no influenza bacilli. It seemed that conditions simulating grippe could be produced by filter passers. They were able to ameliorate the catarrhal conditions but yet they did not seem able to hit the nail on the head. They could get some benefit from the inoculation of the catarrhal organism, diminishing the discharge, but they did not cure the patient. By passing the discharge from the infection through filters and then spraying the filtrate in the noses of students they could produce a severe influenzal cold. The last word had not yet been said regarding the cause of catarrhal colds. Regarding the use of apocynum, injections of this drug might entirely cure ear infections. Regarding hay fever, patients were susceptible to more than one pollen. Cotton wood caused the trouble in some cases. In the treatment they employed they sometimes combined the catarrhal organism with the pollen vaccine. In one-half of the cases treated, successful results followed. With regard to the dangers following this method, one laboratory worker was very susceptible to cotton wood and he had a tremendous reaction. The breathing caused them considerable alarm. He thought that possibly there was some foreign body present.

Dr. George Morrison Coates of Philadelphia closed the discussion. He said that colds treated lasted about ten days; if untreated, they lasted probably eleven days. The pyocyaneus bacillus infection was not always considered a secondary infection. A few days ago he did an operation for acute mastoiditis and obtained a pure culture from the mastoid cells. In all his operations for mastoiditis, cultures were always made and vaccines were regularly administered after operation, and his patients seemed to get well in a shorter time. McKernon of New York, in cases of mastoiditis following scarlet fever or measles, used the autogenous vaccines and this reduced the time of healing to a considerable extent. In ear cases, the results of Nagel's work brought about much skepticism, but his work could be vouched for. In certain ear cases of chronic type, even when necrosis was present, they could raise an artificial immunity and terminate the necrosis. It might take longer but in the presence of a slight degree of necrosis the use of the vaccines influenced the course of the disease very materially.

Election of Officers. — *President*, Dr. J. W. Jobling, College of Physicians and Surgeons, Columbia University, New York City; *Vice-President*, Dr. George P. Sanborn, Boston, Mass.; *Councilman*, Dr. John A. Kolmer of Philadelphia, Pa.; *Treasurer*, Dr. Willard J. Stone of Toledo, Ohio; *Secretary*, Dr. Martin J. Synnott of Montclair, N. J.

President's Address: Pasteur.—Dr. Gerald B. Webb of Colorado Springs, Col., made this address in which he stated that in rereading Pasteur's life it had occurred to him that they as immunologists could not hear too often or too much of this, their greatest master. Pasteur's advice to the students of the University of Edinburgh was "Worship great men." He agreed with the anonymous writer in the *Spectator* that "he was the most perfect man who had ever entered the Kingdom of Science." He reviewed the early history of Pasteur, showing that he was fortunate in his parents, having a father reserved and of a slow and careful mind and a mother, active, full of enthusiasm, and of imagination. He was equally fortunate in choosing a wife who was willing that the laboratory should be put before everything else. The speaker dwelt on Pasteur's work on fermentation, and his discoveries with reference to the disease of yeast and of the silkworm and of what these meant to the wine, beer, and silk industries of France. He reviewed the other discoveries of this great scientist which were familiar to them all. In speaking of Pasteur's attitude during the Franco-Prussian War, he said that he was unable to concentrate on his work and

wrote, "This war has sent my brains to grass." Later he wrote: "Might and right struggle for the world; right which constitutes and preserves society; might which overcomes nations and bleeds them to death." His writing on the psychology of war and his description of the horrors he witnessed formed a counterpart of similar crimes reported recently, and in closing a discourse on this subject he wrote: "But we may assert that French Science will have tried, by obeying the law of Humanity, to extend the frontiers of life." In 1874 Tyndall, after thoroughly investigating Pasteur's experiments, wrote: "For the first time in the history of Science we have the right to cherish the sure and certain hope that, as regards epidemic diseases, medicine will soon be delivered from quackery and placed on a real scientific basis. When that day arrives Humanity, in my opinion, will know how to recognize that it is to you that will be due the largest share of her gratitude." After relating still further the discoveries of Pasteur Dr. Webb stated that it was not generally known that the first experiments in "carriers" dated from him. Pasteur was much more forceful than his biographers had indicated. He rarely visited a theater or went out socially, feeling like the philosopher who said, "I am never bored but when I am being entertained." Pasteur read only what was good, and especially selected biographies. His advice to students should be emphasized. "All experimental research must be guided by some preconceived ideas. Exhaust every possible combination, until the mind can conceive no other possible. It is indeed a hard task when you believe that you have found an important scientific fact, to constrain yourself for days, weeks, years sometimes, to fight with yourself, to try and win your own experiments, and only to proclaim your discovery after having exhausted all contrary hypotheses." In closing Dr. Webb advised his hearers to read the Life of Pasteur by Valley Radot, a book which he described as reading like a fairy story and one which should be memorized by all.

A Clinical Study of the Comparative Results of the Wassermann Reaction.—Drs. A. A. UHLE and WILLIAM A. MACKINNEY presented this paper, in which they stated that under no circumstances should a diagnosis of syphilis be based on the result of the Wassermann reaction alone. The serologist's report should be positive or negative, and if it was at variance with the clinical expectancy, other specimens of blood should be submitted to one or more serologists for confirmation before such a result should be seriously considered. A negative Wassermann did not exclude syphilis, since such a reaction might be obtained in the early stages of chancre, or might be the result of active treatment, or might exist in latent syphilis in which the foci of disease were not active to the extent that antibodies might be detected by the test. In latent syphilis a negative reaction at times became positive after active treatment. In certain cases of nervous syphilis the serum Wassermann reaction might be negative and the spinal fluid Wassermann reaction might be positive. After an intraspinal injection of salvarsanized serum, a formerly negative spinal fluid Wassermann test might become positive. Many competent observers had reported positive luetin tests with a negative serum Wassermann test. Certain factors irrespective of the test itself were considered responsible for discrepancies; these included the age of the serum, infected serum, non-sterile test tubes, the character of the glass of the test tube, changes in the blood as the result of faulty metabolism, influence of alcohol, etc. It could be readily understood why discrepancies should exist in reports from different laboratories, conflicting reports from the same serologist upon specimens from the same individual withdrawn at the same time under identical conditions were not easy to understand. After discussing the discrepancies in the Wassermann reports with several serologists, it was decided that a series of blood specimens from approximately 300 patients be submitted for examination in order to ascertain to what extent the above mentioned factors influenced the Wassermann test. The first part of the work was done by four serologists and later three more cooperated. These men were all representative serologists connected with teaching institutions. The blood was collected from normal individuals, from patients in private and hospital practice who suffered with diseases other than syphilis, and from syphilitics in practically every stage of the disease. With a few exceptions all the syphilitic patients had been under their care for some time and several Wassermann tests had been reported on them before this study was undertaken. The blood was collected under the usual precautions and the specimens were so tabulated that those making the tests knew nothing of the source of the specimens. These specimens were taken when the stomach was full and when empty. In one series two tests were made on each specimen, one of which was a non-infected serum, while the other was infected with virulent pathogenic organisms. In another series the serum Wassermann and the spinal fluid Wassermann were studied comparatively. In latent syphilis a classification was made of those who at the time of the taking of the blood showed no demonstrable lesion of the disease, irrespective of its duration. The periods of latency were classified according to the duration of the disease. The authors exhibited fifteen tables showing the results of these tests by the different laboratories and a number of summaries explaining them, from which they concluded that it seemed to them that the extreme variations in the results of the Wassermann test on blood serum, taken from the same individual under identical conditions as they were reported by several serologists, were not due to any of the factors which were frequently considered responsible for such discrepancies. The same variations occurring when the blood was collected in a sterile or a non-sterile tube; when infected by certain pathogenic bacteria, or irrespective of the time elapsing between the collection of the blood and the time of the examination. In non-syphilitic cases a positive Wassermann report might be expected in from 2 to 18 per cent. of the cases; in active primary, secondary, and tertiary manifestations of syphilis, with the exception of the first few days of a chancre, a positive Wassermann was present in from 50 to 100 per cent. of the cases. In syphilis under active treatment, or when the condition was latent the result of the Wassermann reaction was of the utmost importance to the clinician and it was in these conditions that the most extreme variations were reported. In the study of these cases it became clear that the discrepancies in the Wassermann reports, made by the different serologists, were due to errors in technique, or lack of proper standardization of the reagents.

Pseudopositive Wassermann Reaction in a Case of Uremia and Intestinal Toxemia.—Dr. JUDSON DALAND of Philadelphia reported this case which occurred in a man 55 years of age, a plumber by occupation, who was admitted to the hospital on February 10, 1911. There was ascites, edema of the lower extremities, penis and scrotum, moderate dyspnea which became extreme upon assuming recumbency and after slight exertion, and slight cyanosis of the fingers and lips. There was nothing of importance in the family history or habits of the patient. His present illness began January 16, 1911, when he felt as though a nail had been driven into his left knee and a few minutes later swelling was observed in the feet and knees rapidly involving the legs which was rapidly followed by ascites. The physical examination showed extreme pallor, poor musculature, cyanosis, a few enlarged glands in the neck, axilla, and groin. The pupils contracted equally and responded normally to stimuli. The teeth were absent. The apex beat of the heart was one-half inch to the left of the nipple and the impulse was heaving. The area of heart dulness was increased more especially to the left. The pulse was regular in force and rhythm, compressed with difficulty, and the radial arteries were sclerosed. The first sound was rough and accompanied by a blowing systolic murmur, transmitted to the left axilla. A similar murmur was heard over the aortic cartilage and was transmitted into the neck. The aortic sound was accentuated. The liver was slightly enlarged. The diagnosis was chronic interstitial nephritis and uremia in association with intestinal toxemia. The records of the blood pressure, blood examinations, urinary examinations were presented. The four Wassermann tests taken at intervals during the two weeks following his admission to the hospital showed one three plus Wassermann, two positive reactions, and one plus minus reaction, this being the last of the four. The urine showed a moderate amount of albumin with hyaline and granular casts and a large amount of indican.

Dr. JOHN A. KOLMER of Philadelphia, Penna., said he felt that the other side of the question as to the specificity of the Wassermann reaction needed some defense. He had been interested in the question of the antigens, especially with the cholestrated extract, for several years. He had followed many patients through the clinical course of the disease and had made comparisons with the aid of several clinicians as to the Wassermann findings. He was of the opinion that this reaction was

due primarily to a difference in the antigen. With a proper understanding of the mechanism of the Wassermann reaction the proper use of the antigen would modify their results more than anything else, more than any other factor. He did not believe the alcoholic extract of a syphilitic liver a specific antigen. The question of the specificity of the Wassermann reaction was a fallacy. This was especially true as regards the aqueous extract of rabbits' livers. Two years ago he worked with a pure culture which was furnished him by Dr. Noguchi of New York. He believed the specificity of the Wassermann reaction did not depend upon the antigen but upon the nature of the antibody. The antibody played a big part, or constituent, of the Wassermann. It was their purpose for three or four years to use three different extracts; one to be reinforced with cholesterine; another, the alcoholic extract of syphilitic livers as used in the United States and Germany, and another, the use of an acetone which was insoluble, and extract prepared after the method of Dr. Noguchi. They found the highest percentage of reactions were obtained when they followed the method of Dr. Uhle. The use of the alcoholic extract of syphilitic livers yielded the poorest results. He believed that the reports given by the members differed in the Wassermann reaction, coming from different laboratories, not because of any difference in the technique but because of differences in the antigens. A review of the early literature regarding the specificity of the Wassermann reaction was entirely misleading. The reports regarding scarlet fever were misleading. In his experience with 250 cases only seven gave a reaction, and two had either a macular or papular rash of syphilis. From the standpoint of the laboratory man they respected the specificity of the Wassermann. He had found it on three occasions in the tubercular variety of leprosy. He had found it also in yaws. Syphilis should be diagnosed in the laboratory. The statement that the patient did not have syphilis did not exclude this disease; many of these patients had their symptoms cleared up when under treatment and made it presumably evident that the patient suffered from a true case of syphilis.

Dr. KENYOUN of Washington, D. C., agreed with what was said regarding the specificity of the Wassermann reaction and the importance of reinforcing it with antigen. He believed that many discrepancies found in the laboratories were due to the fact that different antigens were used. There was one important thing that should be called to mind—in the series of cases Dr. Uhle mentioned, ascertaining at what time the reaction was made in the given blood, whether before or after taking in food. It was well understood that those who partook of alcohol in considerable quantities had the Wassermann much modified. He had ascertained that in many cases where the reaction would be negative during the first twenty-four hours, if the reagent was kept for one week or ten days at a proper given temperature, many of the sera would become positive.

Captain VEDDER, U. S. A., said he was in accord with what Dr. Kolmer had stated and especially what he said regarding a proper diagnosis which should not be made on a positive Wassermann reaction alone. They all knew that lesions of syphilis could occur without any history or clinical signs being manifested. He told of a prominent physician who came to the laboratory and gave a strong positive reaction. This man was a prominent dermatologist from New York. He said: "I may have a positive Wassermann but I have no syphilis." There was found a serious heart condition which was probably due to syphilis. He was positive that at no time had he acquired this disease. There were a certain number of cases which could only be diagnosed by the Wassermann test. With regard to the normal cases in which the reaction varied from 0 to 10 per cent he said he had just completed a series of surveys. Among 1500 soldiers he could report a positive reaction in about 3 per cent. Does obtaining a positive Wassermann reaction mean syphilis, or did it not? There were no doubt many cases of syphilis that did not come to the physician had syphilis which could only be detected by the Wassermann. Dr. Park of the New York Health Department had given 500 consecutive sera and the discrepancies were not so great as might have been supposed.

Dr. RICHARD DEXTER of Cleveland, Ohio, agreed with Dr. Kolmer that the antigens were a variable factor. The result of his observation showed that the cholesterine antigen gave a finer test than did others. He reported the case of an insane young man who recently came under his notice and whose spinal fluid was submitted for examination. The patient had been shot through the orbit and there was a fracture of its upper part. The examination of the spinal fluid was negative first. But during the following week he developed a syphilitic meningitis and the examination of the spinal fluid since had been positive. It was first thought that he had a staphylococcus infection.

Dr. JUDSON DALAND of Philadelphia, Pa., referred to the discovery of living *Spirocheta pallida* after the administration of salvarsan. He believed that chancres should be primarily excised and then neosalvarsan given. Ehrlich found no spirochete and no chancre at the expiration of twenty-four hours after the injection. Those present could not help but appreciate the work that had been done by Dr. Uhle. These results were obtained from various specimens and from various laboratories. This was an important question yet to be solved. Dr. Daland said the experiences just reported were very important and the discussion, too, was very important as pointing out the need of a careful interpretation of what was found. If one obtained a positive Wassermann it did not necessarily mean that the individual had syphilis; if one got a negative result it did not necessarily mean that the patient did not have syphilis.

Dr. CLAUDE P. BROWN of Glenolden, Pa., said that in a series of cases in which salvarsan was administered the spirochete were still present.

Dr. UHLE closed the discussion. He said he knew nothing about the technique and what he had presented was from the clinical standpoint only. In speaking of the Wassermann reaction serologists say they wished to obviate the causes which gave rise to a positive reaction. It might be that cholesterine antigen, or the alcohol antigen, might be better. The workers as yet had no specific antigen which they could rely upon. With regard to the diagnosis clinically of gumma of the liver, here there was something wrong; here they could only go by the history of the case and the family history. In such cases the use of the antigen was of great value. He asked what it meant, sending ten samples from the same individual, withdrawn at the same time under identical conditions, to the laboratories and getting the returns that six were positive and four negative. The best they could do was to watch the work of the different workers in the laboratories and determine who did the best work and then to rely upon his interpretations. He recalled one worker who was sent 103 specimens and he did not fail once in making a proper interpretation. Later ninety-three plates were sent and the laboratory diagnosis was correct. There were other things besides antigens which could account for certain discrepancies. One of his friends was a serologist, but his reports were not as good as those of other serologists. The work was often done by dealers who were trained to make the Wassermann test. He thought it was largely a question of technique; let the dealer do the daily work but do not let them interpret the findings; that would be a mistake. What had been presented by them in the paper was but a preliminary study. They hoped in the near future to be able to present some uniform technique, a uniform antigen, and hoped then that the laboratory would greatly aid in the clinical diagnosis.

The Vaccine Treatment of Ringworm of the Scalp.—Dr. ALBERT STRICKLER of Philadelphia, presented this paper. He stated that the vaccine treatment of ringworm of the scalp rested upon the fact that there was developed in the blood of children suffering from this affection, a specific antibody which produced a positive complement fixation test and gave a positive skin reaction. Dr. Kolmer and the author had found 78 per cent. positive fixation tests in children suffering from tinea tonsurans. When they injected 0.056 c.c. of a suspension of dead ringworm fungus in salt solution, which had been briefly centrifuged at a low speed, so that it was about the same density as luetin, and injected it into the superficial skin of the arm of a child suffering from tinea tonsurans, they obtained a reaction in the vast majority of the patients with ringworm and negative results in their controls. After describing in detail their method of getting the vaccine for tinea tonsurans, the essayist stated that their success had depended upon the incorporation of the entire fungus growth in the vaccine: the failure of the psychophytins of Plato was probably due to the fact that the culture suspension was subjected to filtration. Too much emphasis could not be placed on this point and

on the necessity of rubbing up the ringworm growth From the growth in an ordinary Ehrlenmeyer flask about 500 c.c. of vaccine was made up. To this 8 to 10 c.c. of chloroform was added to kill the growth, and the vaccine was heated for one hour at 600° C. The use of the chloroform was latterly discontinued. Controls for living fungi were made on French "proof agar," and for pyogenic organisms on plain agar. The vaccine was preserved by the addition of sufficient phenol to bring it up to 0.25 per cent. It was then tubed in sterile vials and was ready for use. The vaccine might be employed in doses varying from 5/10 c.c. up to 4 c.c. It had been found of no value to employ a dose as large as the latter. The usual dose varied from 0.5 c.c. to 2 c.c. The injections were given at intervals of three days, but later it was deemed advisable to give them every five or six days. The injections were given preferably in the region between the scapulæ. The number of injections varied from seven in some patients to twenty in others. In no instance was there any constitutional reaction. After the patient had received six or seven injections, a local reaction in the form of an infiltrated area developed in about thirty-six hours after the injection, at the point of injection. In treating a case of ringworm of the scalp, hair infected with the fungus was planted on "French Proof Agar" according to the technique described both for the purpose of determining the type of infection and for the purpose of treatment. They then injected the patient with their stock vaccine, once every five days, giving five injections, the first 0.5 c.c. and giving one c.c. for the second and third injections. They then advised local treatment (cade and olive oil in equal parts) for a period of two weeks, meanwhile giving 1.5 c.c. of the vaccine every six days. This local treatment was then followed by the use of an ointment (precipitated sulphur, gr. xx, vaseline ʒi), which might be applied once a day for a period of ten days or two weeks. The vaccine treatment should extend over a period of from two to three months. Up to date they had treated at the Philadelphia General Hospital, twenty patients with ringworm of the scalp of varying degrees of severity. Of these fourteen had been cured, two markedly improved, two improved but left before treatment could be properly carried out, three died from measles and one from pneumonia. All of these were treated with vaccines, only a weak ointment being used to stimulate hair growth in three cases. If after giving seven or eight injections no improvement was noted the stock vaccine should be discontinued and an autogenous one employed. They believed that they had in this method a safe and efficient treatment of tinea tonsurans, and that the *x*-ray offered no advantages over it.

(*To be continued.*)

AMERICAN NEUROLOGICAL ASSOCIATION.

Forty-first Annual Meeting, Held in New York, May 6, 7, 8, 1915.

PRESIDENT, Dr. GEORGE W. JACOBY OF NEW YORK.

Thursday, May 6—First Day.

Exact and Inexact Methods in Neurology and Psychiatry.—Dr. G. W. JACOBY of New York delivered this address stating that while the rest of modern medicine showed a deplorable inclination more and more to split up into special fields, neurology and psychiatry showed an unmistakable disposition toward amalgamation. The attitude of considering these two subjects as distinct from each other had remained unchanged until the inductive method of investigation had brought experimentation into the field of psychiatry, at which time it had become only too evident how dependent were the psychic functions upon the brain and nervous system. In the light of modern science the bodily as well as the psychic functions were but different forms of the same brain and nerve activity. It was this recognition that joined neurology and psychiatry into one inseparable whole. To be exact, we should speak only of brain and nerve physiology instead of psychology and of nerve and brain pathology instead of pschiatry. The teachings of Griesinger and Westphal had already served to implant and to fixate the fact that the study of mental disease; that is, brain disease could not be managed with any hope of success unless continuous consideration were given to the other diseases that might affect the nervous system. The methods which had given our specialty the greatest successes, and which promised the greatest future progress, were those only which could be recognized as exact and scientific and which stood upon a groundwork of fact. The method of speculative investigation that constructed theories as to how things should be or how things might be from its imagination alone or draw unwarrantable generalizations from single observations must in our work be relegated to the forgotten past. Among the exact methods he counted above all clinical observation, anatomic-microscopic examination of the structures of the body, microscopic examination of the blood and other fluid components of the body. Clinical observation had taught us that in the field of neurology and psychiatry we must learn to individualize. Health and disease were not antagonists; they represented merely different manifestations of the same vital activity. Present day medicine no longer knew the division of human beings into two classes, the healthy and the sick, but dealt only with individuals, no two of whom are precisely the same and each one of whom must be treated in accordance with his own individuality. The author's own experience, covering thousands of blood examinations in cases of nervous and mental disease, in many instances extending over months and embracing a long series of experimental investigations regarding the alkalinity of the blood, had convinced him that their sole value lay in the possibility of recognizing complications dependent upon well known disorders of the blood itself and in differentiating some of the acute infectious processes of the central nervous system as well as in recognizing the presence of some organic basis for affections which upon their face appeared to be a functional nervous character. In his estimation, therefore, the examination of the blood in nervous and mental diseases had been of little value in advancing our knowledge of these affections.

Postnatal Growth of the Brain under Several Experimental Conditions; Studies of the Albino Rat.—Drs. HENRY H. DONALDSON, S. HATAI, and KING of Philadelphia presented this paper. They said that the general results of studies on the rat's brain were applicable to the human brain. Postnatal increase in the weight of the brain was due almost entirely to the enlargement of cell elements already present at birth. The increase in brain weight between birth and maturity was, in the rat, about ninefold. This corresponded to a doubling on the average of the initial diameters of the cells. Increase in size was most evident in the cell bodies of the neurones—but the formation of the myelin contributed more than any other single process to the increase in weight. Under all experimental tests the proportional weights of the divisions of the encephalon remained the same (except in the case of the bulbi olfactorii and flocculi). The conditions under which studies had been made were grouped in accordance with their general effects on brain weight: (1) Unfavorable conditions. Domestication; some defective diets; disease (lung disease). (2) Indifferent conditions. Quantitative underfeeding with wholesome diets; some defective diets; inbreeding; gonadectomy. (3) Favorable conditions. Highly varied diets; exercise. Conclusions and applications.

Dr. L. F. BARKER of Baltimore said that he did not know whether the members of the association realized how much detailed work had been done by Dr. Donaldson and his associates. The results given so briefly were based on a long series of weights and measurements in the animals experimented upon, contrasted with normal weights and measurements established by a long series of observations. It had been Dr. Barker's good fortune to visit the Wistar Institute several times and to see the kind and amount of work that was going on there in connection with the remarkable colony of white rats which Dr. Donaldson and his associates had under their control. The workers were preparing a series of consonants of all parts of the body mathematically accurate for weights and measurements so that when published for the animal we shall have a series of consonants comparable more or less to the tables of the physiological and the chemical laboratory.

The Relation of Structure and Function in the Nervous System.—Dr. STEWART PATON of Princeton said that the first period of life that preceded the incidence of the nervous system as an active factor in the mechanism of adjustment was characterized by a few responses which were primitive in character. Only in the lower vertebrates did we find that any movements of the body took place during this primitive period of embryonic life. We had a very delicate and fairly defined proof that the nervous system was beginning to

play its rôle. We had another important sign, the incidence of neurofibrillation. The appearance of the neurofibrils was probably one of the finest indications that we had of the incidence of function of the nervous system. The heart beats had begun and very probably were initiated without the interference of the nervous system. The heart might be looked upon as an elaboration of a function which existed in chemical functions. As soon as the nervous system came in a great change took place. What did we find in the nervous system at this time? We found something very striking, very striking indeed, something that threw great light on practical neurological problems. In the first place we found out that an enormous preparation had gone on in the whole system preceding the incidence of function. It was really almost startling when one saw the great preparation in the spinal cord and the middle and the upper part of the medulla which had taken place in the differentiation of tissue. The most striking sections found in this region were of the development and persistence of the ancestral type and enormous development of the cranial nerves. Undoubtedly these developments of the cranial nerves were transmitted to us from our ancestors lower down in the scale. Then if we went a little higher up in the medulla there was a very great development of the trigeminus, and in the embryo at this stage you could readily trace three branches coming off from the trigeminus. If we went one step higher in the medulla we would come to the third nerve which had no possible use at this stage of the life of the embryo, and yet that nerve was fully developed. The other point was that if we took this same embryo just before the responses begun we found some very interesting conditions that would interest practical neurologists. We found that such organs as the heart were definitely supplied with neurofibrils. You could trace out the whole cardiac mechanism. In addition to that you would find that an organ like the thymus had an enormous nerve supply. At an early stage, before the reactions of the body began, the thymus had a definite and really an enormous nerve supply.

Dr. James J. Putnam of Boston said that he would like to ask Dr. Paton whether he would be willing to accept all the conclusions to which the view that structure does really and truly precede function would logically lead. It was doubtful whether he would be willing to accept the conclusion that everything we know, learn, and think as human beings, such as love of justice, honor and truth, was really nothing but the expression of structure, which in itself is nothing but the expression of a rhythmical chemical process taken in the usual meaning of that term. It seemed to him that that was the conclusion to which we must come. Either structure preceded function or function preceded structure. From our own observation of ourselves, of thoughts and wills, we would think that function preceded structure. These researches of Dr. Paton's seemed to indicate the reverse.

Dr. Philip Coombs Knapp of Boston said that one simple illustration that structure must necessarily precede function could be brought out from the fact that we were conscious of our functions but were by no means conscious of the structure. The absolute necessity of the structure preceding function was shown by the fact that unless one had a proper visual apparatus he remained blind and never could see. But Dr. Knapp thought that anyone who had had experience in teaching ought fully to realize that it was not the vague transcendental desire to know which accomplished the acquisition of knowledge, but rather the ability of the student to grasp the idea and to develop his knowledge. Experience in teaching showed that in spite of the best developed schemes of instruction, in spite of every desire on the part of the pupil to learn, in spite of every effort of the teacher a certain percentage of the pupils by reason probably of a defect of structure were going to remain hopelessly stupid, a condition against which the teacher would regard himself as powerless.

Dr. Paton in closing said that he had tried to be brief and that in doing so one always ran the danger of becoming dogmatic. He certainly did not intend to bring up the question of education here. Dr. Paton said he was afraid he had made a very bad slip. He had had his guinea-pigs in mind, and as far as guinea-pigs were concerned his statements were true. The criticism was very well taken about the possibility of function preexisting. Of course he had only a few simple reactions in mind which he had succeeded in explaining to his own satisfaction. He thought personally it would be a long time before we got the higher reactions. He hoped his hearers would not take what he had said dogmatically as applied to the human being, and that they would think of him only as an enthusiast in regard to the guinea-pig.

Ventricular Hemorrhage. — Dr. Alfred Gordon of Philadelphia read this paper in which extra and intraventricular hemorrhape were considered. The author reported seven cases of the first and five cases of primary intraventricular hemorrhage. From a pathological standpoint erosions of the walls of the ventricles, rupture of the vessels of the choroid plexus and miliary aneurysm were found in the five cases. Detailed anatomical data as to the state of the ruptured blood vessels and to the surrounding tissue were given. In all the cases profound changes of all layers of the walls of the vessels and especially in the intima were present. In discussing differential clinical features Gordon called special attention to the following symptoms: sudden onset without premonitory symptoms, profound coma at the outset and continuing for several days without improvement, absence of genuine paralysis, absence of rigidity and contracture during the days following the seizure, absence of the toe phenomenon. All these symptoms were so uniformly present in every one of the five cases of primary ventricular hemorrhage that pathognomonic inferences were permissible. In three cases there was a displacement of the brain tissue on the side opposite the hemorrhage. It was possible that the profound comatose state was due to this factor; hence a decompression on the sound side might be of benefit. Accordingly an operation was performed on one case and considerable amelioration of the comatose state was obtained. Unfortunately the other patients did not give their consent for surgical intervention.

Dr. Philip Coombs Knapp of Boston said he had seen a number of cases of intraventricular hemorrhage, most of them, however, of the secondary variety. He could hardly agree with the symptomatology Dr. Gordon had given. In the ordinary symptomatology of the case it had differed very little from that of an ordinary case of ventricular hemorrhage, excepting that the coma had been a little more sudden perhaps and naturally distinctly more profound. In practically every case there had been distinct signs of hemiplegia as we ordinarily detected them in a person who was comatose. The one striking feature, however, in all the cases of ventricular hemorrhage had been that, although the duration of life was too short for contracture to have developed there had been distinct rigidity of both sides. In no case had there been generalized convulsions. In a number of cases confirmed by autopsy he had felt that the rigidity and twitchings of the limbs were so characteristic as to warrant the diagnosis of intraventricular hemorrhage. In every case the signs of hemiplegia had been very distinctly marked.

Dr. Alfred Reginald Allen of Philadelphia said that at Dr. Spiller's instance a number of years ago he had studied in his laboratory the cases of ventricular hemorrhage with particular reference to the rigidity and twitchings and as he remembered the specimen in Dr. Spiller's cases they did not bear out the theory that of necessity there was any relation between rigidity and twitchings and ventricular hemorrhage.

Dr. E. Sachs of St. Louis said that the possibility of approaching these cases from the surgical standpoint must be reserved. It was essential to recognize them, and if they were recognized it seemed to him that it was misdirected effort to do anything but try to approach the hemorrhage itself. To try merely to relieve pressure without trying to remove the extensive hemorrhage which was present seemed to him unwise. He said he had not heard Dr. Gordon mention one symptom which had been described as rather characteristic of ventricular hemorrhage and that was excessive temperature. He had been rather interested in that feature from the physiological point of view. It had been claimed by a number of experimental physiologists that this symptom was due to irritation of the fine fibers that lie along the floor of the ventricle. He had never been able to substantiate that and was rather anxious to hear whether these cases, if they were pure ventricular hemorrhage, showed that symptom.

Dr. H. H. Hoppe of Cincinnati said that in the cases of intraventricular hemorrhage he had seen there was a distinct interval between the onset of the hemorrhage and the condition of coma. In one case there was a period of an hour and a half between the onset of the attack, which resulted from a fall from a horse, and admission to the hospital. In the course of two hours the coma deepened and went on until death.

Dr. E. E. Southard of Boston stated that relative to the hyperpyrexia in the ventricular hemorrhage there were isolated cases in which the rupture of the vessel was of infectious origin. Some ten years ago he had had occasion to report two cases of bacterial apoplexy in which the streptococcus was found; these hemorrhages were from erosion of the vessel wall. The hemorrhage might be regarded as primary in that sense. In one case numerous small hemorrhages were present. He thought that the hyperpyrexia should not be regarded as of chemical origin unless cultures had been taken.

Dr. J. Ramsay Hunt of New York said he would like to ask Dr. Gordon in reference to the condition of the optic nerve, also whether Cheyne-Stokes breathing was present. It was a prominent symptom in a case Dr. Hunt saw. It occurred very early, almost immediately after the hemorrhage.

Dr. Alfred Gordon, in closing, said in reply to Dr. Knapp's remarks with reference to hemorrhage, he would say that as Dr. Knapp had seen only secondary hemorrhages his remarks could have no bearing on the subject discussed which dealt particularly with primary hemorrhage. The five cases of hemorrhage of the lateral ventricles alone were all uniformly accompanied by paralysis, with no toe phenomenon and marked petellar reflex on the paralysed side. In reference to the question of temperature the primary cases had at first no rise of temperature. In secondary ventricular hemorrhage, when coma came on, rise of temperature occurred. As to the optic nerve, every one of the cases was examined and in none was there any change in the optic nerve. Cheyne-Stokes respiration was observed to the very end, but the same in the secondary as in the primary cases.

Intracranial Telangiectasis. — Dr. Ernest Sachs of St. Louis read this paper, reporting two cases, both having Jacksonian convulsions, but no other evidence of intracranial pressure. The eye grounds were normal and the Wassermann reaction negative. In the one case on opening the dura, a huge bluish mass of vessels which were so dense in places that the underlying cortex could not be seen protruded. This mass lay over the motor area. There were no branches connecting with the dural vessels. In the second case the process was entirely confined to the dura, there being connections, however, between these vessels and the cortical vessels. Ligation of all these vessels relieved the symptoms and resulted in a cure. There were a number of cases in the literature which resembled one or the other of these cases, but they had usually been called angioma. A study of these cases, however, had led the author to believe that these were not true angiomata but congenital tumors—telangiectasis. It seemed essential to distinguish between true angioma, a neoplasm, and these congenital conditions. When reclassified they constituted a group which must be kept in mind in every case of Jacksonian epilepsy. The clinical picture was quite a definite one: (1) Attacks of Jacksonian epilepsy occurring at long intervals in non-syphilitic young persons. (2) Unconsciousness of long duration. (3) No evidence of increased intracranial pressure. (4) A very slow progression of symptoms. (5) Telangiectases on the head or face. For this condition the author suggested the name Intracranial Telangiectasis.

Dr. M. Allen Starr of New York thought the distinction Dr. Sachs had made was an exceedingly important one and should be adopted by all means. He had erroneously, as he now sees, reported some years ago as an angioma a case quite similar to the second case of Dr. Sachs. Dr. Starr said he admitted freely that that was a wrong classification and that it was a case of telangiectasis. The case was an interesting one clinically and as it came to operation and Dr. McCosh tied off these vessels it might interest the society. The patient was a boy of seventeen who was brought to the Presbyterian Hospital because he had been suffering from very peculiar attacks for a year. They had begun at the age of fifteen. They were characterized by a sudden severe, intense pain in the pyramidal region on the left side. The pain was located over an area the size of a half dollar. The attack would begin gradually and for three days he was in the most intense agony and the agony was so great that by the end of the second day he was in a state of acute mania. He was entirely uncontrollable, fighting everyone who came near him and these attacks of mania had been increasing up to the time he was brought to New York. He suffered from these attacks in two weeks' intervals. No diagnosis had been made, there were no localizing signs. Between the attacks he was entirely normal in every way. There was no choked disk and the condition was quite a mysterious one. The attacks appeared to resemble in a way attacks of cortical epilepsy, although there was absolutely no spasm. There was an area of tenderness over the skull where he felt pain, which remained between the attacks. Dr. McCosh decided it was worth while to make an exploratory trephining operation. He trephined over the area of tenderness and the dura was apparently normal, but cutting through the dura he came down to one of these conditions of telangiectasis. There was a mass of veins on the surface and they resembled more a mass of fishworms than anything he could think of. The mass was tied off. The boy made a prompt recovery. He had temporarily a condition of complete astereognosis with ataxia of the right hand which after three days passed away. Dr. Starr heard from him two and three years after the operation and he had been perfectly well up to that time.

Dr. Alfred Gordon of Philadelphia stated that in the Proceedings of the Neurological Society of Philadelphia published in *The Journal of Nervous and Mental Diseases* several years ago would be found a description of a case almost identical with that of Dr. Sachs. It was that of a young man of thirty, who for fourteen years, if not more, had had attacks of convulsions in the right leg alone. Never in the arm. The attacks were rarely accompanied by loss of consciousness. The patient could give a good description of the condition. Dr. Gordon examined him a number of times. The eyes were perfectly normal and the knee-jerk over the right side was slight. Dr. DaCosta opened his skull on the opposite side in the upper portion in the area corresponding to the leg center and he found a square shaped appearance of the veins, surrounded by four large veins. The veins were ligated and the patient made a good surgical recovery. He developed a mild astereognosis on the right side and the convulsions ceased for a while. About six weeks later the convulsions returned with loss of consciousness. The patient returned to New York and later on came to see Dr. Gordon again and told him that on exceedingly rare occasions he would have an attack. The condition was exactly the one described by Dr. Sachs. It was a dilatation of the veins in the center corresponding to the leg.

Dr. E. B. Angell of Rochester, N. Y., said he had had a case of Jacksonian epilepsy develop in a youth of sixteen or seventeen. The attacks were so characteristic that it was easy to locate the lesion. He was operated on by Dr. Zimmer of Rochester very successfully. In this case they found the same condition as that described by Dr. Starr. Dr. Angell said that he recognized that it was an angioma according to the description in the books. It was not characteristic of a tumor. He was very glad that Dr. Sachs had given the more satisfactory name for this condition. The case recovered absolutely. The surgeon tied off and removed the veins. For ten years there was no further history of a convulsion.

Dr. J. Ramsay Hunt of New York said that since Cushing's paper a few years ago he had been on the lookout for such cases with intracranial complications. He recalled three cases. One was an old infantile hemiplegia in which there was a contralateral hemiplegia with epilepsy. The other case was that of a man who had a trigeminal nævus and who in his fiftieth year developed epilepsy. The epilepsy, however, was not of the Jacksonian type. It was interesting, however, that always before the attack of epilepsy he would have a period, sometimes several hours, of severe pain directly beneath the trigeminal nævus, so there may have been in such a case a connection between his epilepsy, which was generalized, and the vascular lesion of the dura. In the third case a man had a congenital bunch of veins and all through his life had been subject to periodical headaches somewhat suggesting migraine. He stated that before these headaches these veins would always swell. Of course, the relationship between the veins and the headache was obscure, but Dr. Hunt thought it was always well to bear in mind the possibility of intracranial complications in these cases of trigeminal nævi.

A Contribution to the Paralytic and Other Persistent Sequelæ of Migraine. — Dr. J. Ramsay Hunt of New York read this paper, stating that in the vast majority of cases a tendency to migraine entails no more serious consequences than the recurrence of periodical head-

aches of varying degrees of severity. Headaches of this character are often associated with curious focal symptoms, scotoma, hemianopsia, hemiparesis and hemiparesthesia. More rarely evanescent aphasic attacks and mental disturbances accompany the attack. These focal manifestations are purely functional in nature and disappear promptly with the subsidence of the other symptoms of the paroxysm. They are generally regarded as manifestations of vascular spasm and this theory is in harmony with their temporary and evanescent nature. Attacks of this nature may recur over a period of many years and yet leave no permanent mark or symptom. Unfortunately this is not always true, and in rare cases permanent and often serious consequences ensue. The paralytic and other permanent complications of migraine may appear in various forms, as ocular palsies (migraine ophthalmoplegique), organic hemiplegia with aphasia, hemianopsia, and optic atrophy. At such times there has been frequently noted a marked pallor of the optic nerve and retina, from contraction of the vessels which gradually disappeared with the subsidence of the seizure. Another important and interesting question is the etiological relationship of hemicrania to premature cerebral arteriosclerosis. Some writers maintain that the frequent recurrence of vascular explosions in migraine over a period of many years are in themselves sufficient to cause cerebral arteriosclerosis. The autointoxication which is the underlying basis of the disease is also recognized as a probable contributing factor. It is this combination of factors which would appear to be the important one in many of the cases which have just been described. Another element which must be considered is the possibility of arterial anomalies in the blood supply of the brain and cranial nerves which might render a certain arterial distribution especially vulnerable in the event of sudden vascular spasm. When such symptoms appear in middle life after a migraine paroxysm, especially significant are these symptoms when they are foreign to the usual attack. For example, a migraine accompanied or preceded by transient hemianopsia, when this has been an early and more or less constant phenomena of the attack, would not have the same importance as when this symptom appears suddenly in middle life out of a clear sky. On the other hand, it must be recognized that in just such cases with recurrent scotomata the danger of a permanent defect is by no means a slight one. An importance is attached by some writers to the very doubtful association of migraine with facial paralysis (the hemicrania facioplegica), based upon the contribution of Rossolimo, who described a relapsing facial palsy in conjunction with migraine. This case stands alone in literature and naturally awakens the suspicion of a mere coincidence, namely, the casual association of migraine with relapsing palsy. It is well known that attacks of recurrent facial paralysis are by no means rare and Bernhardt has placed the percentage as high as 7.2 per cent of all cases of Bell's palsy. When it is still further considered that pain in the mastoid and occipital region, often very severe and persistent, is one of the common symptoms of facial paralysis because of the sensory system of the facial nerve, it is evident that the pain of migraine may be closely simulated. Certainly at the present time there is no just ground for recognizing a clinical type of facioplegique migraine in the sense that we accept the migraine ophthalmoplegique of Moebius and Charcot. In passing, it is of interest to recall the observations of Sil, who noted a paralysis of the hypoglossal nerve in a case of ophthalmoplegic migraine. This observation, like that of Rossolimo, is unique and in no sense constitutes a definite clinical type. It is of interest to recall that Oppenheim has described a cerebellar type of migraine in which, with the general symptoms of migraine, there were transient symptoms of cerebellar origin; so that the possibility of permanent lesions in the brain stem and cerebellum having this origin must be kept in mind.

Dr. Joseph Collins of New York said there was one feature of these cases that Dr. Hunt had not mentioned, which he considered to be of very great importance, and that was the syphilitic feature. In a series of 100 cases of syphilitic disorder of the nervous system coming in succession he had found two cases of typical migraine, one of them associated with ophthalmoplegia, in which the evidence of a syphilitic origin was found in the blood and in the cerebrospinal fluid so that he has come now to the conclusion that it is well in the majority of cases of migraine, practically in all cases in which there is paralysis of any sort, to submit to the laboratory tests.

Dr. L. F. Barker of Baltimore said he could confirm Dr. Hunt's observations of hemianopsia with migraine. He has had two cases, one in a lady in middle life. In both of these instances the hemianopsia was temporary, though complete at the time. It passed off and Dr. Barker had not heard from the patients since. In view of what Dr. Hunt had said it was possible that they may later develop hemianopsia. Dr. Barker had made it a routine practice to make serological examinations in all neurologic and medical cases. In neither of these cases, however, had a positive Wassermann been present and in his own experience, while migraine and lues do coexist sometimes, it was not common. He wondered as to the nature of this temporary hemianopsia and thought of a possible temporary lesion in the chiasm and also of a spasm of the occipital artery supplying around the calcarine fissure. His inclination was toward the latter.

Dr. William G. Spiller of Philadelphia said that some years ago Dr. de Schweinitz sent him a patient who had had two attacks of ophthalmoplegia. He had had migraine over many years. His parents had had migraine. Recently Dr. Spiller saw a patient who had had two attacks of transitory ophthalmoplegia. He died two or three years later of an apoplectic stroke. Dr. Spiller said he had seen two cases of hemianopsia with migraine. The hemianopsia is not necessarily a part of the migraine.

Dr. Alfred Gordon of Philadelphia said that several years ago he had had a physician under his charge for periodic attacks of migraine. That man came from a migrainic family. He was about forty at that time and from the age of twenty he had had periodic attacks of migraine. The man had another attack of migraine and Dr. Gordon found him hemiplegic on the right side, astereognosis of right side and motor aphasia. The symptoms were not marked, but they were sufficiently pronounced to observe. There had been increased reflexes, but no toe phenomenon. Preceding the attacks he had vomiting. The eyes were examined and found negative. The patient made a complete recovery and had been well up to the present time.

Dr. P. C. Knapp of Boston said there was one form of involvement of the cranial nerves of which Dr. Hunt had not spoken, namely, the anaesthesias occurring in the distribution of the fifth nerve in connection with attacks of migraine. In regard to the ophthalmoplegic migraine there were a few interesting points to which Dr. Hunt had not referred. In the great majority of them the ophthalmoplegia was an incidental occurrence. The patient had had a good many attacks of migraine before the attack of ophthalmoplegia occurred and after the ophthalmoplegia had occurred they had a good many attacks of migraine without the recurrence of the ophthalmoplegia. In a very few instances there is a fairly regular occurrence of the transitory ophthalmoplegia with each attack of the migraine. The first case of ophthalmoplegia that Dr. Knapp had seen was of that nature. This had occurred in a girl about sixteen years of age. Her first attacks of ophthalmoplegia were of short duration, occurring with the attack of migraine, then the ophthalmoplegia did not clear up with the recovery from the attack of migraine, but remained a partial hemiplegia. There had been found in a considerable number of the cases of literal gradual persistence of the ophthalmoplegia until it became permanent ophthalmoplegia independent of the migraine. The vascular element in the causation of the ophthalmoplegia was, of course, very clear. At the same time it must be borne in mind that in the autopsies of ophthalmoplegic migraine the lesion has not been of a vascular character. There had been either a meningitic disturbance or a tumor in the neighborhood of the third nerve. In regard to the hemianopsia association with migraine, Dr. Knapp had seen two cases.

Dr. N. E. Brill of New York said that only recently a nurse in the training school with which Dr. Brill was connected, who had had occasional attacks of migraine for a number of years, developed a hemiplegia affecting the right arm and leg without any aphasia and without any demonstrable sensory disturbances. The hemiplegia disappeared in three days, leaving the girl rather exhausted. She recovered rapidly and had

an attack of migraine since but no hemiplegia. The hemiplegia in this case was thought to have been of toxic origin.

Dr. HUNT, in closing, said that in regard to the pathology of transient and permanent attacks he personally believed they had the same pathological basis. They were essentially a vascular spasm. Dr. Collins' suggestion of the possibility of lues in migraine was, of course, a very important one. Dr. Hunt would broaden it and say that in a symptomatic migraine with no organic cause it was very important to exclude syphilis. As far as possible he had not done that with the cases reported and regarded them as essential or idiopathic migraine.

Report of a Case of Pituitary Tumor, with Exhibition of Patient.—Dr. WILLIAM M. LESZYNSKY of New York read this paper, in which he reported the case of a boy eighteen years of age. At his twelfth year he began to increase in weight until he now weighed 152 pounds, his height being 4 ft. 9 inches. He had since complained of frequent severe headache, occasional vertigo and vomiting, failing vision, and stumbling gait. There was pronounced adiposity, dry skin, absence of hair in the axillæ and over the pubis, undeveloped external genitals, and tapering hands of infantile type. All of his movements were slow. He yawned frequently, and then fell into a deep sleep, unless aroused. There was retarded mental development corresponding with the Binet scale for the twelfth year. The *x*-ray picture showed erosion of anterior clinoid process and calcareous changes in the floor of the sella turcica, which was not enlarged. In the right eye the vision was diminished to perception of light; the left, equals 20 100 with contracted fields for form and colors. Bilateral primary optic atrophy. Exaggerated knee jerks, ankle clonus and Babinski plantar reflex. Blood, cerebrospinal fluid, and urine negative. Increased carbohydrate tolerance. The intracranial pressure symptoms were attributed to internal hydrocephalus. The visual disturbance was assumed to be the result of pressure upon the optic nerves, either from a distended third ventricle, or from a hypophyseal tumor. The corpus callosum was punctured, in order to establish permanent subdural drainage. Ten days later all of the symptoms of intraventricular pressure had disappeared. He had since remained in good health and one year after his discharge from the hospital the vision had improved to shadows at 3 feet with the right eye and 20 40 with normal fields in the left eye.

Dr. E. B. ANGELL of Rochester said he had had two of these cases the past winter and was really somewhat in doubt as to what to do with them. He saw Dr. Cushing perform one of his transsphenoidal operations and made up his mind that it was paying a high price for getting a little improvement. If this treatment followed by Dr. Leszynsky was satisfactory it would certainly be a big gain.

Dr. ERNEST SACHE of St. Louis said he thought it was extremely important in the study of these questions to understand the directions in which the pituitary tumor was growing. They had found it absolutely essential in all pituitary cases, in fact in all intracranial cases, not to be satisfied to pass judgment on *x*-ray findings unless they had a stereoscopic picture. They found when they studied these stereoscopic plates that they got a very different picture. He felt that corpus callosal puncture in general did not offer a very effective means of relieving a hydrocephalus.

Dr. W. G. SPILLER of Philadelphia said the question which Dr. E. Sachs had brought up was a very interesting one. He had recently a case in consultation with Dr. Frazier and Dr. de Schweinitz where it has come up. Could we be sure that the hydrocephalus was caused by the pituitary tumor or the pituitary symptoms caused by the hydrocephalus? Dr. Spiller was of the opinion that hydrocephalus may be primary and by pressure on the pituitary body give the symptoms of pituitary tumor. In the case referred to, a child of 10, with marked pituitary symptoms, increased sugar tolerance and eye symptoms callosal puncture was done with relief of ocular findings, but no relief of general findings.

Abderhalden Reactions and Defective Mental and Physical States.—Drs. S. D. W. LUDLUM and E. P. CORSON WHITE of Philadelphia said that regardless of the criticism of the Abderhalden reaction they again joined the group which saw fit to defend it. In the blood of a thymectomized dog they obtained reactions to testes and pancreas, just as had previously been done in patients which had physiological symptoms of thymectomy. Following this they saw three cases of backwardness in children in which the symptoms were those of lymphatism. These cases reacted to thymus. Results of treatment of these cases with pituitary extract were phenomenal. A girl of 5 years showing gigantism reacted to pituitary. The symptoms were controlled by thyroid extract. They had ten cases of hypomaniac state in adults pointing to hyperpituitarism rapidly controlled by the opposite harmone. A case of infantilism which reacted to thymus started to grow when put upon pituitary extract.

Dr. HENRY A. COTTON of Trenton, N. J., said that this was the most important problem before the psychiatrist. The question of the influence of the ductless glands or the glands of internal secretion upon mental conditions, probably more especially in dementia præcox, seemed to be evident to-day. It seemed to him the work they had been doing in Trenton in the last two years in regard to dementia præcox was supporting in another manner the question of glandular affections connected with this disease. Following out Cushing's ideas in hypopituitarism they examined a number of cases. They examined the blood pressure, sugar tolerance, the polyuria, and all of these cases have shown one thing, that is that the pituitary gland was at fault. There was probably a group of cases in which the thymus was affected and perhaps the suprarenal and the other glands also. As these studies were developing we could at least look to some definite facts to be gotten out of this work to indicate a proper theory.

(To be continued.)

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Original Articles.

WATER IN THE PREVENTION AND CURE OF TUBERCULOSIS;

WITH A PLEA FOR PUBLIC BATHS FOR OLD AND YOUNG AND SWIMMING POOLS PARTICULARLY IN CONNECTION WITH PUBLIC SCHOOLS

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NEW YORK.

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BECAUSE hydrotherapy in the treatment of tuberculosis, and particularly pulmonary tuberculosis, is, in my humble opinion, next in importance to aerotherapy, and because it is relatively little used even in some of our otherwise well equipped sanatoria and by some well trained phthisiotherapeutists, I have gladly accepted the honoring invitation of your president, Dr. Simon Baruch, who may justly be called the father of hydrotherapy in this country, to present this short paper on the use of water in the prevention and cure of tuberculosis.

Before speaking of the external uses of cold water, I wish to say a few words on the internal use. If one is in the habit of taking a careful anamnesis of a tuberculous patient when he presents himself for the first examination, and does not fail to inquire into the condition of the patient's bowels, the examiner will discover in a very large percentage of cases that the patients are habitually constipated. As a matter of routine, I invariably ask the new patient how much water he drinks daily; most frequently the answer is "I drink very little." When the patient is taken under treatment and urged to drink from six to eight glasses of water between mealtimes and even small quantities with his meals, it is surprising to notice how quickly nearly all the symptoms, such as constipation, high temperature, headaches, malaise, and anorexia disappear, and even the cough becomes much better. Of course, the explanation for this improvement lies in the fact that with the increased ingestion of water the toxins secreted by the tubercle bacilli as well as the toxins from an overloaded intestinal tract, become largely diluted. The temperature is lowered, the bowels evacuate freely, the kidneys excrete more abundantly, thanks to the increased amount of liquid, and a feeling of relative comfort replaces that of nausea, malaise, headaches, etc. The increased amount of water ingested also helps to make the sputum less tenacious. This beneficent action of water on cough and expectoration can be materially increased by urging the patient to take an abundance of salt with his meals. Aside of the well-known fact that by the ingestion of chloride of sodium the demineralization characteristic of tuberculous individuals is counteracted, the salt and water produces an increased osmosis, facilitating cough and expectoration. Permitting the patient to take a moderate amount of liquid with his meals and urging him to take a glass of cold water instead of a cocktail before his meals often has a surprisingly good effect in improvement of appetite, general nutrition, and consequent increase in weight.

The old superstition about not taking any liquids with meals is still ingrained in the vast majority of even intellectual people. They forget that a moderate quantity of water ingested with a meal helps instead of hindering digestion. The belief in an aperitive, the alcoholic appetizer commonly called a cocktail, as a means to increase the appetite and stimulate digestion, is even strongly implanted in the minds of some physicians, if we are to judge from the dinners which we are occasionally privileged to attend. That a glass of clear, cool water, taken half an hour before meals, is the best appetizer and stimulant for the gastric secretions, is a gospel which needs to be spread and practised a little more freely and a little more ardently by medical men.

When the patient in the latter stages of tuberculosis is feverish, next to rest and fresh air the ingestion of cold water (pure, in lemonade, or as cracked ice) or ice cream with the external hydrotherapeutic applications, is the best antipyretic remedy at our disposal.

Now let us turn our attention to the external use of cold water which is invaluable as a prophylactic and curative means in tuberculosis.

If I should be asked to define predisposition to tuberculosis either inherited or acquired, I would briefly answer that it was physiological poverty. All that should be and is physiologically rich in the normal man is physiologically poor in the individual predisposed to tuberculosis. His circulation is deficient; he is anemic, that is to say poor in blood; his nervous system is easily exhausted; he tires easily, and his muscles are flabby—all of which indicates a poor assimilation of food; his skin shows the same characteristics as the muscles and is very sensitive to changes of temperature because of its deficient contractility upon the small blood vessels which it contains; in other words, the whole cutaneous, muscular, and nervous systems are below par.

The value of the internal use of water, of which I have just spoken, is as great in the predisposed as in the typical tuberculous invalid, but there is perhaps no remedy of such inestimable value to overcome the above-mentioned physiological poverty as the external use of cold water. We know, of course, that the mechanical and thermic stimulations of the skin are responsible for the effect of

*Read by invitation before the American Association for Promoting Hygiene and Public Baths. New York, May 11, 1915.

cold water (75° to 60°) on the normal system; we know that even the exposure of the body to cold air brings about the same stimulating effect through an increase of oxygen consumption in proportion to the intensity of the cold. The cold water has the same effect, but in addition, particularly when taken as a shower bath or spray, it produces an invaluable mechanical stimulation.

The predisposed individual who, as I have already stated, because of the lack of contractile power in his skin, is sensitive to the unwholesome influence of sudden changes of temperature and non-resistant to the invasion of germs of influenza or common colds, will find the very best prophylactic measures in the judicious use of cold baths. Hence I cannot plead too ardently for the establishment of public baths, municipal, and others, including floating baths for the warm season; but they should all be supervised by the proper health officials. Let bathing in winter and in summer be made not merely an act of recreation, but one of the essential features to develop a healthy, strong, and tuberculosis-free population. If the town is situated near the sea coast, salt water from the ocean should be utilized to the largest possible extent for such public baths. All public baths, be they maintained by the municipality or by private individuals, should of course be properly constructed and they should be so supervised that the propagation of infectious diseases shall be impossible and drowning and other serious accidents shall be guarded against.

In advocating public baths so ardently, I do not however wish it understood that I am not strongly in favor of every family living in city or country having its own bathroom. To judge from my early experience as a poor student, bathrooms are rare and far between for the young man or woman obliged to live in a boarding house or cheap rooming house, and I would suggest a means whereby these people, often alone in the world, could also enjoy the luxury of the exhilarating and health-giving influence of a daily cold bath.

With the aid of an English bathtub, or collapsible rubber tub, 7 to 10 in. deep and about 3 ft. in diameter, a small watering pot with a spout, and with a little ingenuity one can establish a very simple but effective shower bath. Not to get into conflict with the landlady, the tub can easily be placed under the bed when not in use and the floor may be protected against getting wet by a large piece of oilcloth. In winter the room in which the bath is taken should be comfortably warm.

The physiological effect of cold water on the body has been so often and so well described that I feel I could only reiterate what has been said by others much better than I have the time to do here, nor do I feel that I have the ability even if I had the time.

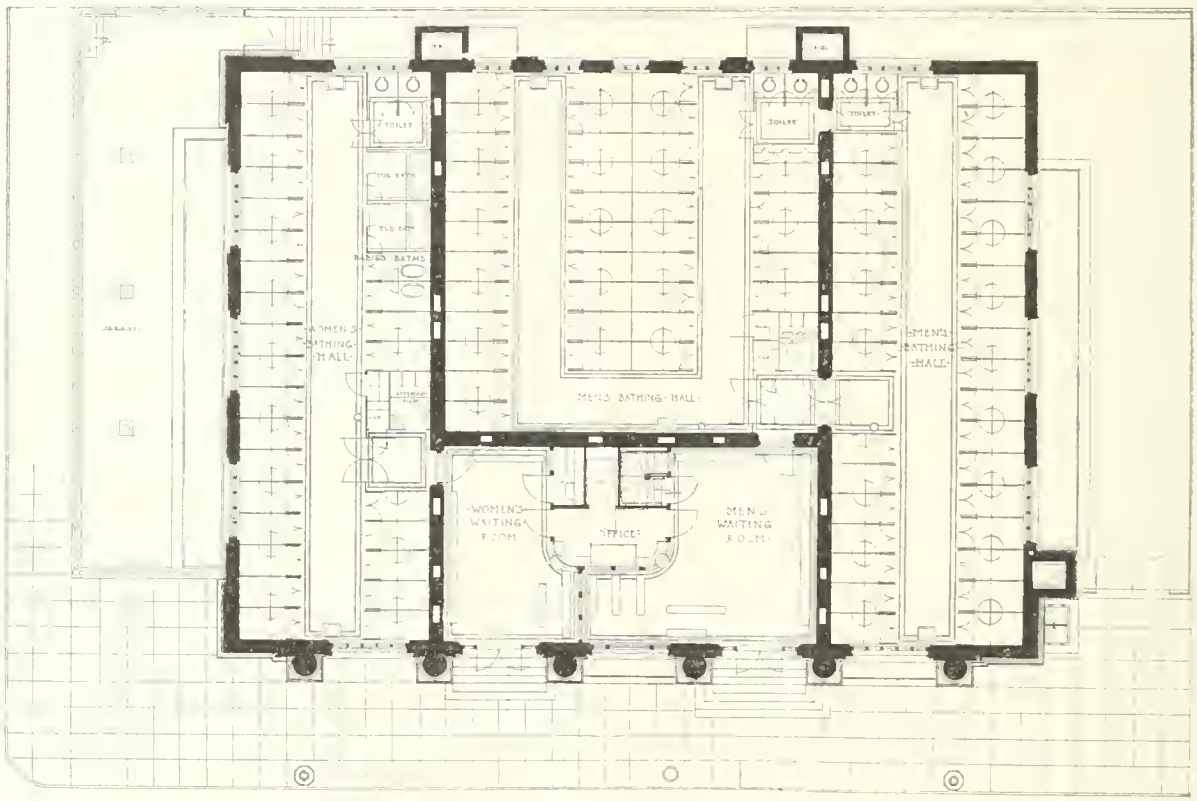

Fig. 1.—Plan of first story of the public bath located at Montgomery and Charlton Streets, Newark, N. J.

Baruch* puts it very tersely in the following sentence: "The nerve endings in the skin furnish a clew to that remarkable sensitiveness of the epidermic layer which opens to hydrotherapy a free gateway to the central nervous system, and especially to the sympathetic, which controls most of the organic functions.

Geyser† describes the tonic effect of cold water on the tuberculous invalid in the following words: "In them the mechanism of the leucocytic and erythrocytic apparatus that should produce antiferments against the tubercle germ is altogether absent, or is devitalized and minimized in efficiency. Tuberculosis and anemia are almost inseparable. Such a

*Baruch, Simon: "Hydrotherapy a Guide to the Application of Water in Disease." Wm. Wood & Co., New York; 3rd edition, 1908.

†Geyser, Albert C.; "Water as a Physiological Tonic." *New York Medical Journal*, Vol. CI, No. 21.

patient requires tonic treatments; he is in urgent need of something that will start his cytogenic apparatus into full activity. There are three very important things that will do this, viz., proper food rich in fats and carbohydrates, scientifically

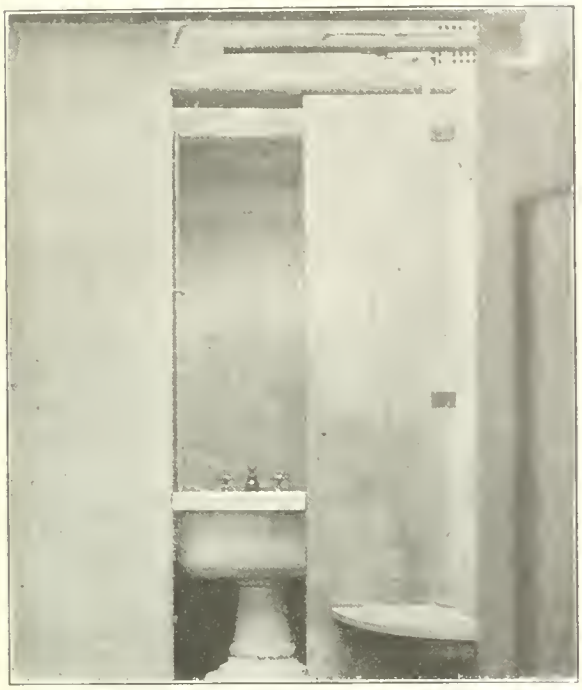

Fig. 2.—The public baby bath.

regulated exercise of body and special breathing exercises, and the tonic effect of the cold baths. All these are at once followed by an enormous increase in red and white corpuscles. Greatest among these is the cold bath at 76° Fahr., taken upon rising in the morning."

If prior to my taking up tuberculosis as a special study I had any prejudice against the external application of cold water to phthisical patients, it was soon overcome when I had the privilege of serving as assistant to the immortal Dettweiler in the Falkenstein Sanatorium for consumptives. In this latter, though a private institution, the patients were most obedient and willing to submit to whatever therapeutic measures were prescribed for them. It was a surprise to me then to see nearly all the ambulant cases line up every morning for their cold shower in the hydrotherapeutic establishment. Most of the patients took a short walk before their douche to get what the French call a preaction.

My observations of the hydrotherapeutic method then in use at Falkenstein, however, did not wholly satisfy me. I could see much good from its use in some cases but not in others, and I thought the application of water in the treatment of phthisis should be much more individualized, especially in a sanatorium. In a goodly number of cases I could see that the inspiration gradually deepened, that the heart contracted better, that the superficial cutaneous hyperemia caused by the cold water relieved the congested pulmonary condition, and that concomitant with this there seemed to be a general improvement in the nutrition. It seemed to me, however, that a number of patients, although they imagined they had reaction, did not really react, and with the exception of purely incipient cases I am to-day convinced that in phthisical patients the routine application of cold water in the form of douche or rainbath can be productive of a great deal of harm.

For the incipient cases who react well and who can go to the hydrotherapeutic establishment in the institution I recommend a short walk, or calisthenic exercises before the douche, but neither the walk nor the physical exercises taken before the bath with the view of producing a good reaction should be of such a nature as to cause the patient to become over-tired. The temperature of the cold application may range between 80° and 70° Fahr.

Geyser maintains that "a drop of 22° applied suddenly over the entire body is sufficient to arouse all the physiological functions." Personally, however, I have found that 5° more or less matters very little in the application of cold water for the average incipient case.

There are, of course, cases even among the incipient in which it is necessary to begin with much higher temperatures (95° to 90° Fahr.) until the patient's cutaneous and nervous systems are sufficiently hardened to stand lower temperatures (80° to 65°). The duration of the application of the cold water should likewise be graded and be short at the beginning; in some cases thirty seconds to two minutes is all that should be attempted at first.

No elaborate apparatus is necessary. An arrangement which enables a direct jet of water to fall with moderate force from above on the patient's shoulders and a horizontal bar which he can take hold of so as not to slip is all that is necessary. The patient himself makes the apical regions of his chest the recipients of the jet of water alternating the right and left sides and preventing his head

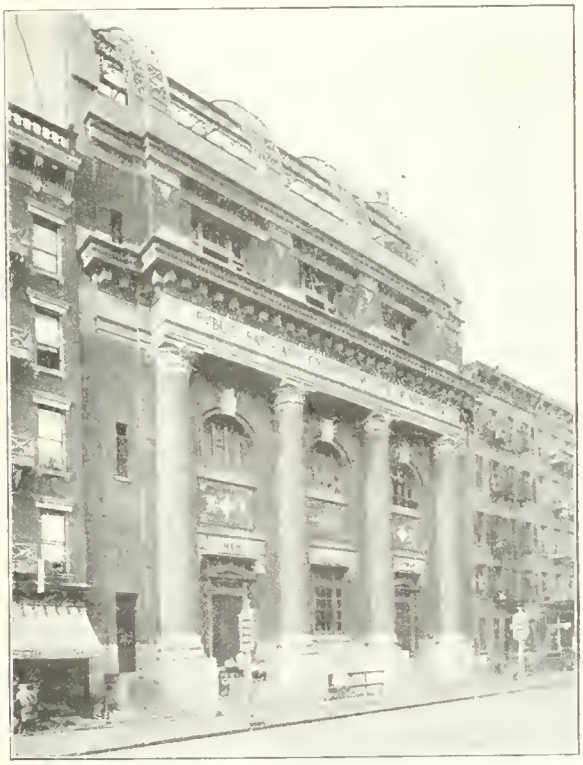

Fig. 3.—Public bath and gymnasium.

from getting wet. If he cares to he can place himself so that the stream of water will strike his sternum and spinal column. The whole body is thus quickly bathed and he enters a moderately warm room where he may dress.

One may of course also take the tonic bath by complete immersion up to the neck in the ordinary bathtub. In this case also the temperature of the water should be regulated (95° to 75° Fahr.) and so should also the duration of the bath (1 to 3 min.), according to the condition and reactive power of the patient. When the patient takes his cold bath in this way the bathroom should be warmed to a temperature of 80° to 85° Fahr. and warmed rough towels should be at hand for the patient to use himself or his attendant to give him a vigorous rubbing over the whole body for several minutes. The patient should then put on a warm bathrobe and return for a few minutes to the nearby warm bed, unless he does not feel tired at all and is warm enough to dress.

Whether the bather is merely predisposed, incipient, or in the early stages, if he has no pleasant feeling of warmth after the application of the cold water, either the water has been too cold, he has exposed himself too long, or his cutaneous surface and nervous system have not been sufficiently trained to withstand the shock. To avoid unpleasant complications which might arise from this lack of reactive power, the patient immediately after the bath should be placed in a warm bed adjoining the douche room and a glass of hot millk or hot lemonade administered.

The vigorous rubbing of the entire body with a well warmed and pretty rough towel is one of the best means to assure a reaction.

Perhaps the vast majority of patients which come under our observation have not been in the habit of using cold douches or cold baths, and if they have been fond of cold bathing or cold showers prior to their becoming ill, they have ceased using them with the beginning of their tuberculous illness. These patients must be reeducated to the use of cold water and the physician who succeeds in doing this will invariably be repaid by most gratifying results.

Let me state here briefly the very simple method to which I resort to train the untrained patient to the use of cold water and to assure reaction. It is the chilling which the patient himself fears and the physician ought to fear, that demands our attention, and we must avoid it. Thus, I believe it is best to have the patient take douches either in the morning when arising from his warm bed, or in the evening after he has been in bed for about half an hour and has become thoroughly warm. If necessary, the bed can be warmed with the aid of a hot water bag which may remain at the feet of the patient.

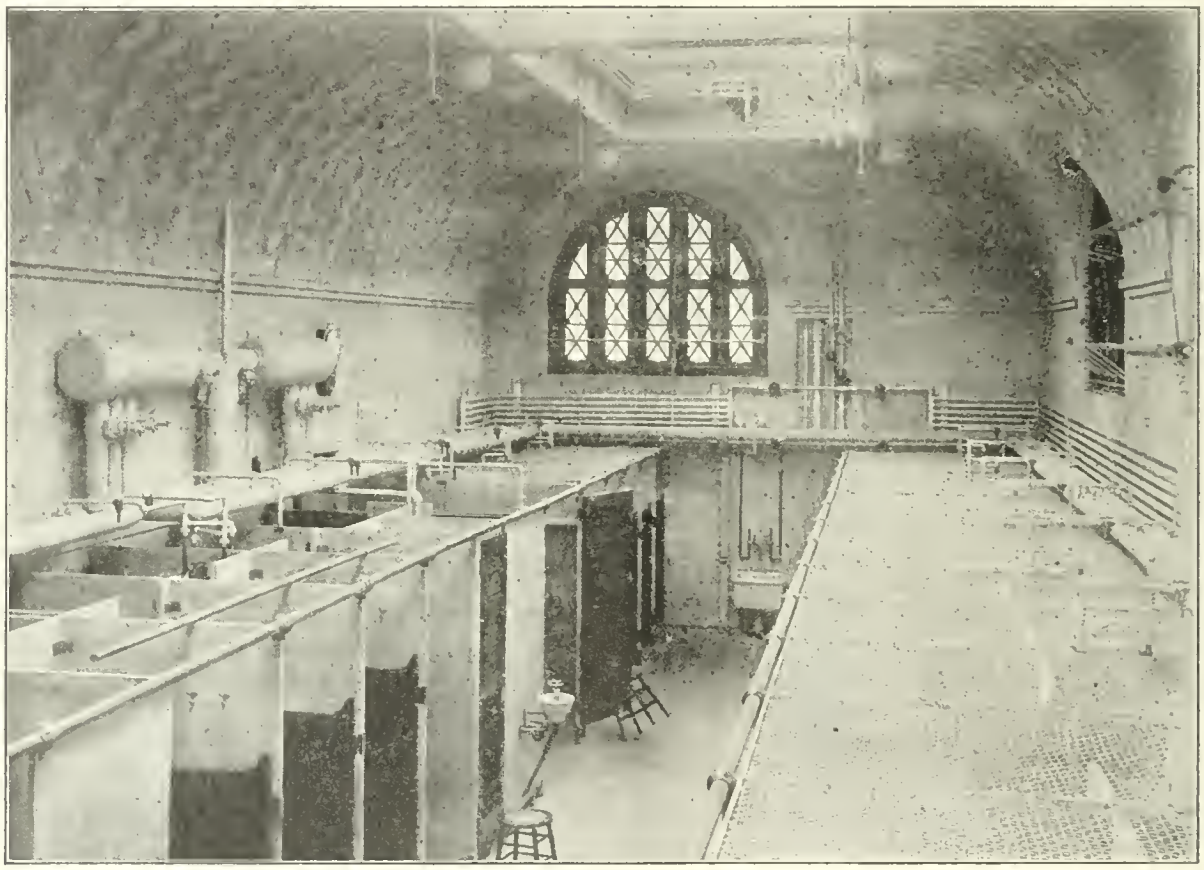

Fig. 4.—Public shower bath

It is also of greatest importance when good reaction is not certain to place the hydrotherapeutic outfit as near the bed as possible. To this end I recommend a circular English bathtub, perhaps a little larger than the one already referred to above. Moderately hot water (about 110° Fahr.) is poured in to the depth of about 5 in. The patient then rises from his warm bed, divests himself of his night clothes, which he places in the bed, covers the latter so as to retain the warmth, and steps into the warm water. Then a second person pours one or two pitcherfuls of cold water quickly over each shoulder, thoroughly wetting the whole body. The head should not be wet.

The douche can, of course, be taken more easily with the help of a second person to pour the water from a pitcher or water pot, but it is possible for the patient to do it himself. If a hose can be

attached to a nearby faucet, a douche, bath, or direct jet can be improvised.

If the patient prefers, or is obliged, to attend to the douche himself, he should proceed as follows: Place the English bathtub or a larger washbowl with hot water in it on the floor to stand in and have a smaller washbowl filled with cold water and a good sized sponge placed on a table within easy reach. While standing in the larger bowl, or tub, squeeze out the sponge soaked in the cold water once over the left shoulder, once over the right, once in front of the neck, and once over the back of the neck. Thus the whole body will be douched. The patient dries himself partially so as not to wet the bed too much and returns quickly to the latter. Under the warm cover he will feel warm and the little moisture on his body, if there is any, will soon dry. He then puts on his nightshirt. Through this procedure reaction is assured and the patient rarely fails to enjoy the douche and to feel comfortable after it.

The temperature of the cold water can vary from 80° to 65° Fahr. For timid patients, or those who have never used a cold douche or have not used one for a long time, it is wise to begin with the hydrotherapeutic application at a temperature of 90° or 85° Fahr., or 95° and gradually go down to 65° or whatever temperature the water may be, as it comes out of the faucet. Of course it must be borne in mind that for example in New York City in midsummer, where the temperature of the water coming out of the faucet may range from 70° to 80° Fahr., it will be necessary, in order to have a temperature of 65° to add some ice water to lower the temperature to the desired degree.

From what has been said thus far about the application of cold water as a tonic and to invigorate the tuberculous, it must be evident that individualization is most essential. A routine hydrotherapeutic treatment for the consumptive may prove as disastrous as a routine aerotherapeutic, solartherapeutic, dietetic, or routine symptomatic treatment.

It is always well to have the windows closed and the room warmed while the douche is being taken. If in spite of all these precautions the patient should fail to react, the douches should be discontinued and only resumed after the general condition has improved and enough weight and strength has been regained to assure reaction. If during the application of cold water the head should accidentally get wet the hair should be thoroughly dried. This precaution the patient should always bear in mind whenever he has washed his head.

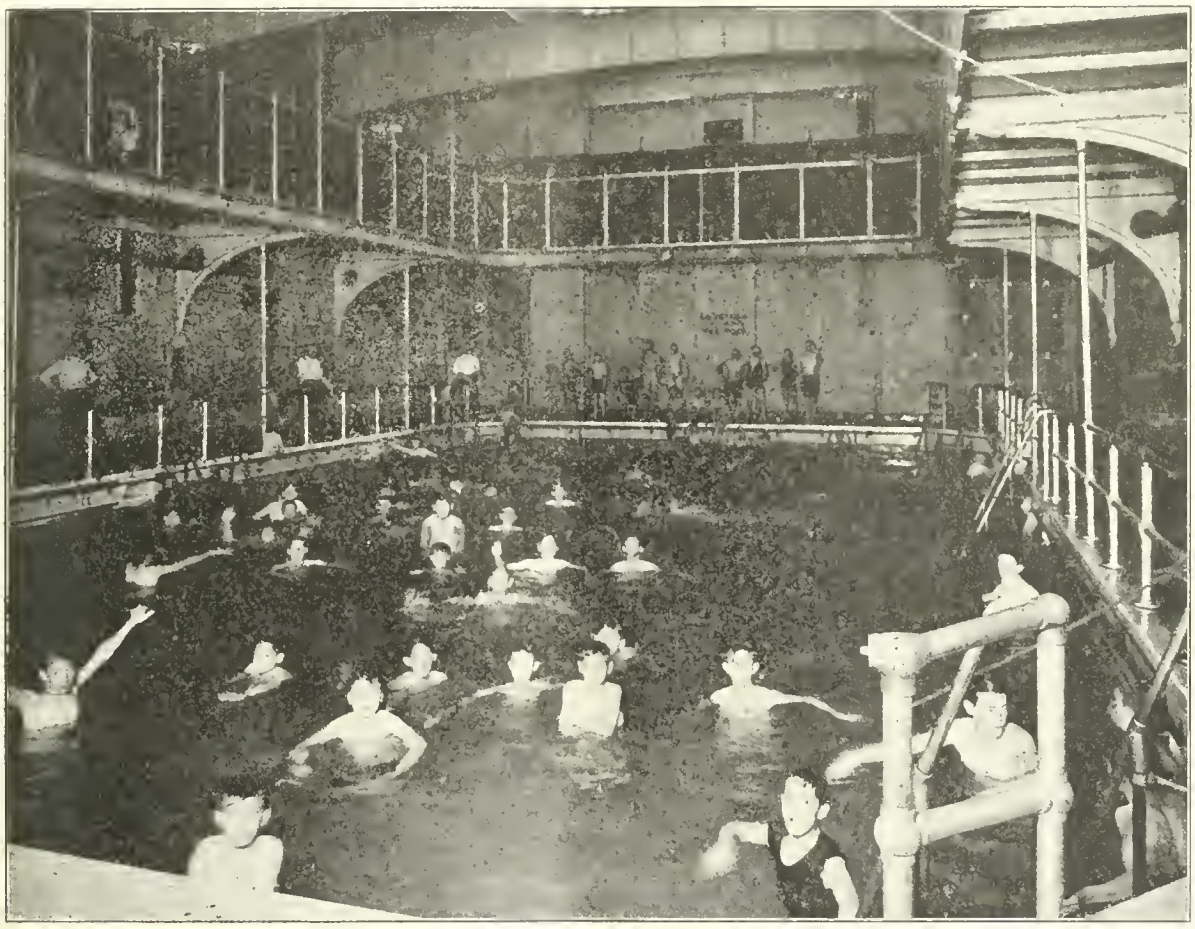

Fig. 5.—Swimming pool in one of the New York public baths.

There remains now only for me to say a few words on the application of cold water in the symptomatic treatment of pulmonary tuberculosis. Sponging the patient with three-fourths water and one-fourth vinegar will materially aid in the combat of hyperhydrosis. To combat obstinate night-sweats, distinctly pleuritic pains, intercostal neuralgia, and uncontrollable cough, I have found the wet-pack equally good. With the aid of three towels or several thicknesses of rather coarse linen, one for each apex like a broad shoulder strap, and another wider one to wrap around the chest, an excellent wet-pack can be arranged. The three towels or the three pieces of coarse linen are soaked

in water at a temperature of about 50° Fahr., wrung out rather hard, and then applied over the apices and around the thorax. A thick flannel band, somewhat wider than the compress, is wrapped over this and the whole fastened in place with safety pins. The patient usually feels no discomfort as a result of this application, sleeps well, sweats but slightly, and pleuritic and intercostal pains often disappear like magic.

The external application of water as an antipyretic remedy in tuberculosis is of course all important. As a rule, we may say the weaker the patient and the higher the temperature, the more decidedly tepid should the water be (85° to 75° Fahr.). For the average patient sponging off —first partial, then entire—with water varying from 65° to 55° Fahr. is indicated. With timid patients the sponging off should always be gradual and partial at the beginning, and in the following order: hands, forearms, face, throat, neck, armpits, arms, back, stomach, gluteal regions; finally, the lower extremities from the hips downward. This sponging off should be done under cover, and with as little exposure to the air as possible. Each portion, after being sponged off, should be rapidly covered without being dried, so that the gradual evaporation of the water adds to the cooling effect. The effect of the first application will be a guidance to the physician for further procedure. This method of applying the cold water can be repeated three, four, or more times daily until a perceptible reduction in the temperature is attained. In the use of wet-packs the same gradual procedure and the same care as to the temperature should be exercised.

I do not favor the entire enveloping of a phthisical patient in a cold sheet for the reduction of temperature, but prefer the partial application of compresses to either lower or upper extremities or the compress over the chest, already described. I resort to this especially when the sponging off seems to disturb the patient too much. I apply the wet-pack first for a while to the lower extremities; next to the upper, and so on alternately every half hour. The wet-pack can also be improvised with the aid of a couple of ordinary towels as pack and a few larger Turkish towels as cover. When the temperature is very high an ice bag over the heart will render excellent service; but still better is the application of a coil of rubber tubing over the head or over the heart. The water can be made as cold as desired, and the rubber coil is not nearly as heavy as the ice bag and more easily applied.

In conclusion, permit me to say that all I have endeavored to do is to show briefly the great value of the judicious use of water as a prophylactic and therapeutic agent in tuberculosis. As I have said so many times, it is my humble opinion that hydrotherapy is only second in importance to aerotherapy in the modern treatment of pulmonary tuberculosis. However, since the future of medical science will lie in preventive measures and your association stands for the promotion of hygiene and public baths, I ask to be placed on record as saying that well conducted and carefully supervised public baths, which will be opened to the masses all the year around, will be one of the most important factors in preventing the diseases of the masses, of which, alas! up to this time tuberculosis is still the foremost.

I would consider my paper incomplete did I not in conclusion say a word about the inestimable value of the external application of cold water in the prevention of tuberculosis in childhood. I consider that for the average child cold water application is permissible after the age of one year. Of course, one must not think of plunging the young child in cold or even cool water. But every mother or nurse after she has given the child its warm bath can with safety put her own hand in pretty cold water and then apply it to the child's body, repeating this operation a few times until the whole of the child's body has been touched with the cold water, the temperature having been modified and reaction assured by the mother's or nurse's warm hand and gentle friction. This method carefully applied will prevent the child from so-called colds perhaps more than anything else. There are few children who do not thoroughly enjoy this little finish of their daily bath.

By a wise philanthropy the city fathers of Newark, N. J., have upon the suggestion of Mrs. Mary E. Jacobson of that city incorporated in the recently completed public baths facilities for bathing babies (Fig. 1). The poor mothers who have no bath facilities at home can take their babies there and give them their daily baths under the best sanitary conditions. The accompanying picture (Fig. 2) is an illustration of the public bath baby.

As the child grows older, the temperature of the cold application can be decreased and the duration correspondingly increased. When the child arrives at school age, particularly the city child from the overcrowded tenements, I trust that it surely will get into a school where there are shower baths and swimming pools. I cannot plead too ardently for both—for the cleansing bath because it prevents disease in school and at home, and for the swimming tank because of its invigorating, health-giving, mind and body cleansing, and life-saving effects.

When I say mind as well as body cleansing I do it advisedly. I have it on the authority of eminent pedagogues that the children who have the advantage of shower or better yet swimming baths in public schools do better work, are mentally more alert, and are better behaved than pupils who have not had this privilege. When the boys and girls have become accustomed to bathe at the school they exert a beneficent missionary influence on their parents, who are often full of prejudice against the baths, which cannot be overestimated.

Concerning the life-saving effects of the swimming pool for children I cannot speak too feelingly. It is my privilege to be the senior visiting physician to the Hospital-Sanitorium for the Consumptive Poor of the City of New York, known as the Riverside Hospital Sanatorium for consumptives, located on North Brother Island. I believe you all remember that fearful catastrophe known as the Slocum disaster. I was on duty in the hospital, when on the morning of June 15, 1904, a boat laden with 1500 happy people, mostly women and children, came up the river. It was an excursion party from St. Mark's Lutheran Church. Just before reaching North Brother Island the boat took fire, the captain made a heroic effort to reach the island; the boat was beached only a short distance from the hospital. The usual panic ensued, and a struggling mass of humanity, some with and some without very defective life preservers, jumped or were thrown into the water. Physicians and patients from the hospital went into the water and saved as

many lives as they could. The water was shallow near the shore and had these women and children known how to swim, instead of more than a thousand lives, of which 900 were children, none or perhaps only a few would have been lost.

Aside from the invigorating, the healthful, and buoyant feeling which a swim in clean pure water gives to the bather, I maintain that to know how to swim is necessary as a life's equipment for every man, woman, or child. All public schools have fire drills to prevent the loss of life in the event of a fire. It is equally important that the children should know how to save their lives and perhaps those of others by knowing how to swim. I plead that swimming lessons be made a part of the curriculum of every public school. To have seen more than 900 little bodies laid out on that terrible day on North Brother Island made an impression on me which will last forever, and as I have often been before so today am I grateful for the opportunity to plead for public swimming pools, particularly for our school children. The money a municipality invests in public baths, floating baths, seaside baths, and swimming pools will give splendid returns in the saving of lives—directly and indirectly. Indirectly by making people clean physically and morally, by preventing disease through the cultivation of cleanliness, and by making the people more vigorous and thus resistant to the invasion of disease. Directly by teaching every future citizen, man or woman, how to swim and to save his life in the event of accident.

That the bathing establishments can be made ornamental as well as useful, the city of New York has already shown. Through the courtesy of Messrs. Werner and Windolph, architects of a number of them, I have come into possession of some plans and pictures of such baths which I herewith reproduce. Figs. 3, 4, and 5 represent one of the latest New York public baths, including gymnasium and roof playground. I hope the sight of these illustrations may stimulate city fathers and philantropists everywhere to become advocates of one of the best methods to improve health and give pleasure and recreation to old and young throughout the community. Nor should we confine ourselves to public baths to be used all year around such as are pictured here. We should also encourage the establishment of public swimming and bathing facilities on seashores and in rivers and lakes wherever the latter two are not used as drinking water by the community and are not contaminated by sewage.

Hence, I sincerely hope that the present agitation for an increased number of floating baths in our own city will meet with success. Every one who has made a study of the situation will agree that there is urgent need of such floating baths during our hot season.

I deem it indeed a great privilege to have been invited to address a body of men and women who, like you, are such ardent advocates of all such institutions as I am pleading for with all the ardor and earnestness I am capable of. All lovers of their kind, all true statesmen, city fathers, and physicians hail the work of your association and wish you Godspeed in your noble endeavors.

16 West Ninety-fifth Street.

A STUDY IN BLOOD COUNTS IN RELATION TO VACCINE THERAPY.

AUTOINOCULATION IN THE TREATMENT OF MOUTH INFECTIONS.*

By JOSEPH HEAD, M.D., D.D.S.,

PHILADELPHIA.

During the last year, as in previous years, vaccines have continued to prove of great value in the treatment of mouth infection. Advanced cases that ordinarily would drag along with local treatment alone or which would make a gradual progress only to lose ground when treatment was suspended, under a well-chosen vaccine would yield to treatment in three or four months, and the progress would continue with unchanging impetus for a period of a year or two.

It must, however, not be forgotten that vaccine without effective surgical treatment can be of little service, for if the depots of infection are left in the mouth, the curative effect of any vaccine must soon be overcome and the patient will certainly relapse into the original septic condition.

But this paper was written to show the value of blood count in the use of vaccines. I have here for your consideration some blood charts that may prove of interest. They represent some cases where vaccine was given and some cases that were presumably normal. Without going into these cases specifically I might say that blood counts have taught me to be more moderate in my dosage, and I have found that my patients have responded at least as well, if not better, than when the doses were pushed to the point of getting marked reactions. In one case

*Read at a meeting of the American Association of Immunologists, Washington, May 10, 1915.

Fig. 1.

a man of forty without any external symptoms developed a leucocytosis of 71,500 in one week, shooting up from 13,000. His vaccine contained per cubic centimeter: Staphylococci, 300 million; mixed streptococci and pneumococci (4), 50; gram negative bacillus, 50; Gram negative cocci (3), 50; Gram positive bacillus (2), 50.

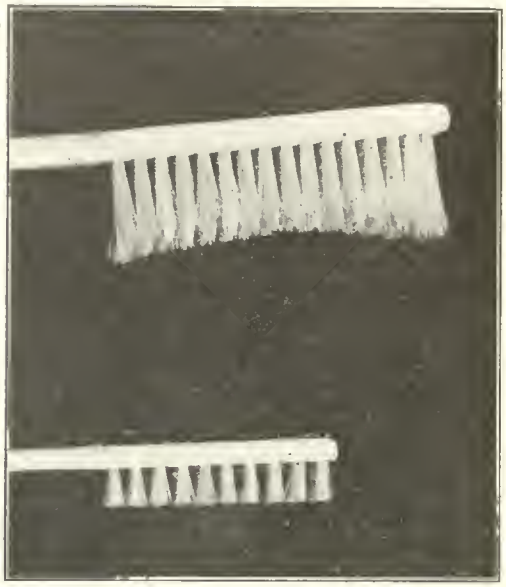

FIG. 2.—Toothbrushes, correct and incorrect; three-quarters actual size.

It was started at 1/10 c.c. and advanced each week 1/10 of a c.c. There were no symptoms except rapid healing of the gums on the sixth dose, when he had 8/10 of a c.c. His leucocytosis, as before stated, went from 13,000 to 71,500.

In another case a patient showed during the treatment a variation in hemoglobin from 65 to 48 per cent, while the leucocytes varied from 16,000 to 8000. A vaccine was given her containing per cubic centimeter: Gram negative bacilli (2), Gram negative cocci (2), streptococci (2), 50 million of each. She was given 1/10 c.c. for three times a week apart, the only reaction being a slight fatigue, and later on there was not even this physical symptom. After the third dose her blood count showed microcytes and a few poikylocytes, and the dose was reduced to between 1/30 and 1/50 c.c., making for the streptococci one to three million and the other germs in proportion. I only mention this case to show that without the blood count injury might unquestionably have been caused this patient by excessive dosage. In other cases the erythrocytes and hemoglobin dropped and the leucocytes rose rapidly on the first dose. Here again we had a warning to reduce the quantity of vaccine and not to increase it until the blood seems to stand the strain put upon it.

The Arneth counts, according to my record, have shown a persistent tendency for the division of two nuclear segments to exceed in percentage that of the division of three nuclear segments. The two segments varying from 45 to 60 per cent, while the division of three segments, instead of being 33 to 48 per cent, according to Simons, was ordinarily between 15 and 30 per cent. Lymphocytosis does not seem to be as much of a factor as I thought last year. The lymphocytes ordinarily do not go up to 40 per cent—usually being nearer 20 and 30 per cent.

In counting the number of erythrocytes and leucocytes a single Thomas Zeiss pipette was used. The blood was drawn to the mark 0.5 in the pipette and the pipette was immediately filled with Toisson solution to the mark 100. A Turck counting chamber was used and it was filled twice for every case; 288 of the large squares were always counted for the leucocytes and 200 of the small squares for the erythrocytes. For the estimation of hemoglobin the Dare hemoglobinometer was used in every case, as was also the Tallquist hemoglobin scale. The latter, however, was not found to be sufficiently accurate. The Dare hemoglobinometer is far more reliable.

In order to estimate the percentage of the different varieties of leucocytes smears were made on glass slides, dried in the air, fixed and stained by means of Jenner's stain. In every case between 400 and 500 leucocytes were counted.

The original Arneth classification of the polynuclear neutrophiles was found to be too complicated and cumbersome to be of practical use, but to gain some idea of the possible changes that may have occurred to the nuclei of the polynuclear neutrophiles during the course of treatment with autogenous vaccine a count was made of the number of cells containing 1, 2, 3, 4, and more nuclei.

When I decided to report these blood counts in the form of a paper, I hoped to be able to give more positive statements than my later knowledge will permit.

In the last portion of my work I ran four so-called normal blood counts and three blood counts

FIG. 3.

FIG. 4.

where typhoid vaccine was given to presumably normal people. One of the so-called normal counts, a woman of 40, turned out apparently not to be normal at all. Her daily leucocytes ran 19,000, 16,000, 14,000, 13,000, and suddenly, after she had eaten a presumably normal plate of ice cream, that may have contained ptomaines, she ran a leucocyte count of 64,500, with a chill. Then it turned out that her menstrual period had been delayed eight weeks. This was discouraging from the "normal" point of view, and I stopped the blood counts, but I hope later on to make some more studies of this case.

With the other three normals the leucocytes had an interesting way of varying backward and forward between 17,000 and 5000. In fact, they did not seem normal at all.

The typhoid vaccine patients had sore throats or had colds from which they were either getting well or which they were just acquiring, so that as regards normal blood counts I am in the same quandary as the countryman who, when he saw a camel, called out: "There ain't no such animal."

However, in spite of such discouragements I still believe the systematic study of the blood, along the lines shown in these charts, are of distinct value in vaccine treatment.

In closing this report on the blood counts I wish to express my thanks to Dr. St. John for the perseverance and scientific accuracy which made these charts possible.

AUTOINOCULATION IN THE TREATMENT OF MOUTH INFECTIONS.

Autoinoculation consists of rubbing the infecting bacteria into tissues that have sufficient recuperative force to defend themselves by the formation of corresponding protective antibodies. A bacterial colony may have so overpowered the tissue on which it immediately rests that all power of antibody formation is destroyed. But if the mass of bacteria is mechanically removed and a portion rubbed into the healthier tissue adjacent, specific ferments are formed that not only will immunize the local part against further attack of such organisms, but the bacterial resistance of the entire body will be raised against these specific organisms by the distribution of their specific antibodies throughout the entire circulation.

This result, I believe, can be accomplished by thoroughly brushing and cleansing the teeth and gums.

No paper relating to mouth infection would possibly be complete without some reference to the ameba. The discovery of the ameba by Barrett and Smith may have a far-reaching effect on this disease. I have used emetin 1/3 of a grain administered hypodermically in the arm or back for ten successive days during the treatment, and have felt that as an adjunct it is a great help to the vaccine treatment for mouth infection. But I have also had remarkably good results where the vaccine was used without the emetin, results which for perma-

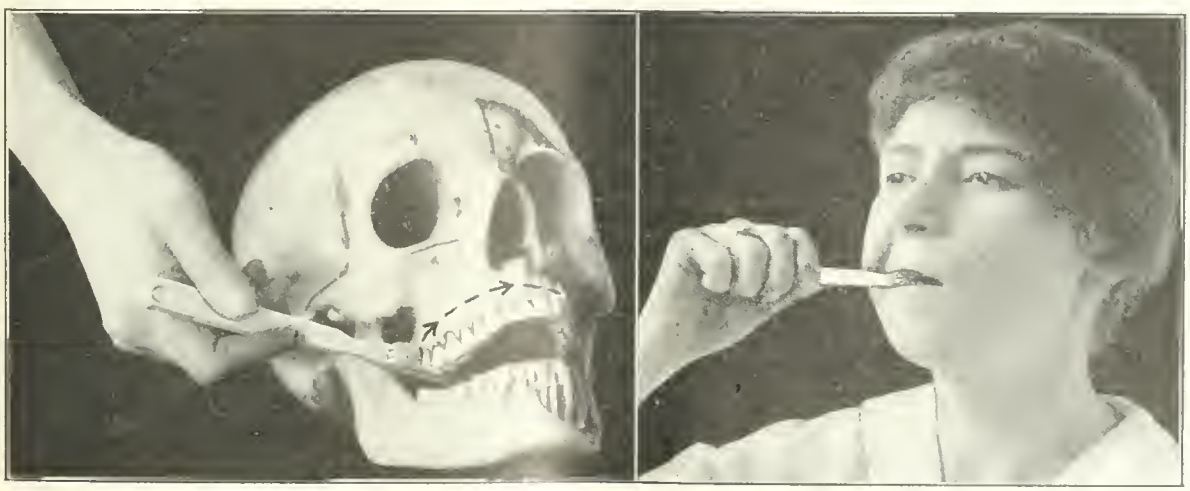

FIG. 5.

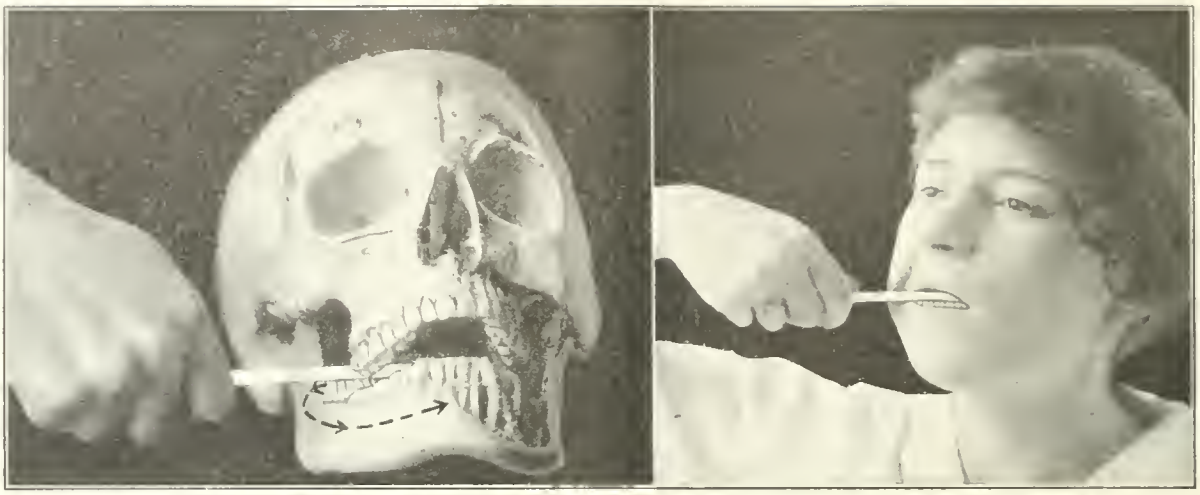

FIG. 6.

nency and rapidity of action were never obtained without the vaccine. I also believe that neither the vaccine nor emetine can cure a case of advanced mouth infection unless there is good dental surgery whereby the primary depots of infection are removed. And I believe that all cures so reported will be followed by a speedy relapse.

In my opinion, no single drug or vaccine can eliminate mouth infection when it is once intrenched. It can only be cured by the intelligent assistance of a practitioner who is able to discriminate just what surgical and therapeutic procedures will be effective, and any specific curative claim for surgery, vaccine or emetine alone will certainly retard, not advance, the cause of true oral hygiene. In this opinion Dr. Bass of New Orleans would seem to coincide when he says: "If a physician feels skeptical as to the specific beneficial effect of emetine, he can remove his skepticism by treating and observing a few patients. Both he and the patient are convinced of the efficacy of the treatment within a short time. After the endamebas have been destroyed by the emetine treatment, however, there are still left the lesions, which will require days, weeks, or months to heal." (*Journal of the American Medical Association*, Feb. 13, 1915.)

He then gives a beautiful description of the pathological lesions of this mouth infection, and goes on to say: "On account of the great prevalence of the disease and therefore the many sources of the parasite, such a patient with our present habits could hardly be expected to escape reinfection more than a few days, and certainly not as long a time as would be required for many of the lesions to heal. This would seem to take away the hope of complete cure."

Dr. Bass states that emetine or ipecac can only partly alleviate the symptoms, and therefore thinks there is no hope of complete cure of mouth infection. I agree with him as regards the efficacy of emetine alone, but I am not so pessimistic as regards the cure of mouth infection, as I am curing advanced cases as a yearly routine, where all the pockets of infection so beautifully described by Dr. Bass permanently disappear and where the rejuvenated gums reattach themselves to the roots and the loose teeth become free from pain and firm under the process of normal mastication.

But when we come to speak of real specifics for the cure of pyorrhea I should like to announce that I have one as effective for pyorrhea as the typhoid vaccine is for the prevention of typhoid fever. In fact, if pyorrhea has not advanced too far my specific will cure pyorrhea when it has actually begun.

My remedy is the autoinoculation caused by the scientific use of the floss silk and tooth brush. As

FIG. 7.

stated before, mechanical removal of bacterial masses is the first essential step in the elimination of mouth infection. Obvious as this is, I will venture to say that not one man in a hundred of this progressive company knows how to properly cleanse his mouth, especially the molars, so that they will be free from infecting masses, and yet this knowledge is of vital importance to the health of every patient. The physician has blindly accepted from the dentist palpably ineffective methods of tooth and gum cleansing. I only ask that some of the accurate technical observation usually employed in physical diagnosis generally be used in the elimination of bacterial masses from the mouth.

For instance, it is the common teaching and generally accepted theory that the tooth brush should be dentated and moved up and down the teeth so as to cleanse the interdental spaces. Now, the slightest observation will show that no tooth brush can really cleanse in between the teeth. The teaching of such an ineffective method prevents the true appreciation of the use of floss silk that really can be effective as a cleanser. The amount of space in the mouth available for free movement of the tooth brush is hardly ever more than two and a half inches, and yet the ordinary tooth brush is two inches long with bristles one-half inch long. With such an instrument bristle friction is practically impossible. The tooth brush should be smaller and the bristles shorter if the real bristle friction is to be obtained. It has been further claimed, and generally accepted, that the gums must not be brushed lest they will recede; while anyone who brushes and cleanses the gums will find that this is the sole way by which recession can be retarded and stopped. These errors are so obvious that it is almost unbelievable that scientific men ever accepted them for a minute.

Gum infection, or so-called pyorrhea alveolaris, starts usually between the ages of five and ten, and develops usually between the ages of thirty and fifty. As soon as the gum recedes from between the erupted teeth it leaves a triangular space. Unless this space is swept daily by floss silk, microbes will collect and remain in spite of the efforts of any tooth brush in Christendom until, having changed from saphrophytes to parasites, they penetrate the gums and peridental membranes, spreading diseases, wheresoever a weakened bacterial resistance most favorably permits. Yet no steps are being taken to effectively prevent this terrible evolution from occurring in our children's mouths. The efficacy of the scientific use of floss silk and a small tooth brush is capable of demonstration, and therefore, if the medical world will only demand that mouth cleansing methods must be effective the ineffective methods will disappear.

The test of any cleansing method is, does it cleanse? The method presently to be shown by me is not claimed to be the only effective method, or the most effective method possible. The method proposed is the only method I know of that will rid the teeth and gums of bacterial masses, leaving a film so thin that a mouth wash will have a chance effectively to come in contact with it. This will make it possible for a mouth wash to retard microbe growth until it is time for the next cleansing, and the mouth will thus be placed in a condition where its natural recuperative force will be able to combat the new inroads of the microbes. If such a method could be taught in the public schools it would increase the healthful years of our future citizens to an incalculable degree. I have taken the trouble to have such a method portrayed in motion pictures for educational purposes. If such instruction could be supplemented by the cooperation of a trained dental nurse in each class room, who would teach the children to effectively brush their teeth so that they could grow up strong and athletic, such teaching would be eagerly received. Every child likes to be dirty, the appeal for cleanliness alone would fall on deaf ears, but what would not healthy boys and girls endure to run, jump, or swim better? Such an appeal in their eyes would add a dignity to accurate tooth brushing that it now altogether lacks. To brush the teeth properly as much pain must be endured for the first ten days as is endured in the first days' training for a foot race. Brushing the gums and necks of the teeth during the first ten days makes them sore and inflamed, but if the brushing is vigorously and bravely continued each day, the gums become as hard and firm as the tissue around the finger nails. Therefore, if the child is informed of the value of this ordeal and encouraged to do this just as a trainer instructs and encourages the young athlete in the first painful exercises that will prepare his muscles for the boat race or the football field, the child will endure it cheerfully.

An effective method of mouth cleansing is as follows: The spaces between the teeth should be swept first with dental floss so that all bacterial masses will be removed from the sides of the teeth and the gums, as is shown in Fig. 1.

This will at first cause bleeding and make the interdental space sore. But if the infection has not penetrated beneath the gums beyond the reach of the floss silk, autoinoculation will soon cause a healing that is little less than miraculous. After using the floss silk the tooth brush should be used. As before stated, the tooth brush should not be over $1\frac{1}{2}$ in. in length and the bristles not over $\frac{1}{4}$ in. long. Fig. 2 shows the relative size of a tooth brush purchased in the open market compared with the size the tooth brush should be.

The bristles may be flat, as shown in the illustration, the principal thing to be avoided is too great bristle length, since bristle length by increasing the pivoting arc of each bristle, just so much reduces the bristle friction produced by the general movement of the brush, and it is bristle friction alone that cleanses the teeth and gums during the process of brushing. Bristles $\frac{1}{2}$ in. long will pivot $\frac{3}{8}$ in. each way without bristle friction. If, therefore, there is a 1-in. stroke the bristle friction stroke is only $\frac{1}{4}$ in., and if, as frequently happens, the tooth brush stroke is only $\frac{3}{4}$ in., there is no bristle friction stroke at all. My own observations have shown this to be a fact. The $\frac{1}{4}$-in. bristle under the same conditions would have a play each way of 3/16 in., which theoretically would cause only $\frac{3}{8}$ in. loss of bristle friction, but in reality it would be less, since the further the bristle extends from the back of the brush, the more readily it bends under pressure. As before stated, $2\frac{1}{2}$ inches is the average space for tooth brush motion found in the average mouth. Therefore, although there may be a $\frac{3}{8}$-inch loss in bristle friction, when the $1\frac{1}{2}$-inch brush is moved through a $2\frac{1}{2}$-inch space there will yet be a $\frac{5}{8}$-inch bristle friction stroke which is amply effective as a cleanser.

And so, having discussed the mechanics of general tooth brushing, let us proceed to inquire into the scientific method of tooth brushing as applied

to the human mouth. There are three motions: the rotary motion whereby all the gums and teeth anterior to the second molars are cleansed with vigorous whirling action; second, the drawing motion wherein the middle of the brush is placed behind the wisdom tooth drawn vigorously across the gum margins of the teeth. In each stroke care should be used to follow the inner curve of the arch with the entire face of the brush.

If at first the tooth brush bristles seem too stiff their excessive harshness can be reduced by placing the brush in hot water for a minute prior to using.

Let us now discuss motion No. 1 in its minute relations: The upper and lower front teeth should be placed edge on edge to avoid the lapping of the upper teeth and rubbed upward to the junction of the upper gum and lip, forward for a distance of a full inch or more, downward to the lower gums and lip margin, and then back to the original position. This should be done at least five or six times, as shown in Fig. 3.

The brush should then be placed between the cheek and the teeth on the right side. Here the same motion should be carried out. The brush should be rubbed upward to the junction of the cheek and gum, back to where the end of the brush is stopped by the overhanging curve of the lower jaw, then back to the start, when it is repeated five or six times as in Fig. 4.

This same motion should be repeated on the left side and the three movements of motion No. 1 are finished. After this movement has been thoroughly performed, if the second and third molars, upper and lower, are examined they will still be found to be covered with bacterial masses. And the reason for their undisturbed deposits is easily discovered. The curving side of the lower jaw lies so close to the upper teeth that no tooth brush can possibly get at them while the jaws are closed, and in the same way the two lower last teeth are excluded from the action of the brush by the fact that they lie behind and within the curving angle of the lower jaw. When the jaws are closed there is not $\frac{1}{8}$ in. room for tooth brush cleansing, but when the jaws are partly opened, the lower jaw swings back, leaving a space of a full ½ in. in which the tooth brush can thoroughly do its work, starting behind the third molars. Therefore, as just intimated, with motion No. 2 for the upper teeth, the mouth should be about half open and the lips and cheek held relaxed. The middle of the bristles of the 1½-in. brush should be placed at the back of the third upper molar and drawn briskly forward along the gum margin, care being taken to follow the curve of the gum with the entire face of the brush. (See Fig. 5.)

To place the brush back of the third molar the relaxed corner of the mouth should be pushed back by the back of the brush until the middle of the brush is directly back of the wisdom tooth. When this is done correctly the brush will be pointing directly at the wisdom tooth on the other side of the arch. The middle of the brush should be placed back of the third molar, not shoved in place by the point, as by shoving it the bristles will be so bent that the resulting pivoting of the bristles will cause the back of the upper third molar to get no bristle friction at all, and so the back of the third molars will not be cleansed.

Motion No. 2 in its action on the lower molar teeth is exactly the same as with the upper, except that instead of placing the bristles on the back of the lower third molar the bristles are directed downward on the gum back of the third tooth, and then with a sweeping, curving, downward sweep is brought sharply along the gum and cheek margins and the necks of the lower teeth. (See Fig. 6.) This motion should be done in the upper jaw and lower jaw, right and left, not less than five or six times each.

Motion No. 3 is comparatively simple. The middle of the brush is placed on the gum and tooth line behind the third molars and drawn sharply forward over the inside of the central incisors, care being taken to follow the curve of the arch with the entire face of the brush. The brush should be placed back of the last molars, not thrust back of them, as thrusting will cause a counter bending of the brush bristles and result in a pivoting that again will leave the back molars without bristle friction, and consequently dirty.

Motion No. 3 should be done five times on the upper and lower jaws, right and left, and when this has been properly done the teeth and gums will be free from bacterial masses, at least as free as the tooth brush can make them, and properly used, the tooth brush is one of the most effective instruments for cleansing the mouth. Improperly used, or used as it is ordinarily, tooth brushing is a delusion, but scientific, careful cleansing with implements of the proper size and shape will unquestionably add years of healthful existence to every man, woman, and child in the community at large.

1500 Locust Street.

PROVISION FOR WAR CRIPPLES IN GERMANY.

By DOUGLAS C. McMURTRIE,

NEW YORK.

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Coincident with the outbreak of the European war there was inaugurated in Germany an extensive system to provide, surgically and economically, for wounded soldiers crippled in action. During the past decade there had been built up a national organization dealing with the care of cripples—mostly children—in time of peace, and the first reliance was placed on the adaptation of existing agencies to meet the needs of adults in time of war.

Hostilities were declared on August 1, 1914 and on the 13th of the same month the Empress addressed to the president of the German Association for the Care of Cripples (Deutsche Vereinigung für Krüppelfürsorge) the following communication:

"Her Majesty, the Empress and Queen, expresses the wish that the activity of the German organizations for the care of cripples should not be hampered by the events of the war, but that they should, on the contrary, contribute their share toward the alleviation of present hardships. We should strive to prevent diminution in the scope of work by institutions for cripple-care, and must aid them to extend that work in certain directions. For instance, needy children, who are not at present being cared for, should be received into the institutions in order to relieve their mothers of undue burden.

"It also seems desirable that these institutions should undertake the orthopedic care of the wounded, as their entire equipment fits them for such work. Their facilities could also be utilized

to restore the wounded to their former industrial or professional status. . . ."

The association immediately issued to its members a questionnaire calling for statements as to the number of beds available for the war cripples, and details regarding the equipment and facilities of each institution. In an accompanying communication it was pointed out that each institution would have to meet the situation individually—some would have to crowd their children and discontinue classes, others might find an unoccupied building or barracks which could be used as an annex, still others might place some of their children in the care of neighbors or friends to make more room for soldiers; while, finally, in some cases benevolent friends might enable an institution to erect a special building which would remain useful after the close of the war.

The questionnaires were filled out and copies sent to the military and civil authorities.

The practical organization of measures for the care of war cripples fell to Dr. Konrad Biesalski, secretary of the German Association for the Care of Cripples. In order to establish the methods and principles of the work, Dr. Biesalski made a round of visits to the various institutions throughout the empire, a series of meetings being held at the different places visited. As a result, the following plan was evolved:

The scope of the work falls within two categories, [*a*] medical care (orthopedic and surgical treatment) and [*b*] social care (teaching of trades and securing employment).

As regards medical care, in order that the war-invalid may be enabled to resume work, the curative resources of surgical and mechanical orthopedics must be called upon, so that the maximum of physical recuperation may be achieved. Whenever possible, all fresh transports of wounded soldiers should first be concentrated in a large hospital which should serve as a central bureau for neighboring hospitals. Thence—granting adequate means of transportation—the soldiers, classified according to character of wounds or disabilities, should be transferred to other hospitals, particularly for treatment by specialists.

Experience has shown that a great variety of motor disorders and much subsequent treatment can be prevented if, during the healing of the wounds, the limbs are made to assume natural and reasonable attitudes and simple exercises are prescribed. Another important prophylactic measure is the high development of bandage-technique for purposes of transportation. The cases in the central hospital which will profit from treatment of an orthopedic character should be classified by an expert, and sent to suitable institutions.

When the orthopedic surgeon and specialist in the care of cripples from any district has been called to the front, his release and return must be obtained by the national association. This has been done in many instances. It cannot be questioned that the work of an orthopedic specialist at his civil post is of more value than his services in the field.

The cases for particular consideration are those of wounds which lead to serious motor obstructions through paralysis, the tearing of ligaments, stiffening of joints, and amputations. The best place for such patients is the institution for cripples which has at hand facilities to cope with the medical as well as with the social requirements of each case.

It was the unanimous opinion that these special institutions where soldiers would have to stay for extended periods should be preferably outside of large cities, in which latter it is practically impossible to preserve discipline. It was decided that in any case there should be an officer detailed as military director. It is imperative that the soldiers should not be sent to their families, as at home they would naturally neglect all physical exercise and, before long, become apathetic and useless. The military authorities must keep the men in an atmosphere of discipline for their own good. Towards the end of the treatment, the soldier may be given a leave of absence to return home for one or two weeks, but he remains a soldier, and as such must return to the hospital in order to be assigned to the work which has meanwhile been secured for him.

From this point on, there comes into prominence the second important feature of the work—social care. The cardinal requirement to success in this field is the education of the public to the idea that the cripple is not condemned to perpetual idleness, but that even a badly crippled individual may be taught to work and earn his living. This can best be accomplished by

(*a*) Continuous propaganda in the daily and technical press, to which end the efforts of writers should be directed in order that the question may be clarified from all possible viewpoints.

(*b*) Through lectures and visits to institutions for cripples. For illustrated lectures the lantern slides of the German Association for the Care of Cripples are available.

(*c*) Through advice to and persuasion of the wounded in hospitals, who, immediately upon their reception, should be made to understand that they will be enabled to continue their former occupations. Hospitals can be advised in this connection by the military authorities, and instructive literature can be supplied, as many hospitals are not acquainted with the technique of care for cripples. Medical organizations and the Red Cross can also be instrumental in this work of enlightenment.

(*d*) By an exhibit demonstrating the principles involved. Also by the preparation of an illustrated pamphlet for broadcast distribution. The workmen's organizations and insurance societies have stated that with the assistance of an illustrated essay of this kind their success would be assured, and they have undertaken to explain its contents to representatives of labor and to distribute it to employers and employees.

Public spirited employers will be glad to offer their former positions to old employees when they will return to them as cripples from the war. There will also doubtless be a deficit in the labor market after the cessation of hostilities. The largest employer, however, is the state itself, which must set a good example and provide work for those who have become cripples in its service. The railroads have long since adopted the practice of retaining the services of those injured in their employ, and the military organization has done the same. If each branch of the state machinery provides only for its own war-victims, thousands will be taken care of. The state can, however, go farther and, when placing orders with civil concerns impose the condition that a proportion of the laborers employed be war cripples. But all must first be taught that the cripple is able successfully to pursue an occupation.

The cardinal principle remains that the cripple must return to his old place, employment, and occupation, and thus be naturally assimilated by the community. Under no circumstances should the cripples be gathered in large colonies. The attempt has already been made to segregate them in colonies of from forty to fifty families, located near small cities, and provided with workshops. But this plan has been universally condemned as the colonies bear the stamp of the unusual. Occasionally it may prove advisable to place an individual cripple in an already existing colony, but in no case should this be done on a large scale. As soon as the conviction becomes general that the cripple can do work, the laborer, himself enlightened, will find no difficulty in resuming his former occupation. Employers will willingly allow for a period of partial incompetence pending adjustment to the new conditions of work.

It is important that the cripple continue in the same or in a closely related occupation, where his former experience will stand him in good stead. When it becomes imperative that the occupation be changed, the wisest course will be to find in the cripple's home town a teacher (manual laborer, shop manager, restaurant keeper, etc.) who would accept the invalid as an apprentice, possibly for a compensation to be paid by the military authorities or from private sources.

The establishment of separate workshops is inadvisable, according to the unanimous opinion of all counsellors; the method is expensive, open to the danger of "crowd suggestion," and would be hampered by lack of experience in the difficult art of teaching cripples—even more difficult with adults than with children. Furthermore, the 54 German institutions for cripples comprise 221 shops for industrial training, in which 51 male occupations are now being taught. In case of necessity these could be enlarged, and the required experience would there be available.

As to the method by which the appropriate work and position for the individual shall be ascertained, the cripple should first be transported to his home town, not to his family, but to an orthopedic institution in the district. By gradual exchange each institution will thus have an increasing number of cripples from its own locality. While the treatment is still progressing the organization for cripple-care connected with the hospital will find employment, in accordance with the wishes and capacities of the individual. This function should be the duty of a small committee consisting of an orthopedic specialist, a representative of the social care for cripples (minister, teacher, etc.), and a representative of the local labor organization.

In case the attempt to find employment through the city or district labor bureau fails, the next higher labor bureau will be advised, since the larger the section controlled by the bureau the greater is the chance for securing suitable employment.

There is in Germany to-day a network of labor bureaus distributed according to provinces and states and controlled from a central office. Wherever there are gaps the district administration will have to step in. Separate departments for partially incapacitated laborers exist in a few of these labor bureaus. Such departments will now be necessary and may perhaps become permanent. The establishment of special labor bureaus apart from the existing system is not advisable.

When the individual has secured employment the institution with which he was connected should keep track of him, so as to be in a position to assist him further if necessary.

As previously explained these principles were developed by the German Association and by Dr. Biesalski as a basis for the work. These methods are now being worked out by the individual organizations.

Beginning the middle of last December, there was held in the Reichstag, Berlin, a general exhibit dealing with the care of the wounded—the Ausstellung für Verwundeten und Krankenfürsorge—in which there was an important section dealing with provision for war cripples. There was exhibited orthopedic apparatus, and articles and pictures showing what badly crippled individuals can do. This exhibit was later sent to other cities. In connection with it there was held in Berlin on January 13, 1915, a great meeting to discuss "Kriegskrüppelfürsorge." Dr. Biesalski spoke on the principles of the work. Professor Schweining described the arrangements perfected by the army authorities. "The military authorities not only seek to heal but also aim to apply measures to avoid the unfavorable results of wounds; arrangements for this had already been provided in time of peace. In part special sections for orthopedic work were established or contracts were concluded with private institutions. A large number of orthopedists have been secured as consultants for numerous hospitals. For instance, in connection with the Garde-Korps, 24 medico-mechanical institutions are at the service of the military authorities. Also, arrangements have been completed with 107 health resorts for the after treatment of the wounded and sick. Artificial limbs and apparatus are procured and renewed by the military authorities. Special institutions have been established for the one-armed and the blind, and others will follow. Advisors with reference to trades are attached to the hospitals for those who no longer can follow their previous trades or think they cannot. Finally, he spoke of the special pensions, as the field allowance and the increase of pay for mutilation will remain as permanent compensation for those crippled in the war." Kirchner, the ministerial director, also spoke of the general co-operation requisite for success along this line.

An illustrated handbook dealing with the methods and principles of care for war cripples has been issued and is being distributed in large quantities. This booklet contains a directory listing 138 institutions or organizations concerned in work for cripples throughout the country.

It was estimated by Biesalski that the first few months of the war yielded 40,000 wounded whose motor affections were of so serious a character as to warrant their designation as war cripples. With the continuance of the war, and in view of the fact that with each man are involved several members of his family, it is conservative to say that the interests of hundreds of thousands are at stake in the work.

Organizations and individuals have entered enthusiastically on their tasks. The Kriegskrüppelfürsorge has now reached such proportions that Dr. Biesalski, having given the movement its impetus, has turned over its further organization to the military authorities. In this way the permanence of the work and its uniformity throughout Germany is secured.

It is interesting to note that in the first 800 wounded soldiers under Dr. Biesalski's care, it was found that with but few exceptions—less than 4 per cent—all could continue their former employments.

The care of war cripples is being worked out in various cities. The plan in Frieburg has been described by Dr. Burkhardt. A central organization has been established under the authority of Dr. Rosin. There are three sections. The first, the economic section, is composed of experts on various trades and on labor conditions. On this committee have been appointed two professors of social science, and a practical jurist. Their duty is to advise the individual as to the choice of a suitable employment. The second, the educational section, is composed of the presidents of the trades, commerce, and agricultural schools. They are empowered to appoint to teaching positions. The third, the clerical section, is under a competent director.

The practical results of this system are shown in the following cases:

(*a*) Paperhanger, 24 years. Amputation of left leg. Has good artistic ability and has been placed in trade school, where he is being trained as a decorative artist. His former employer has agreed to re-engage him.

(*b*) Baker. Left foot crushed. Is being instructed in bookkeeping and commercial arithmetic. Will enter grain dealing trade and manage bakery of a deceased relative.

(*c*) Farmer, 23 years. Loss of right arm. Is being trained in agricultural science and in writing with his left hand. Will take charge of the business end of the agricultural interests of his brother's farm.

The work is slow and final results will not be forthcoming for a considerable time. But the manner in which the problem is being met is unquestionably sound.

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SOME SUGGESTIONS CONCERNING THE TREATMENT OF THE GASTROINTESTINAL SYMPTOMS OF PELLAGRA.

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In this brief article the writer will not discuss the general treatment of pellagra, with its varied and manifold phases, but will endeavor to advance some helpful suggestions regarding the management of the gastrointestinal manifestations, and offer some concrete prescriptions that have seemed of material benefit.

It should be admitted that the disturbances of the digestive tract result from irritation of the central nervous system, plus elimination of toxins through the gastrointestinal mucosa. Let this point also be stressed—many of the apparently acute symptoms, such as vomiting and diarrhea, are not due primarily to local irritation, but are referred from the nerve centers. Based on these postulates, therefore, the following is offered:

Beginning with the inflamed mouth, tongue and lips, these accessible surfaces should receive a daily application of a silver nitrate solution, twenty grains to the ounce. The patient should be supplied with an abundance of a 10 per cent solution of the alkaline antiseptic liquor (N. F.), and admonished to wash his mouth frequently with it, allowing some to trickle down his esophagus each time. Should the lips be raw and cracked, they can be softened and protected by applications of white vaseline.

Nausea is generally controlled by three-drop doses of spirit of bitter almond, given as often as needed. The following will be found efficacious in many cases:

℞ Spts. amygdalæ amaræ, ℥ ii.
Resorcinolis, gr. x v.
Lactis bismuthi, ʒ ii.
Aquæ, qs. ad. ℥ iv.

M. Sig.: One teaspoonful every half hour when nauseated.

As a simple carminative and aid to digestion in hyperacid cases this is worth while:

℞ Spts. lavandulæ co., ℥ ii.
Resorcinolis, gr. x v.
Mist. rhei et sodæ, qs. ad. ℥ iv.

M. Sig.: One teaspoonful after meals, and repeat as needed for fulness or distress.

In hypoacid or achylic conditions, such as are found in late cases, this will prove acceptable:

℞ Tr. nucis vom., ♏ ii.
Acid. phosphoric. dil., ♏ iv.
Elixir calisayæ co., qs. ad. ♃ iv.
M. Sig.: One teaspoonful after meals, in water.

For the burning stomach, one of the neuroses often and bitterly complained of, this prescription is generally of service:

℞ Chloralis, ♏ ss.
Strontii bromidi, ♏ iii.
Aquæ chloroformi, qs. ad. ♃ iv.
M. Sig.: One teaspoonful in water every three hours.

Gastric lavage is seldom indicated, though occasionally, in the presence of an excess of sticky mucus which constantly arises from the stomach, this procedure may be employed.

The writer recommends for the lavage an aqueous solution of potassium permanganate, 1 to 10.000, or ichthyol, 1 to 2.000.

Many pellagrins are either without appetite, or develop a marked sitophobia, or fear of food. Under such conditions much tact is needed, lest a dangerous malnutrition supervene. The following stomachic, however, has seemed quite helpful in many such instances:

℞ Tr. condurango, ♏ iv.
Tr. nucis vom., ♏ ii.
Tr. gentianæ co., qs. ad. ♃ iv.
M. Sig.: One teaspoonful in water before meals.

The occasional constipation is best managed by small doses of castor oil, or liberal doses of liquid paraffin, or gentle enemas. Drastic cathartics are inadmissible—in fact, any of the cathartic drugs should be administered with caution, if at all. The constipation can so easily merge into an obstinate diarrhea, that only the mildest means for emptying the intestinal tract should be employed.

The diarrhea of pellagra is generally compensatory, and to an extent salutary, except in terminal stages, or where actual and deep-seated local irritation is present. Bowel movements not exceeding two or three daily should not be checked. When the diarrhea is excessive, ten or fifteen-grain doses of tannigen, given five or six times daily, have usually sufficed. In rare instances one-grain doses of opium may be given, but opiates should be avoided if possible.

This prescription is also recommended as an astringent:

℞ Tr. kino.
Tr. catechu, aa ♏ iv.
Lac-bismuthi, ♃ i.
M. Sig.: One teaspoonful after each loose action.

In states of intractable diarrhea, pure kerosene oil may be injected into the rectum and colon. A pint may be introduced at gentle pressure from a fountain syringe, and allowed to remain in the bowel for half an hour. The oil does not seem to be absorbed, and in one instance, where, through a misunderstanding of orders, the oil was allowed to remain in the colon for over three hours, no ill effects were noted. These injections may be administered three or four times, on alternate days.

The diet in pellagra should be as liberal as practicable, always insisting on the daily ingestion of the flesh proteins and either dried beans or peas. Fresh meat and the legumes seem to fill a specific requirement, and may be eaten at any stage of the disease. An abundance of the other nutritious foods should also be allowed.

While the woody vegetables, or those containing much cellulose, are ill borne in diarrheal conditions, they may be allowed when the patient is constipated.

Until the zeist theory is disproved absolutely, the patient should be given the benefit of the doubt, and all corn products should be prohibited.

It is a mistake to limit the diet on account of diarrhea, unless it is plainly of an irritative type, or appears as a terminal symptom. Pellagra is an exhausting malady, and the pellagrin who is well fed, regardless of digestive disturbances, except the most acute, has a vastly better outlook for recovery than one who is dieted in strictly orthodox fashion.

The foregoing suggestions are based upon the observation and treatment of eight hundred cases of pellagra.

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DELIRIUM.*

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THE best definition of delirium is that given by Tuke. He describes it as a "perversion of the mental processes, the perversion being manifested in speech or action." Delirium is characterized by incoherent speech, hallucinations, delusions, illusions, restlessness, watchfulness, apparently purposeless actions, and inability to fix the attention. Its presence, therefore, implies the existence of a general disorder of the mind. It should not be used synonymously with the term insanity.

Delirium is one of the first and most frequent conditions which the general practitioner is called upon to diagnose and treat. The child has some slight disturbance. There is a rapid heart action, and a high temperature. Then follow confusion and restlessness. The patient struggles, cries out, and plainly indicates that he sees strange objects and hears unusual sounds, in other words, that he has both delusions and hallucinations. His mental faculties are disturbed, unduly aroused, and perverted. He is delirious. The condition from which he is suffering is simple delirium. These symptoms, which complete the picture of simple delirium, represent the fundamentals of every type of delirium. There are variations and the variations which enable us to separate deliria into different classes result from the several factors which cause the particular delirium in question.

Delirium may be severe or mild, but in either type it is a condition of short duration. It usually lasts a few days and rarely more than two weeks. It may vary in intensity from the mildest type known as "flightiness" to the most severe—an intense maniacal condition.

It accompanies many forms of infection as typhoid, scarlet fever, malaria, etc.; it may be the result of exhaustion, as in numerous instances of the collapse or exhaustion delirium, following lactation and wasting disease; it may be directly produced by drugs, either self-administered, as the alcoholic delirium, or administered by the physician, as evidenced in the bromide intoxications; it may be due to poisons formed in the body, as in anemia or gout; it may be post-operative; it may be traumatic; it may be due to some source of irritation, as a clot or neoplasm in the cerebrum; or to some interference of the cerebral circulation, as illustrated in the

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delirium of arteriosclerosis and senile dementia. It may be psychogenic in origin, as is the delirium in dementia precox or hysteria.

The best classification of delirium is the one proposed by Dercum of Philadelphia. He divides all deliria into two classes: (*a*) The Febrile Delirium, (*b*) The Afebrile Delirium. *Febrile deliria* are those which accompany the various acute infections, the exanthemata and the various acute visceral diseases, such as pneumonia. The afebrile deliria are those which are met with as sequelæ of various infectious diseases, as a result of various intoxications, and after trauma or shock. According to this classification you will see that a patient may suffer from a febrile delirium during the period of his illness, and an afebrile delirium during the period of his convalescence.

The febrile delirium is one which is always accompanied by the physical signs of the particular disease from which the patient is suffering and the temperature. It is the result of the action of certain toxins upon the cortical neurones. It is the delirium which we meet in typhoid and pneumonia, in rheumatism, and scarlet fever, etc. It may vary greatly in severity. Thus a patient of defective ancestry, endowed with a highly nervous temperament, is much more apt to develop a delirium than a phlegmatic individual. Again, it may vary according to the intensity of the toxins. The patient may simply wander a little, may become noisy and violent or he may abound in delusions. Therefore the two factors which influence the febrile delirium are the intensity of the toxin and the degree of resistance on the part of the individual. Its characteristics are those of simple delirium—delusions, hallucinations, illusions, restlessness and insomnia, etc., etc. It varies somewhat in the different diseases.

The mental symptoms arising from the toxins of the different infectious diseases do not vary, however, to so great an extent as to warrant a differentiation. There are, however, a few minor differences which I shall point out. In *malaria* the delirium is sudden and intermittent. It may accompany or replace the fever. It is rarely present in the quartan variety—occurring with greatest frequency in the tertian and quotidian.

In *typhoid* Aschaffenberg distinguishes two types, the first in which there is no pseudo-motor activity, but many hallucinations and delusions of a persecutory and threatening nature; the second—which may develop from the first—shows great psychomotor activity a rapid development, with marked hallucinations and delusions. There is a considerable flight of ideas and confusion of thought, together with an anxious and emotional state.

In *hydrophobia* the hallucinations predominate; periods of quiet occur.

In *acute chorea* the delirium is one characterized by a clouding of consciousness, with a peculiar dreamy confusion of thought. The patient displays anxiety, marked irritability and outbursts of passion. The speech is disjointed. These patients suffering from chorea have delusions, but they are neither very clear nor very elaborate.

The afebrile delirium is far more interesting than the febrile. It, too, is an affection of short duration, generally never extending beyond a few days. It may occur in many and widely different conditions. Thus, it may be the delirium which is the result of febrile conditions, the delirium which follows surgical shock, great fright, sudden loss of blood, and toxic conditions.

There are two factors important in its production: (1) Exhaustion, and (2) Toxemia.

The afebrile delirium presents both physical and mental symptoms. It can best be described by relating the symptoms of the exhaustion or collapse form of delirium, which is simply another name for the afebrile delirium. This is fairly common. It may be due to inanition, to excessive lactation, or to a wasting disease. It may follow a great loss of blood, as a post partum case, or chronic nervous exhaustion.

It is characterized by an acute onset. There is usually a loss of appetite, a few nights of insomnia and restlessness. Immediately there appears a period of motor excitement with great incoherence of thought, and marked clouding of consciousness, accompanied by both delusions and hallucinations. The patient becomes greatly frightened. The attendants and friends startle him as they come near.

The figures on the wall paper assume fantastic shapes; every sound is perverted and new ones are heard. He is absorbed in his own fancies. Music is heard, and crowds fill the room. The patient is terrified, and either cries out loudly or assumes a crouching attitude in one corner of the bed. I can remember one patient who dreaded the approach of darkness, as he told me that every night the night nurse attempted to cut off his arms and legs. He thoroughly believed this, and whenever the night nurse approached to feed him he would grapple with him and fight him off as if in reality his life were at stake. He subsequently told me that his suffering every night was the greatest that you could conceive of. Physically these patients show a great loss of flesh, a pale and clammy skin, a subnormal temperature and a pulse that is weak and irregular. They eat very little and sleep very little.

Some of the patients either cry out loudly or talk in a whisper, assuming a confidential mood. I can recall another patient suffering from an exhaustion delirium who was too weak to get out of bed but whose hands were nevertheless in constant motion. He would draw me down to the level of the bed and then in a startled manner whisper that he was being pursued by a black man; at another time that the room was full of black squirrels.

These patients are generally worse at night. At the present moment I have under my observation a lady who is recovering from an attack of exhaustion delirium. She believes that thieves come every night and strip the apartment. The fact that the furniture is still there makes but little impression. Only a few days ago when I asked her if the thieves had come last night, she replied no, but that they were coming to-night and that she must find a place to sleep, as to-night they would even take her bed.

The delirium from exhaustion is characterized by great motor activity, incoherence of thought, and involvement of apprehension.

The duration of this psychosis is brief—two or three weeks. The onset is sudden and the return to consciousness is sudden. Following a sound sleep these patients may wake in a refreshed and normal state of mind. The prognosis in these cases is good, provided always that the exhaustion has not gone too far and that the condition is recognized early enough to permit of the proper treatment.

Another instance of the afebrile delirium is the delirium produced by drugs. It occurs with great frequency and is most apt to follow the injection of bromides—but may result from hyoscine, chloral, veronal, morphine, antifebrin, etc. The action of

the poison is probably not the only factor in its causation. Insufficient food, loss of sleep, digestive disturbances and general exhaustion all act as contributing causes. The drug or alcoholic deliria are fundamentally the same, differing only in special characteristics. The physical signs are coated tongue, foul breath, pasty complexion, and defect of speech. There is an unsteadiness of the gait, and slight tremors. The reflexes may be slightly active, and the temperature may be above the normal. The mental symptoms are dullness and hebetude, with a tendency to dip down to a lower level of consciousness. Hallucinations are present; the faculty for both recent and old events is good.

This form of delirium is more than any other dependent upon the degree of resistance of the patient as one patient may take with impunity a dose which in another will precipitate a severe delirium.

Several years ago I saw a most interesting case of drug delirium. A man of fifty, whose business it was to make umbrellas, had been taking chloral for the past eight years. He told me that at the end he was taking 150 grains a day. He then stopped the chloral and began taking veronal. In time he stopped this and returned to the chloral, and began to drink heavily.

He became very irritable, squandered his money and forgot what he did with it. He would open his place of business early in the morning and then lock the door, shutting out his customers. He became very suspicious, and had marked hallucinations. He then developed delusions of grandeur and believed that he possessed great will-power. He would make mistakes in his checks, and in writing would leave out words. He became then greatly depressed.

The physical examination showed a man, bloated and anemic, weeping, and suffering from great mental depression. He was very slow in all of his movements. The pupils were equal and reacted to both light and accommodation. The tongue was coated with a brown fur. His gait was ataxic; movements of the upper extremities very uncertain; the knee-jerks were present under reenforcement. He had delusions of grandeur. There was an optic neuritis in his left eye. The diagnosis that he came in with was general paresis. We stopped his drugs and in three months he was perfectly well.

The afebrile delirium must be distinguished from the delirium occurring in epilepsy, hysteria and alcohol. It would take too much time to go into details and describe each one of these separately. I will simply mention the delirium occurring in Korsakoff's psychosis, because that is the most common and apparently the least understood.

Korsakoff's disease is a polyneuritic psychosis. In other words, it is a neuritis with mental symptoms. It may, however, manifest itself without neuritic symptoms. The aetiology in the large majority of cases is alcohol. There are other conditions which may result in Korsakoff's disease, and of these the most common are typhoid fever, pyaemia, jaundice and tuberculosis.

The cardinal symptoms of Korsakoff's psychosis are disturbances of memory and pseudo-reminiscences. These patients are disoriented, they do not know the date, the season, or the time of day. They are unable to remember what they ate for breakfast and cannot say whom they saw last night or when they received a visit from a member of their family. They are, however, never at a loss to supply answers to your questions and always have ready a story, highly improbable and yet prolix to a degree. I have one patient in my service at the City Hospital who is so feeble that it is with difficulty that he is able to leave the ward. Three months before his admission he was quite himself, was present at his daughter's wedding, and was able to take care of his family. When I last saw him he was so feeble that he could scarcely get about the ward, and rarely went out. Yet when I questioned him as to what he had done yesterday he at once told me a long and elaborate story about his having taken a long walk down Broadway. A few moments later to the same question he replied that he had spent the morning fishing. Not satisfied with this reply, he then went into great detail, telling me the character of the expedition, the kind of bait used, and even specifying the number and kinds of fish caught. His memory was very defective; he could not tell the time of day, or remember when his family had last been to see him. Usually he would say that his daughter had just left him, or that the whole family had all been to see him the day previous, whereas no one had called for a week. The retention of ideas and memories in this psychosis is markedly altered.

This patient gave an alcoholic history, covering a long period of time. The physical signs were those of lost knee-jerks, and paralysis of the anterior tibial muscles.

The treatment of delirium comprises four distinct factors: (1) To secure sleep, (2) To overcome the motor unrest, (3) To prop and maintain the patient's vitality, (4) To discover and if possible remove the cause.

To secure sleep: In endeavoring to secure sleep you should always bear in mind that in a delirious patient the effect of a drug may be the very opposite to that which you intend. If he is suffering from an exhaustion or toxic delirium, drugs will aggravate. Therefore, if possible, avoid drugs. Resort to hydrotherapy. The hot bath, given at a temperature of 90-95 per cent. is one of the best methods at our disposal. Patients can be placed in the tub, and kept there for periods varying from one-half to one or two hours. The water should be allowed to run continuously, and a bath thermometer kept in the tub, so that a steady and regular degree of temperature can be maintained. If this is not practicable, the best substitute is the wet pack. This consists of a sheet wrung out in warm water, which covers the patient. Over this are placed blankets tightly drawn, with the arms held down. The patient should be kept in this for an hour. If drugs must be used, the least harmful are trional, veronal and medinal. Paraldehyde is excellent; it produces rapid results.

A most important item in the treatment of deliria is the conservation of the strength of the patient. A delirious patient therefore should be at once put to bed, and kept there. Liquid nourishment is of great value, and should be given constantly and persistently. The best form in which to administer it is that of egg and milk.

Close attention should be paid to the heart action. If there is any indication of cardiac or circulatory failure, immediate resort should be had to strychnia and digitalis. The former can best be given hypodermically. Elimination on the part of both bowel and kidney should be carefully attended to. In a word, then, the keynote of the treatment of deliria is rest, hydrotherapy, liquid food, elimination, and stimulation.

41 East Sixty-third Street.

FULGURATION IN GONORRHEAL FOLLICULITIS.*

By GEORGE KNOWLES SWINBURNE, M.D.,

NEW YORK.

We constantly read in current literature that the treatment of gonorrhea is unsatisfactory, and the fact that there is a multiplicity of drugs recommended, and more are being sought after, is proof that the treatment is unsatisfactory. I have felt for many years that there was no acute, infectious disease the treatment of which was so satisfactory as it is in the case of acute gonorrhea if begun within the first few hours. And it is perfectly possible for every one to get such treatment in the first few hours if they can be made to realize the importance of time as an element of treatment. In the paper that I read in 1908 before the American Urological Association on "The New Silver Salts, Their Advantages and Limitations," I made the statement that, with any of the new silver preparations where the silver is combined with albumin in some form, if the disease were seen within the first twenty-four hours of the outbreak, in the vast majority of cases it could be throttled, that is, it could be kept from advancing any deeper into the canal, and also from penetrating any further into the tissues. And I stated that this was as true in primary cases as in those who had had multiple attacks. Now, the limitation of these silver salts is that, while the disease can be throttled and can be kept from going any deeper if rightly managed, the disease shows a proneness to relapse if treatment is intermitted; nevertheless the injections of these silver salts can be kept up indefinitely without any harm to the mucous membrane. But there are other means which can be employed after the case has reached the point, while under treatment, in which nothing but epithelial cells can be found, except possibly a few pus cells here and there, and absolutely no gonococci. We know that in a large proportion of these cases if the disease is allowed to go without treatment for forty-eight hours, or possibly three days, or at the outside four days, there will be a relapse, and the reason is that one or more follicles within a short distance of the meatus are infected. The medicine does not reach into the depths of that follicle, and that is the sole reason that the case is not cured at that time. I have often tried to search out these follicles by the use of the meatoscope, or urethroscope, but generally with ill success unless the infected follicles were very close to the meatus. I have also tried other means. Now some of these primary cases can be kept at the point where there is no inflammation, by daily injections, or by injections used every other day on the part of the patient, or even perhaps twice a week, and in these cases there will be no appearance of the disease. And yet if they neglect the use of this treatment a relapse will occur. I have known such cases to last as long as six months, and even longer, and I have tried various means to bring them to a quicker close.

One method that I have used has been successful in some cases, that is by daily hot irrigations of one of these silver salts, starting at a temperature of 115°-120° Fahrenheit, and gradually increasing up to 130°-135° for a period of three weeks or so, after which there will be a complete disappearance of the tendency to relapse, and evidently a cure of the case. Some of these cases, however, have relapsed just the same at the end of such a time.

By the way, in passing, I wish to say that now for a long time I have ceased using hot irrigations in the acute stages until the case has reached this point of showing no pus or gonococci, but only epithelial cells, for I have become convinced that in my own hands in some cases, there is a marked tendency for the disease to be carried deeper into the canal by their use.

Now, the first case in which I attempted fulguration was that of a physician who came to me after having attempted to treat himself for four months by using anterior injections of argyrol. During that time he found he had the very condition which I have described above. No posterior urethritis had developed during that time, but if he let up at all he would relapse. I first suggested the daily irrigations of hot solutions. At the end of the week nothing but epithelial cells could be seen, no gonococci, although the day that he came there was a marked purulent discharge containing numerous gonococci. But in view of the length of time that he had his trouble, I did not stop at this point, but kept up the daily irrigations for two weeks longer before allowing him to intermit treatment for even a day. Then I let him go without treatment only forty-eight hours, when there was a marked return of the symptoms so that now he was exactly as he was the day he came. We went back to our hot irrigations. Then when I had again got the condition down to a showing of nothing but epithelial cells, I injected the urethral canal with the silver salt and had him hold it in for ten minutes. I then put him on the operating table and examined his urethral canal with the Buerger urethroscope, carrying the window as far down the canal as possible without running the point of the instrument into the posterior urethra at all. The reason for using the preliminary injection was to prevent the possibility of carrying infectious material down the canal from the infected follicles. In this case I examined the anterior four inches of the urethral canal, the entire internal surface—the floor, side and roof. Curiously enough, in this case, I found no follicles on the floor of the canal, but I found in the roof six or eight wide-mouthed follicles, with congested rim, beginning at about three and one-half inches and running forward at short distances apart. At that first sitting I had my wire ready and was able to fulgurate each one of those follicles. Then I let him go for a week, having him use his ordinary injection at home once a day during that week, and on the second examination I found that a change had taken place in several of these follicles. Although they seemed to be wider open they had lost the inflammatory edges; some of them were wider open than they were before, but there was no pus coming from them. Nevertheless, I fulgurated each one again and repeated this a week later. Then I let the patient go for a week without using any injections at home, telling him to report if he noticed a relapse. That seemed to end the condition altogether; there were no relapses and he continued well after that.

Since then I have done this fulguration at an earlier stage in a large number of cases where they have shown this tendency to relapse. In the majority of these cases I have found that infected follicles occur more frequently in the roof of the canal, and very seldom have I found any on the floor, though I have in some cases. There were some

*Read before the American Association Genito-Urinary Surgeons, White Sulphur Springs, May 18, 1915.

cases showing this tendency to relapse in which I could not find any follicles anywhere. I have examined such cases more than once, and after explaining to the patient the probable reason for his constant relapse, and the importance of treating himself by keeping up the daily injections, these cases have ceased relapsing in a shorter time than have those in which I found infected follicles.

I have found this method of fulguration to be of great value in those chronic cases of folliculitis in which we find a beaded condition of the urethral canal. After fulguration, this beaded condition disappears, and the cases clear up very satisfactorily.

Now, in doing this fulguration I happened to possess the older style of the Buerger urethroscope, and my method was to bare the fulguration wire for one-quarter to three-eighths of an inch of its point, bending the wire at an obtuse angle at the point so that with the instrument in position, in pushing forward the wire, it comes into view and will readily touch the mucous membrane; then all that I had to do was to see at about what point the wire would hit the mucous membrane, place the window of the instrument so that when the wire was advanced the point would enter the follicle. It was not quite so easy to do this as it is to catheterize a ureter, but by a little patience I got so that I could do it quite as readily, and now with the latest Buerger which has a small lever with which one can guide the wire more readily, it is perfectly feasible to do it in the manner that I have described.

During the examination and during the treatment I always have an irrigator attached to the instrument, so that there is a constant stream of cold sterile water running, and in turning on the electric current I simply leave it on for a second or so. If the water is not running the sensation of burning is a little greater than when it is running. Patients very quickly get used to it and do not mind it, though some make a good deal of fuss. I always begin at the deepest follicle that I can find, and work my way forward. In some cases there are only two follicles, and in some, as I have reported, there have been as many as eight. At each follicle I turn on the electric current two or three times, doing it for one or two seconds each time, according to the way the patient acts. I have made the examinations and treatment once a week; in the acute cases the patient uses his injection of silver once or twice daily at home during the interval. I do not recall having made more than three applications of the fulguration in any one case, *i.e.* in the acute cases. In some chronic cases I have made, I think, even four, perhaps more. This method has proven quite satisfactory in my hands.

64 East Fifty-sixth Street.

FETID BRONCHITIS.

By BEVERLEY ROBINSON, M.D.,

NEW YORK.

One occasionally meets with a case of bronchitis in which the sputum and breath are foul. The bronchial attack may be acute and the fetid smell may last only a short time. Usually, where the discharge from the bronchi is specially offensive, the case has already become somewhat chronic.

If the putrid condition remains for a while and resists usual medication general and local, the disease is both rare and obstinate. When it attains unusual severity, it comes on by degrees and usually continuously. It is usually occasioned by a previous attack of influenza, or by an unresolved pneumonia.

It may be, of course, connected with pulmonary tuberculosis, in which there is already cavity formation, or a limited empyema, which has found exit through a bronchial tube. In the great majority of instances, where we have fetid bronchitis which truly deserves the name, by reason of the quantity and character of the sputum, there is present more or less dilatation of the bronchi. This dilatation may be localized or general. It may affect only a limited area of one lung; it may be recognized as being in one, or both lungs, in a wide extent. When it is extensive it is apt to involve the lower lobes of the lungs; either, or both. In these instances, the larger bronchi are often much distended, and in a somewhat irregular way.

When the dilatations are localized they are apt to be in saccular shape and form more or less large and numerous cavities. One or more of these cavities may be near the surface of the lung at the apex, or base, and frequently the pulmonary and costal pleura adjacent to the large sized cavity are very adherent. At least, this is true when the disease has lasted several months or years.

The mucous membrane of the bronchi, where the disease is diffuse is red, congested, thickened, irregular. The elastic fibers and muscular tissue are often atrophied. There may be ulceration—communicating with lung tissue and causing limited destruction and maybe gangrene. The vessels are thin and dilated, hence not infrequently spitting of blood or considerable hemorrhage. Where the cavities are saccular they are often surrounded by fibrous tissue, which has contracted and dilated the bronchi in this way. The fibrous tissue is the result of a previous pneumonia and may be connected with pleuritic adhesions, which have sent projections into the lung.

The essential symptoms of fetid bronchitis are the large amount of putrid, purulent sputum and the nauseous, most offensive breath. The two together are of such a nature occasionally that the patient is practically ostracized and becomes unbearable to others. As a rule, the condition is without fever and the patient may only now and then have an acute exacerbation. The cough is paroxysmal and comes on in the morning and at night, when the patient expels a large amount of fetid sputum. The cause of the cough and expectoration is either because the bronchi are distended with more sputum than they can carry without rejection, or else the sputum has reached a position in the bronchus which is relatively healthy and cannot bear irritation from foul secretions.

The sputum usually is coughed up without much difficulty. The quantity is often very large, as much as one or more ounces at a time. The immediate cause of the fetid sputum and breath is the presence of different microorganisms, which have occasioned decomposition of the bronchial secretions. Among these Pfeiffer's bacillus and the pneumococcus are most frequent and productive. They may be mingled with many others. The sputum when it stand for a while separates in two, or even three, layers. The lower stratum is mainly pus and granular detritus. The intermediate layer, a turbid liquid, composed of mucus and pus and the upper layer is mucus and frothy. If the lung be tuberculous, either we may find tubercle bacilli under the microscope, or shreds of pulmonary tissue, where a cavity exists.

Frequently, the diagnosis of bronchial dilatation is very difficult to make positively, partly by reason of symptoms referable to affections which have preceded and caused it. There is little doubt that not a few cases of arrested pulmonary tuberculosis are none other than instances of bronchiectasis.

The presence of tubercle bacilli in the sputum is the one sure way to distinguish between them. The symptoms of the two diseases may closely resemble one another. This is especially true if there be fever, notable loss of flesh and strength, and continued cough with abundant purulent expectoration. The outlook in these cases, even of moderate severity, and especially if they have lasted several months already, is none of the best. They do not die—but they continue in about the same condition, neither better nor worse for a long while. Of course, they are liable as those affected with other diseases, to acute complications more or less grave. An accession of cold in the form of a fresh attack of bronchitis will aggravate the subacute, or chronic, condition—but will not terminate fatally. Such is not true of intercurrent broncho or lobar pneumonia, or empyema. These complications not infrequently bring on death more or less rapidly. In most cases of fetid bronchitis the general health has shown impairment for several years and the patient has also been a victim of privations, unsanitary surroundings. Behind them is a poor constitution with a hereditary history none of the best.

As to treatment, what may we do? The best air, the most nutritious food, freedom from exhausting work, are all indicated. A specially dry climate with rare atmospheric changes of any degree coming on suddenly should be recommended. Such is found in some parts of California and upper Egypt in the winter. In the summer, portions of the Adirondacks and Sullivan County, N. Y., are desirable locations.

Internally, an ordinary tonic treatment with the hypophosphites of lime and soda is about as useful as anything I know in that line. Of all drugs none is so useful locally as beech wood creosote properly administered. Internally, the dose must be small; not more than one half minim, given every two or three hours, with a little glycerin and whiskey. Locally, the use of beechwood creosote with the perforated zinc inhaler is the best means to correct fetor of the breath and sputum and to modify the diseased bronchial membrane. The inhaler must be worn many hours in the day to be of real utility. The ability to do this comes to many only after the lapse of a few days, or weeks. A formula I have long used is probably quite as good, if not better than others. It is equal parts of beechwood creosote, alcohol, and spirit of chloroform. Of this from ten to twenty drops must be poured on the sponge of the inhaler, and repeated as required.

The use of creosote in concentrated vapors in a tightly closed room, evaporated from an open dish or vessel, I do not approve of. It is too irritating to the eyes and nasal passages and I believe would, if persisted in, probably affect the kidneys undesirably. This method was strongly commended many years ago by Chaplin and is described in text books and special articles on bronchiectasis.

Mendel's system of intratracheal injections do not convince me as to their real utility, and I must consider the distress occasioned by them overbalances any possible desrable results, which at best, must be temporary.

Ephraim's and Guisez's methods of injecting drugs, referred to by Meyer, do not impress me better than the use of a nebulizer operated with compressed air.

Creosote in the form of a spray as spoken of favorably in one instance, by McPhedran of Toronto, may be useful and not injurious, but I do not believe it is so practicable as the dry vapors when they are persistently employed.

I consider in summer that a sojourn at sulphur springs with treatment there employed—inhalations, baths, drinking the water specially indicated. The mere breathing of the air continuously, near and around sulphur springs, is of itself curative. Sharon, Richfield Springs, N. Y., White Sulphur Springs, W. Va., are resorts which may be advantageously selected. In later years, more than one surgeon has tried to bring about a cure of this wretched disease by surgical methods. I have yet to see, or read of, an instance, in which operatory treatment has been, to my mind, successful in effecting an absolute cure. A few cases may be ameliorated, and operation is permissible, when other rational means have failed.

Up to the present time, I would only willingly indorse an operation, where a large, relatively isolated cavity was accurately diagnosed and not far removed from the surface of the lung. In such a case, I would wish to have the neighboring costal and pulmonary pleura closely adherent one to the other. If that were the condition, sufficient incision with or without the resection of a portion of one or two ribs, and the introduction of a drainage tube through which suitable medical fluids could be frequently injected, might bring about locally much improvement.

Clinically to sum up: In fetid bronchitis we have a rare and very obstinate and distressing affection. In its management, I know of nothing better than what I have advised. It may take many months to effect a notable and favorable result, but if my treatment is persisted in, it will ultimately make life bearable to oneself and others, even though it does not succeed in producing an absolute cure.

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42 West Thirty-seventh Street.

Chronic Myelemia with Complete Dislocation of Spleen.—A. J. Hall reports the case of a woman who was first seen by a surgeon on account of an abdominal tumor, which, arising in the pelvis, reached upward above the navel. It was smooth, firm, and rounded, with a completely free edge above. A pelvic tumor was diagnosed and laparotomy performed. The tumor was found to be an enormous spleen completely dislocated and resting on the floor of the pelvis. Fortunately, no attempt was made at removal. A blood examination followed and showed the true nature of the case which ran an ordinary course, apparently not aggravated by the surgical interference.—*Proceedings of the Royal Society of Medicine.*

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THE MECHANISTIC CONCEPTION OF DEMENTIA PRECOX

THERE is hardly a greater and more serious problem confronting the psychiatrist and society in general than that of dementia prevox. It is a problem which has baffled the students of mental disease, and, in spite of the considerable progress which has been made in recent years in the field of psychiatry, we still find the most diverse opinions concerning the nature of that mysterious affection. The great battle which has for some time been going on and which is waxing more interesting at present is concerned with the mechanistic conception of dementia precox. One school adheres to its psychological origin and nature, maintaining that the somatic manifestations are not primary but secondary. Another school insists that the psychological manifestations are merely secondary and are but the end results flowing out of certain definite organic changes, the physical disease being primary and essential, and producing, by its associated disorders, the glaring objective mental picture. Since this standpoint is of the greatest importance for an understanding of the real nature and cause of the condition, and hence for possible therapeutic attack of a physical nature, it will be interesting to consider briefly the arguments of those favoring the mechanistic view. Some of the foremost phychiatrists have insisted that dementia precox is due to some as yet unknown toxemia, and it is the toxic nature of this disease which is stressed by the writers who support the mechanistic standpoint. Many papers have appeared in the last few years offering evidence in support of this view. The amount of evidence being accumulated is rapidly increasing, and the number of adherents to these ideas will no doubt increase in proportion. This will mean more earnest and intensive work, with findings that will be of the greatest value in one or the other direction—of a positive or a negative nature.

The members of the mechanistic school contend that dementia precox, when fully established, is a pluriglandular affection in which the sex glands and two or three other glands of internal secretion are undergoing dystrophic processes, similar to the changes found in the thyroid and thymus of exophthalmic goiter and in the other endocrinous glands of individuals affected by other pluriglandular dystrophies. The case for dementia precox as a pluriglandular disease is well summed up by Bayard Holmes (*Chicago Medical Recorder*, Vol. XXXVII, No. 3), who has followed the trend of the organic concept and has accumulated much evidence in its behalf. The best evidence to be found is presented to us by the application of the Abderhalden reaction to dementia precox and allied disorders. It has been demonstrated that the Abderhalden defensive ferment reaction shows conclusively the existence of processes of degeneration and dysfunction in the pluriglandular system, the sex glands in particular, in more than two-thirds of the cases of dementia precox, whereas, in marked contrast, such disturbances of these organs are absent in the manic depressive psychosis and in mentally normal persons. There is evidence that the blood-pressure raising apparatus is disturbed, since the blood pressure is usually found to be low in the early stages, and the injection of adrenalin in quantities sufficient to raise the blood pressure of an adult from forty to eighty millimeters of mercury has little or no effect in patients suffering from dementia precox. Furthermore, contrary to what is found in normal individuals and in other types of insanity, there is a protracted increase in the number of neutrophiles following the adrenalin injection. The toxicity of the blood, as shown especially by its hemolytic power, seems to be marked. Morphological changes in the blood have been observed during the catatonic stage. The blood has been found to be highly concentrated, and Kahlmeter and others have observed a seeming polycythemia and a relative leucopenia. With any tendency toward betterment there has been noticed a change upon which Lundvall lays particular stress. He calls these blood changes "blood crises," and notes that they occur periodically, apparently as a constant phenomenon, and independent of factors which might lead to increased muscle work or of physical excitement. This blood crisis is characterized by a leucocytosis, chiefly a polynucleosis, associated with a critical and often protracted post-critical eosinophilia. The increased red blood cell count and the decreased white blood cell count with the blood pressure below 100 or rarely as high as 120, gives us, as Holmes states, "a blood picture distinctly significant of a grave toxemia." It is also argued that the errors of metabolism, which need not be enumerated here, but which have been detected in dementia precox, are significant of a peculiar and uniform toxemia, particularly when compared with manic depressive insanity and general paresis. Certain studies have disclosed some gross and histopathological changes of the brain and of the ductless gland system, including the thyroid and thymus, the parathyroid glands, the adrenal glands, and the sex glands. This field has, up to date, been but little explored and the findings cannot be stated with absolute conviction and certainty, but the observations so far published have been suggestive and must lead to more thorough attack in this direction. Post-mortem studies of the ductless glands should become a part of the routine in future work.

It is seen from the above that, as Holmes suggests, future studies should include metabolic stud-

ies, Abderhalden reaction studies, blood studies, blood-pressure studies, and reaction studies to determine the functional competency of the ductless glands, particularly the adrenal and the sex glands. It is asserted that not only is there laboratory and symptomatic evidence as well as morphological and histological evidence of the existence of pluriglandular disturbances in dementia precox, but also that comparison of dementia precox with other pluriglandular conditions lends added support to the contention of the mechanistic basis of the prevalent insanity of youths. The knowledge gained from the studies into the origin of other pluriglandular conditions, in addition to other findings, seems to the mechanists to point strongly to peripheral infection or alimentary intoxication as the source of dementia precox. As yet very little research has been made along this line. However, Holmes, Dercum, and others hold that we must accept the probability that the etiology of dementia precox is at least similar to that of the other ductless-gland disorders. In fact many of the workers now accept as proven the toxic etiology of dementia precox, and point to the ductless-gland changes, particularly the dysfunction of the genital glands, as proof of the primary toxic nature of this mysterious disease which lays hold of so many adolescents at the critical period of their lives. Already a method of treatment has been elaborated which has for its object the increase of the leucocytes in the blood of dementia precox patients, with the object of enhancing the resisting power of the individual. A search for possible sources of infection is advocated and various other therapeutic suggestions have been put forward.

Although there is much evidence against this theory, and although there are many battles yet to be fought over many of the problems involved, still the case for dementia precox as a pluriglandular disease is now being pushed to the foreground with such persistence and rapidity that it must at least demand our respectful consideration. It seems very likely that the future will show that there are at least two different types of so-called dementia precox, namely the psychogenetic and somatogenetic types. Be that as it may, the reader should consider the fact that at least in a certain proportion of cases, dementia precox may be the result of a peripheral infection which, as Holmes says, by selective action destroys the chromaffin elements of the adrenal, the sex glands, and profoundly affects the thyroid, the thymus, the parathyroid, and the cranial contents.

THE RESPIRATORY "DEAD SPACE."

A CURIOUS instance of two sets of investigators working on the same theme unknown to each other and reaching the same conclusions at the same time is illustrated by the publication of two papers in the *American Journal of Physiology*, July 1, 1915. The first of these papers by Yandell Henderson, F. P. Chillingworth, and J. L. Whitney on "The Respiratory Dead Space" was ready for publication when Henderson wrote to J. S. Haldane of Oxford, England, describing the results obtained. By return mail the latter replied that he had been at work on the same theme and had obtained practically the same results. A few days later he sent the manuscript of his paper, with the result that this appears in the same number of the above journal under the title, "The Variations in the Effective Dead Space in Breathing."

The "dead space" of the lungs connotes the capacity of the bronchial tree and was estimated by Loewy in 1891 to be 144 c.c. Since 500 c.c. of air is taken in with each inspiration, the amount available for actual ventilation of the pulmonary alveoli is determined by deducting from the volume of inspired air the 144 c.c. that fills the bronchial tree. Zuntz and others regarded this dead space as of an unvarying volume, but it was shown by Siebeck in 1911 that during the hyperpnea of physical exercise the dead space is increased.

Henderson and his collaborators find, from a consideration of the axial flow of gases through tubes and from determinations of the CO_2 content of successive fractions of the expired air, that some alveolar air containing CO_2 in increasing amounts begins to issue from the nose and mouth even in the first 50 c.c. of an ordinary expiration. This shows that the alveolar air diffuses rapidly through the dead space. Even an amount of tidal air much smaller than the capacity of the bronchial tree may afford a considerable gaseous exchange, as in animals during heat hyperpnea. It is found that the dead space expands and contracts passively with the movements of the thoracic walls and lungs. At shallower levels than ordinary breathing the dead space is considerably less than 150 c.c. With deeper breathing it may amount to as much as 600 c.c.; with the deepest breaths it may exceed a liter in volume. It is much more affected by diaphragmatic than by costal movements and is of practically the same volume during rest and exercise. The enlargement of the dead space during hyperpnea is essentially a passive stretching and not an active bronchodilatation. Even at a uniform extent of chest inflation the dead space is continually undergoing active variations in volume, which may at times exhibit a distinct rhythm of a period of several minutes, and which may amount to as much as 30 per cent. of the mean volume of the dead space in quiet breathing.

Of considerable practical significance is the fact that in a close and stuffy room the bronchi are constricted and that a distinct chill constricts them still further. Pleasantly cool fresh air induces bronchodilatation. Experiments in a Turkish bath have shown that during profuse perspiration and cutaneous hyperemia there is a greatly augmented diffusion of CO_2 from the walls of the dead space, which fact indicates a hyperemia of the respiratory passages. As much as one-half of the total CO_2 exhaled by the subject may come from the dead space. In asthmatics the chronic dilatation of the chest stretches the pulmonary passages passively and thus tends to compensate to some extent for their active contraction.

Haldane reaches practically the same conclusions as those above reported. He notes, however, that the "effective" or "virtual" dead space is a physiological and not an anatomical conception, the magnitude of this space depending on the physiological

efficiency of the respiratory surfaces in relation to the supply of venous blood and fresh air. He emphasizes the fact that estimates of the composition of alveolar air from the composition of the mixed expired air on the assumption of a constant dead space are fallacious. Haldane believes that the greater part of the blood which has lost CO_2 directly to the dead space passes to the left side of the heart and that the passive stretching of the dead space occurs principally in the pulmonary infundibula.

THE VITAL STATISTICS OF A COMMUNITY AND THE PERSONAL FACTOR.

It is held by many that in proportion as a nation increases in industrial wealth, so does the population deteriorate. That is to say, the average excellence of the people diminishes. In the first place, the inhabitants of a manufacturing country are for the most part massed together in cities, and this alone tends to bring about a considerable amount of degeneration. In the second place, industrial prosperity affords the opportunity for the workers generally to expend a great deal of money in luxurious living, and in the course of time a comparatively large section of the people will have, in consequence, retrograded physically and mentally. Drink and other forms of vice and dissipation, combined with unhygienic living and unsanitary dwellings, for these invariably go together, will have played their harmful parts, and a no mean portion of the population will have to be denominated as degenerates or as approaching the state of degeneracy. A thriftless, irresponsible, and lazy class will have been evolved.

In Europe, and to a lesser extent on this continent, the social problem is that which bulks most large. The thieves, drunkards, and wastrels of all kinds which confront one in the slums of all cities, are the despair of reformers, and convince them, if there were any doubt on the matter, that it is the personal factor which counts. And it is not only the submerged or more or less submerged tenth which arouses the sociologist, but the decent very poor. It is obvious that where there are extreme poverty, vice, and dissipation, there must be also a great deal of disease. The object of the social reformer is to cope with these conditions. However, the personal factor cannot be disregarded, and as this factor is largely a question of heredity, the problem becomes more complex.

It is an open question as to whether bad environment leads to drink or vice versa. The advanced socialist declares with decision that it is the environment that leads to drink, and that given improved dwellings and manner of living this canker which is eating into the vitals of modern society will be eradicated; whereas others, with as much if not more reason for confidence in their opinions, say that it is bred in the bones to be dissolute.

Dr. W. Robertson, Medical Officer of Health of Leith, Scotland, takes the latter view, and holds that the personal factor is predominant and that although this bad personal factor may be taught in process of time the worth of right living, the process will be slow. In a recent address he asserts that it may be stated without fear of contradiction that alcohol has been the greatest dehumanizing influence in the world's history. It matters little whether it be a question of cause or effect. Any measures, therefore, which promise to save chronic offenders from its baneful blight will be for the good of the race as of the individual. Of course, improved housing is an ameliorating factor; vital statistics have proved this in all civilized countries, and especially in Great Britain. Of all hygienic efforts which have effected so much in reducing the incidence of disease, none has exerted greater power than improving the environment of the poor. It is patent to all that the provision of airy, decent dwellings, with a sufficiency of air space around, cannot but be a long step in the direction of advancing the standard of health of a community. Education again can do a great deal toward improving the individual from all points of view. Still, the personal factor must always be looked upon as the most important of all.

Ergotism from War Bread.

At present we may speak of two kinds of war bread in the belligerent countries of Europe. One is due to Government fiat and is standardized. The other is the result of actual or alleged stringency in bread makings, and is made of inferior or falsified materials. It is quite conceivable that "spurred rye" may find its way into bread, as has often happened even in peace times. At a session in April of the Royal Imperial Medical Society of Vienna (*Berlincr klinische Wochenschrift*, May 17) Fuchs presented a soldier with convulsive ergotism. The man had lived while in Russian Poland on the native bread. The disease picture was that of severest tetany. There was, however, dry gangrene of the great toes, which at first suggested freezing, but although the patient had lived in the trenches the weather had not been cold. The author now investigated the feces and found ergot in abundance. The bread had been very dirty and had evidently contained ergot in large quantities. Recovery was spontaneous. The author regards epidemic tetany as a mild form of ergotism, and says it often develops after eating bread made with contaminated flour.

Bread or Beer?

Any question as to whether barley should be made into beer or bread in order to get the best food value would hardly be seriously agitated in the United States, even although barley is not much used as a breadstuff. It is otherwise in Germany, where beer is regarded as a sort of liquid bread, the alcohol content of which—when beer is used within dietetic limits—is not held to pass beyond the limits of combustibility. This "burning question" was recently made the subject of a session of the Anti-Alcoholic Society of Physicians of Munich (*Muenchener medizinische Wochenschrift*, May 25). Theilhaber, the speaker, made the following points in favor of bread, or rather, against beer as an article of diet: The value of beer calories is supported by one-sided arguments; no regard is had to the toxic action of alcohol; brewing leaves out the vitamines and mineral constituents of the other coatings of the grain. Even at best beer nutriment

represents a luxus consumption, for doubtless those who consume it do not require these extra calories. The sense of the meeting was that beer brewing ought to cease until the war is over. If this cannot be brought to pass then brewing should be minimized.

News of the Week.

Death Rate in New York City.—The Department of Health reports 1,376 deaths in this city during the week ending July 17, an increase of 90 over the number reported during the corresponding week of last year. The increase in the number of deaths was evenly distributed among all age periods, the group under five years showing the largest proportion. In this group there was an increase of forty-three deaths. In the group under one year of age there was an increase of seven deaths. The death rate for the first twenty-nine weeks of 1915, is 13.94, as compared with 14.42 for the corresponding period of last year.

Medical License Examinations.—As a result of the recent examination of applicants for license to practise medicine in the State of Pennsylvania 224 passed successfully and were granted licenses and twenty-four failed.

Dr. G. M. Williamson, secretary of the North Dakota State Board of Medical Examiners, reports the results of the recent examinations. Eleven candidates took the written examination, and of these, seven were successful; ten applied for the practical and oral examination and for reciprocity certificates, and of these, eight were successful. Five applicants were granted reciprocity licenses to practise without further examination.

Forty-nine of the sixty-five applicants for medical and osteopathic licenses in the State of Washington passed the examination held at Seattle in June. Of the forty-nine successful applicants forty were licensed to practise medicine and nine to practise osteopathy. Included in the list of successful doctors was the secretary of the State board of health.

Typhus and Cholera Epidemic Abating.—The American vice-consul at Belgrade has reported by cable to the State Department that "the spread of typhus in Montenegro is controlled. The epidemic is practically over there now. There are very few scattered cases. Typhus and other infectious diseases in Serbia continue to decrease rapidly. Cholera towns gradually being cleaned." The dispatch added that an appropriation of $10,000 for use in Serbia would be ample for control of infectious disease during the next two months, and that certain permanent improvements could be made with a similar amount. The Red Cross has approximately $10,000 available for that purpose. It has previously given $30,000. The Rockefeller Foundation gave nearly $100,000, and a Serbian committee contributed $10,000.

A Baby Hospital in Serbia.—The American Red Cross announces that it has arranged to establish a baby hospital in Serbia to be supported by the Red Cross of this country and to be manned by American doctors and nurses. The hospital will be known as the Mabel Grouitch Baby Hospital, in recognition of the Red Cross activities of Mme. Slavko Grouitch, wife of the Serbian Under Secretary for Foreign Affairs, who is an American woman. Two physicians who will have charge of the hospital, Drs. Louise Taylor Jones of Washington, and Catherine H. Travis of New Britain, Conn., sailed last week on the Greek steamship *Constantinos V*, and two nurses for the hospital will sail next week.

Charitable Bequests.—By the will of the late Mary Van Beil of Marion, Pa., the sum of $5,000 is bequeathed to each of the following Philadelphia institutions, for the endowment of a free bed: Methodist Episcopal Hospital, Jewish Hospital, and Episcopal Hospital.

The will of the late Annie M. Wilson of Philadelphia contains a contingent bequest of $15,000 to the Jefferson Hospital, for the maintenance of three free beds to be known as the "Wilson Memorial Beds, for the benefit of reduced gentlemen."

Examination for Resident Physician.—The Civil Service Commission of Philadelphia announces an examination to be held on August 13 for the position of resident physician under the Bureau of Health of the Department of Public Health and Charities of that city. There are six vacancies and the positions carry a salary of from $600 to $800 a year. The examination is open only to residents of the State of Pennsylvania. The duties of these positions are to give medical assistance to the inmates of the institution to which the physician is assigned and any other duties appropriate to the title which may be assigned. The applicant must be a graduate of a recognized school of medicine and licensed to practise in the State of Pennsylvania. He should have some institutional experience, and preferably be above 25 years of age.

Dr. Mayer Resigns from the Staff of the "Centralblatt für Laryngologie."—In a recent issue we noted that the editor and publisher of the *Internationales Centralblatt für Laryngologie* had removed the name of Sir Felix Semon from the title page, because of his expression of opinion as a naturalized English citizen regarding "Germany's barbarous warfare." As this action destroyed the journal's claim to be international in character, as a protest against the introduction of politics in a scientific journal and in loyalty to a man who has done so much for laryngology, Dr. Emil Mayer of New York City, who for the past sixteen years has been the collaborator for America, has tendered his resignation to the editor of the *Centralblatt*.

Dr. Harold B. Wood of Chicago has been appointed chief of the public health bureau of Topeka, Kan. He received the degree of doctor of medicine from the University of Pennsylvania in 1901, and that of doctor of public health from the same institution in 1910. In Chicago he was in charge of the sanitary and medical inspection of public schools.

Dr. H. S. Baketel of this city, editor of the *Medical Times*, has been appointed professor of hygiene and public health in the Long Island College Hospital, Brooklyn.

Dr. Richard Kovacs of this city has removed to 223 East Sixty-eighth Street.

Regulating the Sale of Proprietary and Patent Medicines.—The Louisiana State Board of Health has adopted verbatim the ordinance enacted by the Board of Health of the City of New York in December last, regulating the sale of proprietary and patent medicines. This ordinance, which will become effective in New York City on December 31, 1915, requires either the registration of the names of ingredients of all proprietary or patent medicines with the Board of Health, or, in lieu thereof, the printing of the name of each ingredient "conspicuously, clearly, and legibly in English, on the outside of each bottle, box, or package in which the medi-

cine or medicinal compound is held, offered for sale, sold, or given away." The weekly *Bulletin* of the Health Department says it is advised that Cincinnati has under consideration the enactment of this same ordinance, and that similar legislation is being considered in Indiana, Minnesota, and other Western States.

Committee of American Physicians for the Aid of the Belgian Profession.—Dr. F. F. Simpson, treasurer, 7048 Jenkins Arcade Bldg., Pittsburgh, Pa., reports the following contributions for the week ending July 24, 1915:

Dr. Charles N. Dowd, New York, N. Y.	$25.00
Dr. Emil Lofgren, Rockford, Ill.	5.00
Columbia Medical Society, Columbia, S. C.	20.00
Receipts for the week ending July 24	$50.00
Previously reported receipts	7,700.84
Total receipts	$7,750.84

Obituary Notes.—Dr. James Albert Bennett of New York, a graduate of the New York Homeopathic Medical College and Hospital in 1871, a member of the American Institute of Homeopathy and the New York County Homeopathic Medical Society, and for the last twelve years treasurer of the Consolidated Gas Company of New York, died at his home on July 11, aged 72 years.

Dr. Thomas Aloysius Maloney of Springfield, Mass., a graduate of the New York University Medical College in 1898, and a member of the Massachusetts Medical Society and the Hampden District Medical Society, died at the home of his mother in New Britain, Conn., on July 13, aged 40 years.

Dr. Lewis H. Adler of Philadelphia, a graduate of the University of Maryland School of Medicine, Baltimore, in 1859, and of the Jefferson Medical College, Philadelphia, in 1871, died at the Methodist Hospital, Philadelphia, on July 15, aged 73 years.

Dr. Isidor Zippert of New York, a graduate of the New York University Medical College in 1898, and a member of the East Side Medical Society, died at his home after a long illness, on July 14, aged 39 years.

Dr. Anton Theodore Remer of Dallas, Tex., a graduate of the Barnes Medical College, St. Louis, in 1900, died at his home on July 2, aged 53 years.

For the Promotion of International Morality.—We are requested to publish the following appeal:

To the Men and Women Engaged in Medical Practice and the Advancement of the Medical Sciences: The present horrible war among civilized nations has brought out impressively certain sad facts: that although there are civilized *individual* nations, we are still very far from having a civilized humanity—there is an abyss between *intra*national and *inter*national morality; that, no matter how cultured and enlightened nations may be, they still settle their international differences by brute force, by maiming and killing their adversaries; and, finally, that the present high development of science and invention in individual nations only serves to make the results of this war more destructive than any other in history.

The war has demonstrated, however, one encouraging fact, namely, that among all the sciences and professions, the medical sciences and medical practice occupy an almost unique relationship to warfare, and that, among all the citizens of a country at war, medical men and women occupy a peculiar and distinctive position.

No discovery in medical science has been utilized for the purpose of destroying or harming the enemy. Medical men in each of the warring countries are as courageous, as patriotic, as any other citizens, and are as ready to die or to be crippled for life in the service of their country as any other class of their fellow countrymen. But their services, however, consist in ministering to the sick and to the injured and in attending to their sanitary needs. Furthermore, they often risk their lives by venturing into the firing line to bring the injured to places of safety and to attend to their immediate needs. *In these heroic and humanitarian acts friend and foe are treated alike.* Finally, the majority of the members of the medical profession and of the medical journals of the neutral as well as of the warring countries abstain from public utterances that might be grossly offensive to any of the belligerent nations.

These facts—this advanced moral position in international relations which medicine and its followers are permitted to occupy in all civilized nations, ought to be brought to the full consciousness of the men and women engaged in the medical sciences or in medical practice. Such a realization could not fail to have an elevating influence upon the medical profession itself, and would probably exert a favorable influence upon the development of international morality in general.

At the dawn of history, medical men were frequently also the exponents of philosophy and morals. In the middle ages, when knowledge became specialized, medical men more and more devoted their activity exclusively to medical practice. Because of its inefficiency at that time, medicine lost its prestige. In recent times, however, medicine is becoming an effective science; one marvelous discovery has followed another, and the efficiency of medical practice has been rapidly increasing. Medicine makes habitable to man hitherto uninhabitable parts of the world. It prevents disease; and, with increasing theoretical and practical efficiency, medicine is learning to alleviate and cure disease and injuries. Medical sciences and medical men have steadily risen in the esteem of civilized mankind. *May not the medical sciences and medical men become again the standard bearers of morality, especially of international morals?*

To accomplish these objects, it is proposed to organize as large and effective an Association as may be possible of men and women engaged in the medical sciences or in medical practice under the name of The Medical Brotherhood for the Furtherance of International Morality.

It is obvious that such a Brotherhood could not exercise an important influence at once. But our modest expectation for prompt results should not prevent us from attempting now to take the first step in the right direction. Many important results have often had small beginnings.

A Committee of Physicians and Medical Investigators request you herewith to enroll as a member, and to declare your willingness to endorse and support the moral standard which the medical profession generally upholds when called upon to perform its patriotic duties in an international strife.

It should be expressly understood that it is not the object of the proposed Brotherhood to influence the feelings and views of any one regarding the problems involved in the present war. It is desired merely to bring to the full consciousness of the members of the medical profession the exceptional moral position which all civilized nations, even while at war, *permit* and *expect* medical men to occupy at least as long as they remain in the medical profession and act in this capacity. This consciousness cannot fail to elevate the moral standards of physicians. Furthermore, after the close of the present war, the Brotherhood could without doubt facilitate the reunion of the members of the medical profession of all the nations which are now at war and increase good feeling among them. A humanitarian body such as this proposed Brotherhood, if already in existence and ready for service, might and could be of the greatest usefulness in many ways.

Medical readers of the above appeal are requested, if they are so inclined, to enroll as members. There is no membership fee, but voluntary contributions for the purpose of upholding the organization, distribution of literature, etc., will be gratefully accepted. Enrollment and contributions are to be sent to the Medical Brotherhood in care of Dr. S. J. Meltzer, 13 West 121st street, New York City.

The following is a list of the officers and members of the advisory committee of the Medical Brotherhood:

EXECUTIVE COMMITTEE (Residents of the City of New York): *President*, Dr. S. J. Meltzer, Member Rockefeller Institute; *First Vice-President*, Dr. Rufus Cole, Director Rockefeller Hospital; *Second Vice-President*, Dr. S. Josephine Baker, Director Dept. of Child Hygiene; *First Secretary*, Dr. Wm. J. Gies, Professor of Biological Chemistry, Columbia University; *Second Secretary*, Dr. Harlow Brooks, Professor of Clinical Medicine; *Treasurer*, Dr. Robert T. Morris, Professor of Surgery, Post Graduate Medical School; *Council*, Drs. Abraham Jacobi; Robert Abbe, Surgeon to St. Luke's Hospital; John Winters Brannan, President Medical Board, Bellevue Hospital; J. A. Fordyce, Professor of Dermatology, College of Physicians and Surgeons; Nellis B. Foster, Assistant Professor of Medicine, Cornell University Medical School; S. S. Goldwater, Commissioner Dept. of Health; Graham Lusk, Professor of Physiology, Cornell University, Medical School; William H. Park, Professor of Bacteriology, Univ. & Bell. Medical College; John Allen Wyeth, President New York Polyclinic.

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Mendel, Professor of Physiological Chemistry, Sheffield Scientific School, New Haven; Chas. H. Mayo, Rochester, Minnesota; James F. McKernon, President, Post Graduate Medical School, New York City; Joseph L. Miller, Associate Professor of Medicine, Rush Medical College, Chicago; Albert P. Mathews, Professor of Physiological Chemistry, University of Chicago, Chicago; Ward J. MacNeal, Director, New York Post Graduate Hospital, Medical School, New York City; F. G. Novy, Professor of Bacteriology, University of Michigan, Ann Arbor; Albert J. Ochsner, Professor of Surgery, University of Illinois, Chicago; G. M. Piersol, Editor *American Journal of the Medical Sciences*, Philadelphia; W. M. Polk, Director, Cornell University Medical School, New York City; W. A. Pusey, Professor of Dermatology, University of Illinois, Chicago; Stewart Paton, Neurologist, Princeton, New Jersey; Richard M. Pearce, Professor of Experimental Medicine, University of Pennsylvania, Philadelphia; Joseph H. 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Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

HEALTH OF THE SOLDIER—RESEARCH COMMITTEE—SALVARSAN AND ITS SUBSTITUTES—NEW HOSPITAL—OBITUARY.

LONDON, July 9, 1915.

THE Health of the Soldier was the subject to which Dr. F. M. Sandwith devoted his Chadwick lectures, and a very appropriate subject, you may think, in a time of warfare waged on the present scale. The medical dangers of the campaign have declared themselves thus early, and have followed as usual the unsanitary conditions. The tetanus bacillus is present so constantly in the intestines of horses and cattle that it is regarded by many as a normal inhabitant whence the soil and the water are so liable to contamination. Sir George Makins, who was in the South African War, is now consulting surgeon with the forces, and writes from the field:

"One may well look back with envy to the clean soil of the Veldt, much as the dust was then regarded as a bugbear." The high cultivation carried on in France and Belgium has kept up a constant source of the bacilli from the manure so freely employed. In consequence tetanus is notoriously common, for the slightest scratch may admit the organism. Dr. Sandwith mentioned that the number of cases diminished at once when the troops pushed further into Belgium among sandy, barren dunes. He goes on to say that, judging by laboratory experiments on animals, the immunity conferred by antitetanic serum is transitory. It begins to diminish after about a fortnight, and disappears altogether in six or seven weeks. When a bruised wound is soiled with earth, he says it is well to inject an ounce of serum, followed by half-ounce doses weekly until the danger period has passed.

The British regulation treatment of gunshot wounds in the present campaign is: First field dressing of pad of gauze, etc., applied by surgeon, comrade, or patient himself; on reaching field ambulance this is changed, patient taken to clearing hospital, where wound is cleansed, if necessary, and iodine paint freely used. When needful this dressing is repeated during the journey in the ambulance train to the base. Since November an injection of serum has been given as a precaution at the clearing hospital or earlier. Gangrene was next considered by the lecturer, which, he said, was caused by a similar soiling of a wound by dirt, containing in this case the bacillus of malignant edema.

The various forms of gangrene now so rare were not so fifty years ago, and the lecturer thought it was well to be reminded occasionally of our debt to Pasteur and Lister, who disposed of the idea that wound fever and hospital gangrene were spontaneously generated. Before their day gangrene was looked upon as an event of inflammation—a complication which the surgeon could not foresee or prevent. One hundred and fifty years ago there was a great belief in cauterizing by fire, boiling liquids, or disinfectants. It was also thought that wounds should be kept from the air and not touched by hands or instruments, but this gave place to the era of poultices, dressings of old linen, etc., and ointments. An occasional protest was made, but no one saw the reason for cleanliness, and the death rate increased. The danger of surrounding impurities, dirty hands, dressings lying about on filthy tables, and so on, had not occurred to the surgeon. In the operating theater he wore his dirtiest coat, stained with blood and grossly infective matter. To Pasteur's discovery of organic germs in the air and everything unsterilized, modern surgery owes its success. Lister's genius in 1867 applied this knowledge to wound infection. Result: the antiseptic and then the aseptic methods. In 1887 Pasteur discovered the gangrene bacillus—a strict anaerobe, therefore not infecting superficial wounds, but multiplying in living tissues when introduced deeply beneath the skin. Shell wounds in this war have been very destructive in this way, the external aperture being small comparatively, but leading to extensive injury, difficult or impossible to cleanse, necessitating removal of tissues under the skin. The lecturer gave a brief account of his only experience of hospital gangrene in the Russo-Turkish War, when the Greek and native doctors had no disinfectants except quicklime in basins standing on the floor. This old-fashioned hospital gangrene, a complication of septicemia due to dirt, once so common, does not resemble the gas gangrene, of which the bacillus has been recognized and is a traumatic infection from the contaminated soil. It has been found in this war that free exposure to the air, and so to oxygen, gives excellent results, and some of our wounded are being treated in open-air shelters. The patients in the trenches do well in almost any illness from wounds to pneumonia. At Versailles general hospital with 1000 beds, antigangrene vaccine in daily doses for a week has given great success.

Frostbite next occupied Dr. Sandwith's attention, as likely to attack troops as soon as the cold weather sets in. It appeared among those engaged in the present contest as early as November, but Dr. Sandwith's personal experience with it was in the Russo-Turkish War, and he described the Arab soldiers stumbling along in the snow, their hands lost to sensation as they thrust them into the flames of the campfires. In January (1878) eighteen of Baker Pasha's Turkish sentries were frozen to death in one night, and orders were given to change every quarter of an hour. Chilblain is only the first stage, and water-bite, which some are talking about as coming from the trenches, is the same malady.

The lecturer also noticed that form of nervous exhaustion which so constantly arises during war or follows it, for which Weir Mitchell's rest cure is the remedy. He then referred to the impossibility of maintaining cleanliness in a prolonged campaign where clean men may come into contact with others from filthy homes, and vermin are apt to find a way into the camp, and by increasing in vast numbers, worry the men day and night; worse still, they may be carriers of infectious diseases. They are the constant accompaniments of all armies, and it has been said more dreaded than bullets by most officers.

The Medical Research Committee, under the authority of the Local Government Board, has so far exercised a certain control over the sale of salvarsan and the substitutes proposed for it. The committee satisfied itself that French and English preparations were quite equal in purity and efficacy to the original products. It is known that unfavorable results have sometimes followed the administration of the German product, some actual fatalities. Various suggestions have been made as to the cause, but none of them can claim much support. It is now desired that the committee should have more records of the experience of those who have been employing salvarsan or its substitutes clinically. These, compared with laboratory investigations, may settle whether any additions or modifications of the system hitherto employed are desirable. In making such reports as these it is of great importance that full details be given as to the dosage, the exact preparation employed, and the precautions taken to secure purity of the water or other solvent, as well as of the drug itself. As to the last point, comparisons should be confined, at any rate at first, to portions of the same sample, and when that is exhausted to specimens of the products of the same manufacturer.

Major Ffrench, R. A. M. C., on June 15 read a paper at the Dermatological Society on the substitutes. He said kharsivan and neokharsivan were the same as salvarsan and neosalvarsan. Billou is a French substitute, apparently the same as novarsenobenzol, though of a somewhat darker yellow. This powder is soluble in water, giving a clear yellow solution. Neokharsivan is a reddish-brown

powder, also readily soluble, tinging the water. Kharsivan is a yellow powder, not so readily soluble, but a clear yellow solution can be obtained by careful procedure. This solution is mixed with a 4 per cent. solution of sodium hydrate. The remedy is used by intravenous injections, and demands special care. The day before the patient is examined, his urine tested, etc., pil. hydr. gr. 4, given in the evening, followed by Epsom salt in the morning. After a light breakfast, tea and bread and butter, the injection is given in the forenoon, and if no after effects occur tea is had in the afternoon, like the breakfast; and the ordinary hospital dinner at 7.30 P. M., if free from fever or stomach derangement. The routine dosage was three such injections at ten-day intervals. Concurrently mercurial injections were used for nine weeks. Major Ffrench said more than one hundred cases, including primary, secondary, and tertiary disease, had been treated with the substitutes. No serious results had followed their use, and they considered them very excellent substitutes and to be safely recommended for the treatment of all forms of syphilis.

A new hospital to accommodate wounded officers has been established with one hundred beds and the possibility of increasing to two hundred.

The death has occurred of Mr. Clement Lucas, member of the council, and late vice-president of the R. C. S. E., at the age of sixty-nine. He had been senior surgeon to Guy's Hospital, and held other important posts.

Surgeon-Major W. F. MacTier, I. M. S. (retired), died on the 19th ult., aged ninety-two.

Progress of Medical Science.

Boston Medical and Surgical Journal.

July 15, 1915.

1. The Newer Views of "Cancer" and Their Present Relation to the "Responsibility" of the Practitioner. E. Reynolds.
2. The Surgical Treatment of Cancer of the Cervix Uteri. F. Cobb.
3. Inoperable Uterine Carcinoma. A Method of Applying Heat in Its Treatment. J. F. Percy.
4. A Case of Pyelonephritis, Complicated by Adeno-Carcinoma and Chyluria. E. T. Gray.
5. Limitations of the Radical Operation for Cervical Cancer of the Uterus. H. T. Hutchins.

1. Cancer and the Physician's Responsibility. — E. Reynolds states that mammary lumps of benign appearance are sometimes unexpectedly malignant. Delay may convert an undoubtedly benign tumor of the breast into a most malignant growth. Any definite chronic lump in a breast should be removed when possible by a non-mutilating operation. Benign growths of the uterus do not necessarily remain benign. There is no sharp line between the benign and the malignant, and the malignant usually arises from the benign.

2. Surgical Treatment of Cancer of Cervix Uteri.— F. Cobb emphasizes the importance of early diagnosis of cancer of the cervix and the fact that the radical abdominal operation cures a large percentage of cases and carries with it in skilled hands no excessive primary mortality. By radical operation is meant the author's modification of the Wertheim abdominal hysterectomy. This consists in the removal of the uterus and a liberal portion of the vagina and as much of the parametrium as possible through a medium abdominal incision after ligation of both internal iliacs, the regional lymphatic glands being removed only if enlarged to sight and palpation. When done by specially trained men the operation should carry with it an immediate mortality of not over 15 per cent. In advanced cases which are inoperable palliative measures should be resorted to for the prolonging of life and the checking of pain and hemorrhage. These objects may be accomplished by the use of the actual cautery with ligation of the internal iliac and ovarian arteries. Curetting should be done because of the chance of forcing cancer cells into the lymphatics. Percy had developed a valuable method of treating advanced cases by means of the cautery. He opens the abdomen in the median line and ties both internal iliac arteries and the ovarian arteries. After this, with his assistant's hand in the abdomen over the uterus, he uses through a special water-cooled vaginal speculum for from thirty to fifty minutes his special cautery at a low temperature, which he calls a "cold iron," the heat of which is not sufficient to char or carbonize the tissue, about 125 Fahr. The author believes that Percy's method is the one of choice in treating border line and advanced cases of cancer of the cervix.

New York Medical Journal.

July 17, 1915.

1. The Psychology of Stammering. G. H. Makuen.
2. Irrigation, Transinsufflation, and Visualization of the Intestines by the Duodenal Tube. I. O. Palefski.
3. Syphilis of the Nervous System. W. V. P. Garretson.
4. Unsuccessful Adenoid Operations. W. Brady.
5. Microscopic Localization. P. A. Sheaff.
6. Late Congenital Syphilis. S. Berkowitz.
7. The Prevention of Syphilis. A. W. Stillians.
8. The Gouty Individual. W. R. Stone.
9. Life Insurance and the Kidneys. J. S. Lankford.
10. Pulmonary Tuberculosis and Diathermia. A. C. Geyser.
11. The Treatment of Diarrhea. J. C. Simpson.
12. An Improved Urethroscope. E. C. Ballenger and Omar F. Elda.

1. The Psychology of Stammering.—G. H. Makuen states that in 1910 he described the causes of stammering as being twofold, predisposing and exciting, the former being probably congenital and often inherited and consisting in an irritable or hyperesthetic condition of the psychomotor mechanisms of speech. The idea advanced was that stammering is a form of aphasia and like the latter, having probably a physical basis which may or may not be demonstrable. Still more lately C. S. Bluemel has characterized stammering as a transitory auditory amnesia.

2. Applications of Duodenal Tube.—I. O. Palefski finds that by the conjoint use of the duodenal and rectal tubes one may introduce into the intestines large amounts of salt solution and oxygen. A liter of sodium chloride, 1.5 per cent.; sodium bicarbonate, 1.5 per cent.; sodium sulphate, 2.5 per cent.; magnesium sulphate, 5 to 6 per cent., will produce a flushing effect upon the intestinal canal. In lower concentrations these will be absorbed and excreted by the kidneys. In higher concentrations they will produce transudation into the intestinal canal and will be discharged from the rectum in nearly twice the quantity introduced. The irrigation may be carried to a point when the rectal flow will appear clear, odorless, bile colored, and neutral, with a marked reduction in the bacterial contents toward the end. By employing varying concentrations of salt solutions, one is able to deplete the body of its fluid and replenish with fresh saline or water with or without nourishing material. Intestinal irrigation should prove valuable in dysentery and ptomaine poisoning. It should dispense, to a great extent, with appendicostomy for lavage of the ileum and cecum. It enables one to study more accurately the digestive and absorptive powers of the intestines. Transintestinal insufflation with oxygen should prove valuable in intestinal fermentation. By introducing barium into the duodenum one can observe under the fluoroscope the peristaltic action of the jejunum, ileum, and cecum.

4. Unsuccessful Adenoid Operations.—W. Brady be-

lieves that repeated attacks of coryza lead eventually to adenoids. In cases of the latter in which it is doubtful whether to urge operation a course of treatment for the accompanying rhinitis may be sufficient. This course of treatment consists in applications to the nasal mucosa of the ordinary iodine-potassium—iodide-glycerin solutions, and regulation of the general hygiene of the patient.

7. **The Prevention of Syphilis.**—A. W. Stillians concludes as follows: 1. The need of an active campaign against venereal disease is pressing. 2. The possibility of eradicating syphilis is demonstrated by the brilliant record of the United States army. 3. A campaign based upon the same principles should be instituted among civilians. 4. Educational efforts can well begin with students, especially medical and dental students. 5. Among legislative measures needed, an act making it a crime knowingly to transmit venereal disease and an act requiring a certificate of health before marriage are important. 6. Prevention by means of the Metchnikoff ointment should be advocated for all those who expose themselves to the dangers of irregular sexual intercourse.

Journal of the American Medical Association.

July 17, 1915.

1. Intraspinal Therapy in Syphilis of the Central Nervous System. H. F. Swift.
2. A Reaction of the Pupil, Strongly Suggestive of Arteriosclerosis with Increased Blood Pressure. M. Wiener and H. L. Wolfner.
3. Immediate Results of Splenectomy in Pernicious Anemia. R. I. Lee, B. Vincent, and O. H. Robertson.
4. Roentgen-Ray Epithelioma, Curable by Radium. An Apparent Paradox. R. Abbe.
5. Use of Autogenous Rib Graft in Reconstructive Skull Surgery. P. R. Kahle.
6. Anteversion of the Femoral Neck in the Normal Femur and Its Relation to Congenital Dislocation of the Hip. H. A. Durham.
7. The Vaccine Treatment of Ringworm of the Scalp. A. Strickler.
8. Gastrojejunal Ulcers. Their Röentgenological and Surgical Aspects. R. D. Carman and D. C. Balfour.
9. The Absorption of Drugs from the Nasal Submucosa of Dogs. J. D. Pilcher.
10. Paronychia: A Simple Method of Treatment: An Analysis of Three Hundred Cases. I. Seff and S. Berkowitz.
11. Leprosy or Syringomyelia? G. B. Hassin. G. Burke and J. Nuzum.
12. Foreign Body in the Lung. Report of a Case in which the Primary Diagnosis was Suggested by a Blood Examination. G. L. Richards.
13. African Trypanosomiasis. Report of a Case. H. K. Tuttle.
14. Nonsuppurative Subphrenic Peritonitis. H. Neuhof.
15. Otitic Pneumococcic Bacteriemia. A. S. Tenner.
16. Foreign Body in the Bladder. M. Bornstein.
17. Apparatus for Utilizing City Water Pressure to Furnish Compressed Air for Atomizers. H. J. Ullmann.
18. A Benzidin Tablet Test for Occult Blood. D. Roberts.
19. A Simple Substitute for Empyema Tube. A. M. Miller.
20. Compression Ring for Hemostasis. F. P. Corrigan.
21. Device for Figure-of-Eight Sutures. A. H. Clark.
22. Isolation of *Bacillus Tuberculosis* from Sputum by the Method of Petroff. O. W. H. Mitchell and R. R. Simmons.
23. A New Pocket Colorimeter. T. Kuttner.
24. An Improved Inflatable Face Cushion. R. C. Coburn.
25. An Improved Hemorrhoid Operation. W. L. Secor.

1. Intraspinal Therapy in Syphilis of Central Nervous System.—H. F. Swift notes that intraspinal injections of "autosalvarsanized serum," or serum to which a small amount of salvarsan or mercury is added, is of distinct help in certain cases of tabes and cerebrospinal syphilis. Not all patients with these diseases require intraspinal treatment. Many of them respond well to intravenous injections of salvarsan combined with mercury and iodides properly administered. In other cases the symptoms and abnormal cerebrospinal fluids are not controlled by general therapy, and it is in this class that the author believes the addition of intraspinal therapy to be of value. Both the clinical side and laboratory evidences of active disease should be considered, and any treatment controlled by repeated examinations of the blood and cerebrospinal fluid. Although the treatment of these diseases should be systematic, it should not be so rigid that individual indications should be disregarded. Not infrequently one sees improvement only after active treatment has been discontinued. Others seem to require constant treatment until all evidences of active disease have disappeared. Only by considering all these factors can consistent beneficial results be obtained.

2. The Pupil in Arteriosclerosis.—M. Wiener and H. L. Wolfner have observed a condition of the pupil which seemed always to be associated with patients registering a high blood pressure. A review of the literature and a careful clinical study of a large series of patients seem to confirm the authors' original deductions as to the clinical significance of this sign. Patients afflicted with fundus disease, or with any condition which might interfere in any way with the reaction of the pupil, are not included in the authors' notations. This pupil is found to be larger than the average normal pupil, with a usual minimum size of 4.5 mm. to 5.0 mm. in width, contracts promptly to light stimulus, but immediately returns to the original size and there remains, without the light stimulus having been changed. While it is not claimed that this reaction is pathognomonic of arteriosclerosis with high blood pressure, the authors maintain that its association with arteriosclerosis with high blood pressure is so nearly constant as to make of it a sign that is at least strongly suggestive, and therefore of clinical value.

3. Splenectomy in Pernicious Anemia.—R. I. Lee, B. Vincent, and O. H. Robertson report that the immediate result of splenectomy in a series of five cases of pernicious anemia was a prompt post-operative recovery and a definite remission of the disease in every case. The remissions were much more marked than is usually seen in pernicious anemia. In four of the five cases the red counts rose to from 4,000,000 to 5,000,000. The remissions occurred so constantly that the authors are inclined to attribute them to the operation of splenectomy. The study shows that in spite of marked improvement, the blood picture still exhibits the accepted characteristics of pernicious anemia with the exception of the color index, which has been altered from high to normal or low. Furthermore, in three of the five cases evidence of increased blood destruction was present several months after spenectomy, as shown by the urobilin estimation. These facts one can interpret only as evidence that the disease is not cured. It cannot as yet be stated that the improvement brought about by this means will last longer than the remissions which come spontaneously and which may persist over a period of years. From the very nature of the disease, it will be many years before the exact value of splenectomy can be determined. The only conclusions one may safely draw from these cases combined with the reports of other writers are: (1) Splenectomy is not a very serious operation in pernicious anemia and offers a definite means of inducing a remission. (2) The remission thus brought about is more marked in the majority of the cases than any other known therapeutic procedure.

4. Radium Treatment of Roentgen-Ray Epithelioma.—By R. Abbe. (See MEDICAL RECORD, July 3, 1915, page 41.)

8. Gastrojejunal Ulcers.—By R. D. Carman and D. C. Balfour. (See MEDICAL RECORD, June 26, 1915, page 1092.)

The Lancet.

July 10, 1915.

1. Trypanosomes Causing Disease in Man and Domestic Animals in Central Africa. Sir David Bruce.
2. Loss of Personality from "Shell Shock." A. Feiling.
3. The Risks from Tuberculous Infection Retained in Books. H. Kenwood and Emily L. Dove.

4. A Note on a Case of Primary Hepatic Carcinoma of the "Cirrhosis Carcinomatosa" Type. F. Parkes Weber.
5. Treatment of Septic Compound Fractures and Wounds by Ionization of Salicylate of Sodium. R. McQueen and L. H. Boothby.
6. The Relationship Between Nuclear Division and Phagocytic Power in Polymorphonuclear Leucocytes. F. E. Taylor.
7. The Action of Chlorine on the Blood. H. W. Hake.

1. **Trypanosomes.**—Sir David Bruce, in the third of the Croonian Lectures deals with the *Trypanosoma gambiense*, the cause of the notorious "Congo sleeping sickness." This organism was first seen fourteen years ago in the blood of an Englishman employed on the river Gambia in West Africa. This parasite differs markedly from the *Trypanosoma brucei* which causes nagana among the domestic animals and "Nyasaland sleeping sickness" in man. It is difficult to infect the lower animals with the *Trypanosoma gambiense*, whereas the *Trypanosoma brucei* infects most animals with the greatest readiness. The carrier of the former organism is the tsetse fly, *glossina palpalis*, in which the parasite retains its virulence for a period of about 18 hours after it has been swallowed. It then loses its power of infecting animals for about twenty-two days. Recent investigations have shown that the antelope on the shores of Lake Victoria act as a reservoir of the virus of sleeping sickness.

3. **Tuberculous Infection Retained in Books.** — H. Kenwood and Emily L. Dove conclude that there is probably no material risk involved in the re-issue of books recently read by consumptives, unless the books are obviously soiled. Even then the risks are very slight. Nevertheless, it is desirable to provide against a possible risk, however slight. This will be secured if dirty books recently received from houses in which there is a consumptive reader are not re-issued until such books have been either disinfected or placed "in quarantine" in a separate room for the period of a month. It will be desirable to disinfect such a room from time to time. When such books are very dirty they should be withdrawn from circulation. The loss involved would be much reduced in time if the borrower could be temporarily deprived of his right to borrow when a book is brought back in a badly soiled condition. It would be well to demand (upon a printed and gummed slip) the following precautions of all readers: (a) Not to cough into a book; always to cough into a handkerchief. (b) Not to moisten the fingers when reading; the hands should always be dry and clean. (c) Always to keep the book closed when it is not being read. Moist heat is a simple means of destroying the infection of tuberculosis on those library books which are not likely to be injured by such a method. For this purpose it is not necessary that the temperature should reach 100° C., although it should approximate to that; nor that the exposure should exceed 30 min.

5. **Ionization Treatment of Septic Wounds.**—R. McQueen and L. H. Boothby first clean up and syringe the wounds with sterilized water, or preferably with a 4 per cent. solution of sodium salicylate, and if it is necessary to swab the wounds they use sterilized swabs dipped into the solution; after the wound is thoroughly cleaned they plug it firmly and even tightly with sterilized gauze, or ribbon gauze for the small cavities and pockets, soaked in a warm 8 per cent. solution of sodium salicylate. Then there is placed over all a gauze pad soaked in the same solution, and over this is placed a piece of lint, folded four times, saturated with the solution, which lint is pinned to a copper mail chain electrode attached to the positive pole of a galvanic battery, and a current of from 5 to 30 milliampères is passed for at least a quarter of an hour. The chain electrode and pad are removed and a dry piece of gauze is put over the wet dressings with some wool and kept in position by a few turns of a bandage. It is essential to remember the following points in carrying out this treatment: first, no other antiseptic reagent is to be used in the cleaning of the wounds, not even a solution of boric acid, except perhaps peroxide of hydrogen, and even then the wound should be washed out with sterilized water before using the solution of sodium salicylate; secondly, all cavities leading off from the main wound and spaces between broken and splintered bone must be packed with the gauze, and if separate pieces of gauze are used they must all be in contact with the main plug; thirdly, the gauze must be plain, sterilized gauze and must not be prepared with any antiseptic, fourthly, the current should be gradually increased and diminished, and not turned on and off suddenly; and fifthly, the solution of sodium salicylate should be warm.

6. **Nuclear Division and Phagocytic Power.**—F. E. Taylor has compared the various neutrophile leucocytes according to Arneth's classification, with respect to the average number of staphylococci injected. He has found that the neutrophile leucocyte of Class I with undivided nucleus possesses a moderate power of phagocytosis; that this power of phagocytosis reaches a maximum in the leucocyte of Class II with bipartite nucleus and then progressively diminishes as the nuclear division increases, being lowest in the cells of Class V with multipartite nuclei. It would therefore appear that by taking phagocytic power as an indication of functional activity, and this again as an indication of the age of the cell, the neutrophile leucocytes with undivided nuclei are young and immature, those with bipartite nuclei have reached adult life and possess full functional power, and that thereafter progressively increasing nuclear division indicates increasing age and diminished functional activities. These results may also be taken as in some measure supporting the views put forth by Arneth on the relationship between the age and functional power of the neutrophile leucocytes and their behavior in the various toxemic states.

British Medical Journal.

July 10, 1915.

1. Treatment of "Gunshot Wounds" of the Knee-joint. H. M. W. Gray.
2. The Plating of Gunshot Fractures. N. C. Lake.
3. A Useful Splint for Compound Fractures of the Leg. C. H. Barber.
4. A Staging to Facilitate Drainage and Continuous Irrigation. E. H. Willock.
5. The Croonian Lectures on Trypanosomes Causing Disease in Man and Domestic Animals in Central Africa. Sir David Bruce.
6. A Case of Chronic Intestinal Obstruction Due to Tuberculous Cicatricial Constrictions of the Jejunum. S. H. Pugh.

1. **Treatment of Gunshot Wounds of Knee-Joint.**—H. M. W. Gray presents the following synopsis of his method of treatment: Excise the wound of the skin and the superficial soiled or necrotic muscle and fascia. Enlarge the wound freely if necessary. Remove foreign bodies (previously localized by *x*-rays) after possible enlargement of the wound in the synovial membrane. Flush synovial cavity with a 5 per cent. saline solution. Thoroughly remove blood clot. In very acute cases make a fresh incision. Trim the edges of the wound in a synovial membrane, and suture it if the sepsis not acute. Insert a drainage tube down to but not through the wound in the synovial membrane. Fill the rest of wound fairly firmly with a gauze dressing. Inject formalinglycerin or ether, etc., through a fresh puncture. Clean and redisinfect the surrounding skin. Apply superficial dressings and a light bandage. Immobilize the parts in a suitable splint. If this method fails, employ free arthrotomy and possibly amputation.

4. **Continuous Irrigation of Wounds.**—E. H. Willock has devised an apparatus for this purpose. This con-

sists of a staging which facilitates continuous irrigation of a wound no matter in what part of the body it may be. The staging is made as simple as possible. It consists of an oblong frame resting on four telescopic legs. Movable transverse bars, 2 inches wide, support the part of the body that needs irrigating or draining. For supporting the buttocks special bars are made. These transverse bars are provided with vertical detachable splint bars for the purpose of fixing a limb if necessary. Extension can be applied from the end of the frame. A deep tray hooks on underneath the frame and is placed wherever it is required. It is provided with a stopcock, and if the fluid discharged into it is excessive it can then be passed on by means of rubber tubing into a further receptacle under the bed. The legs rest upon fracture boards, and can be adjusted to enable the frame to be raised or lowered or tilted at an angle. The advantages claimed for the staging are: (1) Free continued irrigation can be carried on in any part of the body. (2) There is an entire avoidance of heavy dressings and "pus poultices." (3) Free drainage is secured from dependent parts.

5. **Trypanosomes.**—By Sir David Bruce. (See page 203.)

Berliner klinische Wochenschrift.

June 7, 1915.

Blood of Slaughtered Animals as Food.—Salkowski refers first to the possibility of preserving blood which is strongly inclined to putrefy, especially in hot weather. We know of no chemical substances which can preserve blood which shall be edible, but the fluid can be kept from putrefaction by salicylic or boric acid. Before it can be utilized as food it must be coagulated, after eight-fold dilution, by heating; after which it should be strained through muslin. The resulting proteid coagulum is tasteless, soft and neither granulated nor sandy. It may be used in many ways for food purposes—may be stirred into soups, mixed with preserved fruits, etc. From another viewpoint blood may be mixed with cane sugar, which is hostile to putrefaction and has indeed long been known as a dressing for putrid wounds. Long before the present war the author made studies of sweetened blood from this viewpoint. The author is also much interested in "albumin bread" made from blood and naïvely states that the consumer need not know the source of the albumin. The present war bread contains 4.38 per cent. of protein, of which 60 per cent. is utilizable. If the bread ration is 221 grams daily the consumer gets 5.52 grams assimilable protein for that period. If, however, bread made with blood is used, the latter figure will be changed to 13.88 grams. This bread, first devised by J. Block is termed by the author "Block bread." Block has in fact compiled a collection of recipes in which blood albumin is an important ingredient. Dried and powdered blood has a relatively small field of usefulness by reason of its grittiness and unpleasant taste. These drawbacks, as already mentioned, are not present in the sweetened coagulum which is a semi-solid mass of the consistency of marmalade, having an agreeable taste. Its stability has not yet been determined. To prepare it an equal quantity of sugar is added to the blood and the whole evaporated. The author terms it albumin-marmalade. The best use of blood as a special food dish is the smoked blood sausage or pudding, made as a rule from pig's blood. There is no doubt that ox blood would answer equally well.

Digestibility of Mushrooms.—Loewy and von der Heide refer to the large protein constituent of mushrooms in connection with their slender nutritive value. Dried and powdered fungi are said to be more nutritious than the crude article. Most of the work done on this subject goes back about thirty years and the results obtained showed a wide range of variability in accordance with the species studied. The authors reduced to flour the so-called stone fungus, which is known to be rich in nitrogen and highly palatable. Unground fungus was used as control. Subjects were placed on a fixed diet of meat, cakes, potatoes, butter, and mushrooms and the nitrogen metabolism studied. The mushrooms contained 43 per cent. of nitrogen, and the utilization was very imperfect, perhaps on an average 50 per cent. Milling did not in the least increase this utilization. Mörner found that 33 per cent. of mushroom protein occurring in the form of chitin was indigestible, while 41 per cent. could be peptonized by pepsin and trypsin. The remaining 26 per cent. was extractive matter, chiefly amino acids. But the utilizability of mushrooms is conditioned largely by the large unabsorbable fraction. The remainder is as utilizable as fine wheat flour, but no means are available to separate the two fractions.

Syphilis and Gastric Symptoms.—Brugsch and Schneider reach some conclusions as a result of an extensive study of this subject. These are as follows: Ulcus ventriculi in a subject with tertiary syphilis usually sets in without hyperchlorhydria, the acidity being in fact diminished. Achylia is very common in lues as a probable result of chronic gastritis. Sensory irritative symptoms are present due to root neuritis in the middle dorsal segments. These have really no connection with the stomach but cause gastric symptoms and suggest tabes. Sensory gastric crises from vagus irritation may occur. Motor gastric crises occur, typical and atypical. But hypersecretory disturbances associated with pain (ulcer symptoms) cannot exclude syphilis.

Münchener medizinische Wochenschrift.

June 8, 1915.

Late Complications of Frostbites. — Burkard saw among several dozen frost bites among the Austrian troops during the Carpathian campaign last winter several cases of intercurrent phenomena of threatening character which developed in the midst of smooth healing. The material in general consisted in freezes of the third degree, in some cases extending as deep as the metatarsals. The duration upon admission had been from one to two weeks. A line of demarcation was invariably present, and in the majority of cases the gangrene was moist. The treatment consisted of deodorants, aseptic dressings, and exposure to direct sunlight, which favored mummification. The sloughs were allowed to come away of themselves. In one case at least three weeks after the exposure and ten days after admission the temperature, hitherto normal, suddenly rose to 40 C. As the wound at first showed nothing to account for this behavior, typhoid fever was suspected, but after 24 hours there appeared just outside of the line of demarcation a bright red, very sensitive areola. Realizing that a dangerous general infection was in progress amputation was performed, at first a Lisfranc disarticulation, and later a high thigh amputation, but the patient died. In a second similar case after six weeks smooth healing, local amputation checked the generalization of the sepsis. Later lymphangitis developed along the entire extremity but yielded to free incisions. A third recovered case was very much like the second. The author explains his cases as follows: Study of two of the preparations shows that the line of demarcation ran through a phalangeal articulation. The structures which enter into the formation of the joints are very resistant toward

the necrotic process, especially the cartilaginous surface. During the period of latency the joint was protected from infection, but when sloughing had progressed sufficiently the now defenceless joint was attacked by pathogenic organisms. In such cases the question of amputation at an early date must be entertained.

A Wandering Horsehair. — Guhrauer relates briefly two observations. Three years ago the author's father summoned him and pointed out to him on the sole of the left foot a small inflamed point the size of a pinhead. Beneath it one saw a small, dark splinter. The author, by means of a needle, freed the object, which proved to be a horsehair 20 cm. long. The removal was painless and bloodless. No wound was left behind. The hair was evidently from a hair mattress. The second case occurred in the author himself. After a bath, as he was putting on his right stocking, he saw above the flexor tendon of the great toe, and projecting for 4 or 5 cm., a horsehair. This was painlessly removed and measured 20 cm. in length. The wound closed at once. The author has no idea as to how or when the hair entered the foot.

Roentgen-Rays in Hay Fever. — Schmidt, himself a sufferer from this affection, having tested upon himself all the customary remedies, exposed himself, just before an expected outbreak which had already given warning of its appearance, to a one-third erythema dose (Sabouraud-Noiré). He used a small Burger therapeutic tube of about 7-8 Wehnelt hardness. After a few days evidences of irritation were absent, and the customary attack had been aborted. Since that period the author has tested the resource on a woman patient. She was much benefited by the first radiation, and after a second, fourteen days later, was practically well. The author's own disease reappeared during the summer, and while he improved under a second exposure he was disappointed in the result. The war then broke out and he could not further avail himself of the treatment.

Deutsche medizinische Wochenschrift.

June 3, 1915.

Possible Spread of Leprosy from Russia to Germany. —Blaschko refers to the recent occupation by the German Eastern army of certain Russian Baltic territory, in which leprosy is endemic. In Memel, East Prussia, is the solitary German focus of the disease, and this region abuts against the Russian government of Kowno and province of Kurland. In Livonia leprosy has existed since the Middle Ages, and although it had nearly died out, underwent a recrudescence in the Nineteenth Century. In 1904 there were probably 1,000 lepers in these localities, a notable increase during the preceding decade, but in 1910 there was another decline. There were in that year 581 lepers in Livonia and 176 in Kurland. All the lepers reported at Memel are at once interned and there has been no fear of a spread of the disease on German soil. Now it is of course different, for German troops occupy territory in which lepers abound—by no means all of whom are interned—without taking account of concealed cases. The disease is feebly but surely contagious for some individuals. Perhaps one soldier in 10,000 will contract it, but there are 300,000 German troops in the infected territory and after the war is over these will be scattered all over Germany. In regard to mode of transmission this is very likely effected by vermin. Aside from keeping the troops away from lepers, notably from houses which have been sheltering them, the only prophylaxis is one directed against vermin, consisting of the application to the clothing of naphthalin or powdered cresol.

Fitness and Unfitness for Campaign and Garrison Duty.—According to Christian fitness for active military service is a matter of health, physique, and endurance. To secure these desiderata a strict selection eliminates a large number of individuals, some of whom have trifling anomalies *per se* but such as antagonize efficiency. By a satisfactory physique is meant one which enables its possessor to walk, run, leap, climb, kneel, and lie down. A criterion of robust health is not given, beyond the statement that all functions are properly performed. After the original selection has been made the question of unfitness is bound up in the soldiers who have sustained lesions or developed disease. In as far as a *restitutio ad integrum* is concerned these men may again become eligible for active duty; but if their usefulness is impaired they may be relegated to garrison duty. As a result of injury or disease the normal endurance may suffer and this is seen especially in the undernourished, anemic, and neurasthenic subjects. Generally speaking, the chief difference between active and garrison duty lies in the fact that the latter involves neither marching nor exposure to bad weather. Also eligible for garrison duty are those originally rejected for active duty for defects trivial in themselves but which interfere with functions necessary for active duty, as crooked or stiff fingers and toes, chicken breast, scoliosis, chronic inflamed eyes, etc. Garrison duty may even be performed by those with hernia, varicose veins, hemorrhoids. In the German army there are four grades of garrison troops, depending on the relative degree of incapacity for active duty, and the same number of degrees obtains for total unfitness for military duty of any kind. Men who are actually crippled or who have no index finger or thumb, or are blind in one eye or who have any one of two score or more shortcomings which interfere even with garrison duty can be used as laborers, skilled or unskilled. These men were never eligible for military service, and their unfitness, therefore, has not been due to war injuries. They work as saddlers, cobblers, tailors, etc.

Four Cases of Ichthyosis in a Family of Six Children. —E. G. L. Goffe reports these cases. The ages of the children ranged between eight months and ten years. The condition was not present in either parent but was present in the mother's brother.—*Proceedings of the Royal Society of Medicine.*

The War and Psychiatry.—Isabel Emslie notes that the war has not made any increase in insanity as far as civilians are concerned. Among those in which insanity may be said to have been caused by the war, the great proportion of cases are those people who have had previous attacks and those who are weak-minded or very highly strung. Few normal persons seem to have been affected. Many of the admissions to the asylum show that though their psychoses were not actually caused by the war, nevertheless this was playing a large part in evolution. This factor was very noticeable in the admissions which occurred in the first month or two after the commencement of the war. It has gradually become less and less frequent, till now it is rarely seen. The mental shock of the war is apparently not so keenly felt now by the unstable mind as when the blow first fell. Of patients already suffering from psychosis when the war started, it could not be said that one had a relapse which might be traced to the war. The patients who were most affected were the paranoiacs, who, though they apparently had a normal outlook on the war, really had their own distorted views of it and had developed many and varied delusions.—*Edinburgh Medical Journal.*

Insurance Medicine.

The Appointment and Management of Local Examiners.—Dr. I. H. Florence, Medical Director of the Great Southern Life Insurance Company, Houston, Texas, read a paper on the above subject before the Medical Section, American Life Convention, French Lick Springs, Ind. He said that medical directors all recognize local examiners as their sheet anchor, but at the same time the subject is more or less of a disturbing one. The question is how to proceed to get the best service. A plan that has proven satisfactory is that blank applications for examinerships be sent out by the medical department. Agents should be instructed in case of towns where no examiner is listed, if he has an applicant for examination, to get into touch with the home office or to use his best judgment in selecting a doctor and continue his services till further instructed. When the blank is sent direct from the medical department it impresses the doctor with the fact that his appointment comes through that service and not from the agent. It is essential that the list of examiners be complete in proposed new territory before the agency force goes into the field. Hence, the medical director should be given ample time to make his appointments in any proposed new territory into which his company contemplates entering. This will eliminate some of the friction that naturally arises between the agency and medical departments.

Upon entering a new State or district a good and practical plan is to obtain lists from other companies who have been operating in that State for a number of years, and by the aid of two or three lists and the different medical directories evolve a list from the combined information.

The usual routine of sending inquiry blanks to the doctor's references is useless. Whether it is better to have a first and alternate examiner in a locality or to put them both on the same basis, is a matter of opinion and choice. After an examiner has been appointed he should be protected and favored to the extent of requiring the agents to use him when available. When an agent persists in using other than the regular appointee, especially if he does so without a good and valid reason, a never failing plan is to charge the fee to the agent. A vast amount of good can be accomplished by educating the local examiner, so to speak.

It is the experience of the writer that the very best service is given by recent graduates from reputable four-year schools; they are well equipped, anxious for work, and will give good service. While they have not the experience of the older practitioners, they give a careful and painstaking examination. As a rule, the young practitioner will give facts as he finds them. His ability to draw conclusions may not be as keen as the older man's; and, of course, being new in his locality is a drawback, as far as past history, habits of life, and surroundings of applicants are concerned, all of which are essential as having a bearing upon the rating of an applicant.

The Role of Traumatism in Disease Calling for Compensation.—In a paper read before the British Assurance Medical Society, on May 5, 1915, Sir Thomas Oliver pointed out that in the evolution of industrial legislation employers had been forced to accept responsibility for all accidents to their workmen occurring in service. By the Employers' Liability Act, liability was possible only if there had been negligence on the part of the employer, but by the Workmen's Compensation Act negligence as a contributory qualification is no longer necessary, either on the part of the employer or the workman. To-day employers are held responsible for all accidents. As legislation proceeded it became difficult to separate accident from industrial disease. Tuberculosis and traumatism is first discussed by Oliver and a case is given in which a judge awarded full compensation on the ground that the pulmonary disease from which the patient suffered was the result of an accident. In dealing with the question all the pros and cons are discussed and the verdict seemed to be that there is some relationship between traumatism and tuberculosis.

As for a casual relation between diabetes insipidus and head injury the speaker thought that in some instances this might occur and further that the strain and worry to which engine drivers, who as a class die from diabetes mellitus in larger numbers than men engaged in other occupations, are especially exposed may tend to cause the disease, and thereby afford grounds for compensation. With regard to cancer and traumatism it is likely that local injuries play an important part in the causation of the disease. Again there are traumatic neuroses.

Finally, Oliver drew attention to the fact that one notable feature of accidents to working men since the Workmen's Compensation Act came into operation is the unwillingness on the part of the injured to return early to work. There is no difference between fractured limbs to-day and fractured limbs twenty-five years ago, and yet a working man who has his arm or leg broken to-day takes as many months before he returns to work as his predecessor required weeks a quarter of a century ago. Insurance companies, in Oliver's opinion, occasionally do harm by not paying injured men promptly and by not paying a lump sum down. It is a financial question which must be settled by experience. The rate at which traumatic neuroses, according to the speaker, are increasing among female workers in all trades is a noticeable feature of modern industrial life, and for this the Workmen's Compensation Act is no doubt partly responsible.—*Medical Press and Circular*, May 12, 1915.

Some Accident Insurance Decisions.—That an insured is shot under the mistaken belief that he is another does not, it is held in Alabama case of Continental Casualty Company v. Cunningham, L. R. A. 1915 A, 538, prevent the shooting from being intentional within the meaning of an accident insurance policy reducing the recovery in case the injury results from the intentional act of insured or any other person.

Chance contact with poison ivy which results in death is held in Railway Mail Association v. Dent, L. R. A. 1915 A. 314, to be within the operation of a policy insuring against death from accident, but providing that no sum shall be due unless the accident alone results in producing visible external marks of injury or violence, nor unless the death results wholly from that injury. But it is further held that chance contact with poison ivy which results in the spread of an eruption over the body and death is not within a provision in an accident insurance policy exempting the insurer from liability where death results from poison taken or administered accidentally or otherwise.

Society Reports.

AMERICAN ASSOCIATION OF IMMUNOLOGISTS.

Second Meeting, Held in Washington, May 10, 1915.

THE PRESIDENT, DR. GERALD B. WEBB, COLORADO SPRINGS, COLO., IN THE CHAIR.

(*Concluded from page* 168)

A Study in Blood Counts in Relation to Vaccine Therapy; Autoinoculation in the Treatment of Mouth Infections.—Dr. JOSEPH HEAD of Philadelphia presented this communication. He stated that during the past year, as in previous years, vaccine had continued to prove of great value in the treatment of mouth infections, but it must not be forgotten that vaccine without effective surgical treatment could be of little service. The essayist showed charts which demonstrated the value of blood counts in the use of vaccines and said that the blood counts had taught him to be more moderate in his dosage, and he had found that patients responded at least as well as, if not better than when the doses were pushed to the point of getting marked reactions. He cited the blood counts in several cases which showed that without them injury might unquestionably have been done by excessive dosage with vaccines. Lymphocytosis did not seem to be as much of a factor as he had thought last year. When he had first undertaken the work he had hoped to be able to make more positive statements than his later knowledge would permit; this was largely due to the difficulty he had had in finding individuals with a normal leucocyte count. The essayist stated that no paper on mouth infection would be complete without some reference to amebæ. He had been using emetine, 1/3 of a grain administered hypodermically, in the arm or back for ten successive days during the treatment and had felt that it was a great adjuvant to the vaccine treatment of mouth infection. However, no single drug would cure advanced pyorrhea alveolaris without the aid of good dental surgery. The most successful remedy, usually an actual specific, for pyorrhea was autoinoculation by means of the energetic use of a stiff tooth brush and floss silk. The speaker then described his method of removing the offending matter of microorganisms and at the same time securing a curative autoinoculation by the use of these mechanical cleansers. Improperly used, or used as it was ordinarily, Dr. Head said, tooth brushing was a delusion, but scientific, careful cleansing with implements of the proper size and shape would unquestionably add years of healthful existence to every man, woman, and child in the community at large.

Dr. C. C. BASS, Tulane University, New Orleans, La., said that the subject of pyorrhea alveolaris had interested him many months and the more he studied the subject the deeper he got. He was now studying the pathology of the disease but later he expected to take up the bacteriology and then the protozoology, and finally the treatment of this disease. The information he had got during the past few months was appalling in showing the great prevalence of the disease. It had taken a great deal of time before they were able to make the diagnosis, but he still found that in many cases it was still impossible to make a correct diagnosis. The diagnosis made by the dentists was no better than the diagnosis he made. As they all knew, the dentist made the diagnosis of pyorrhea alveolaris when he was able to squeeze pus from the gum or a pocket around a tooth. Whenever he saw a drop of pus, he made the diagnosis of pyorrhea. The condition could not be cured by simply giving medicine. The surgical treatment was what was called for. They had seen about 500 cases and found only two of this number in whom they were not able to demonstrate pus and the *Endameba buccalis*. The endameba did not attack normal tissues; there must first be present damaged tissue, some particular tissue that was susceptible to infection. It should be remembered that the *Endameba buccalis* lived, grew, and reproduced in the peridental membrane of the human being, and probably that of other animals. It fed upon certain cells that were found in some suppurative foci. The kind of cells it fed upon were much more numerous in suppurations next to bone tissue. The endamebæ were continually crawling around and hunting for food, ad were in direct communication with the bacterial flora contained in the mouth. Dr. Bass did not believe in any treatment that did not take into consideration the rôle played by the *Endameba buccalis*. The surgical treatment was very important. The lesions progressed rapidly with destruction of the soft parts, thus exposing the bone. The danger from this disease came from the members of the family who drank from their cups leaving the *Endameba buccalis* where an acquired lesion would be infected, a mouth to mouth infection. Everybody, if he lived long enough, would lose his teeth from this disease if untreated; it was a long sloughing process and dependent upon the flora in the individual mouth.

Further Experiments in the Production of Immunity to Tuberculosis.—Drs. GERALD B. WEBB and GEORGE BURTON GILBERT of Colorado Springs, Colo., presented this communication. They recalled that they had previously shown that a thick emulsion of blood platelets added to a lethal dose of tubercle bacilli appeared to modify the course of the infection or to prevent it. However, this did not furnish a practical, safe, and reliable method of inoculating living virulent bacilli for purposes of immunization. It had seemed desirable, in view of the importance attached to the rôle of the lymphocyte in nature's battle against tuberculosis, to determine whether an emulsion of lymphocytes added to a lethal dose of tubercle bacilli could influence or prevent infection. Lymphocytes were obtained by injecting four c.c. of sterile Binger's solution into the peritoneal cavity of guinea pigs and about ten minutes later withdrawing some of the fluid by means of capillary pipettes and immediately mixing with a definite number of bacilli obtained in a capillary pipette by means of the Barber method. After incubating for twenty minutes this mixture was inoculated subcutaneously in the nipple area of adult guinea pigs. Samples of the fluid obtained from the injected guinea pigs, when stained, showed a practically pure emulsion of lymphocytes, at least 95 per cent. at the time chosen as most favorable. Both normal and tuberculous guinea pigs were used for obtaining the leucocytes in different experiments without appreciable difference in the results. The formation of a fibrin network which collected the lymphocytes and permitted only a perfectly clear fluid to be withdrawn from the pipettes was overcome by having the doses of living bacilli already picked out in separate pipettes so that they would be mixed with the lymphocytes at once. In one experiment, serum, both heated to 56° C. and unheated, from both normal and tuberculous guinea pigs, was added to the lymphocyte bacilli mixture and the whole incubated before inoculation. In this series of five experiments no uniform and constant action by the lymphocyte emulsion so far as actually preventing infection could be detected. Indeed any uniform modification of the course of the disease also seemed to be lacking. The tabulated data of these experiments was presented and also the autopsy results.

Concerning the Occurrence of Tubercle Bacilli in the Circulating Blood.—DR. LOUIS HAMMAN of Baltimore read this paper. He commented upon the unsatisfactory state of their information concerning the occurrence of tubercle bacilli in the circulating blood. The literature upon the subject was full of the grossest contradiction. Some authors claimed that they found the bacillemia in all cases of tuberculosis, others that they discovered tubercle bacilli in the blood only in the last stages of the disease; still others contended that they found them even in the last stages of the disease only exceptionally. The results of microscopical examinations of the blood were unreliable, since there were so many possible sources of error; but even by animal experimentation some authors reported a very large number of positive results; some, indeed, as high as 50 per cent. of the cases examined. The speaker's investigation of this question upon patients in advanced stages of pulmonary tuberculosis and in animals inoculated intravenously, led him to draw the following conclusions: Tubercle bacilli occurred in the blood in sufficient number to be demonstrated by animal experiment only in the last stages of pulmonary tuberculosis in human beings, and then only infrequently. In animals they were constantly found when a very large number of organisms was injected intravenously. When smaller numbers were injected, and the disease remained localized relatively to the lungs, no bacillemia occurred until toward the end of the investigation, when the disease became general.

Dr. GERALD B. WEBB of Colorado Springs, Colo., said that it was puzzling to men who were working in tuberculosis to know how to interpret the various results they obtained regarding the occurrence of the tubercle bacilli in the circulating blood. Anyone who studied

the growth of the tubercle bacilli in the incubator realized what a sticky mass there was to deal with. The typhoid bacilli, as they all knew, made no such a sticky emulsion, but with the tubercle bacilli it was different. In their work in inoculating this bacillus it was extremely difficult to do the work because of this stickiness. In these cases of bacillemia the tubercle bacilli were said to be frequently found in the circulating blood. The clinicians must realize that they did get in. They must get there through the circulating blood stream and settle in certain regions. Dr. Webb asked Dr. Hamman what he knew regarding the type of the tubercle bacilli described by Landouzy—the typhoid type of bacilli.

The Virulence of Various Strains of Human Tubercle Bacilli. — Drs. GEORGE BURTON GILBERT and HAROLD GREGG of Colorado Springs, Colo., presented this preliminary report. They said that the use of live bacilli for the production of immunity had been of little avail because of their inability to control the exact numbers and the virulence of the bacilli. The ingenious device of Prof. M. A. Barber made it possible to isolate and inoculate any given number of living virulent tubercle bacilli. Using this same method it has been possible to show great variation in the minimum lethal dose of different virulent cultures. The authors presented a list of certain cultures and the smallest number so far found capable of producing progressive and fatul tuberculosis in adult guinea pigs. In an effort to obtain a culture of moderate virulence for future work along immunological lines it was decided to obtain a large series of cultures of tubercle bacilli from different types of cases and from different organs of the body and then to study these in detail as to virulence. The cultures were obtained using the media recently advocated by Petroff, consisting of 1/10,000 gentian violet, two parts of whole egg and one part meat juice. Definite numbers taken from the fresh cultures less than one month old were inoculated subcutaneously in the nipple area of adult guinea pigs. Both local and internal lesions were studied. Owing to the lack of guinea pigs only six cultures could be reported on at the present time. The tabulated results with the various cultures showed the absence of both local lesions and local regional glands in seven instances where macroscopic disease was found in one or more internal organs. This was quite unusual in their experience. It was certainly safe to assert that great differences in virulence occurred in virulent cultures obtained from various cases. Whether cultures obtained from varied organs varied regularly in virulence remained to be determined.

The Direct Treatment of Cerebrospinal Syphilis According to the Method of Swift and Ellis.—Drs. CLYDE L. CUMMER and RICHARD DEXTER of Cleveland, after outlining quite fully the work of Swift and Ellis in the treatment of syphilitic diseases of the central nervous system, and reviewing a number of the reports of others who had employed this technique, concluded that from this work one gained the impression that the definite changes could be brought about in cases of paresis, but that the permanence of the improvement was still open to question. There was no doubt that many cases of tabes and cerebrospinal syphilis had been markedly improved symptomatically and that the laboratory findings in certain cases had returned to normal. Practically no changes had been recorded in the deep reflexes or the pupillary responses in tabetics. Certain criticisms of this method had been made, one being its danger. A careful search of the literature showed that the reported deaths had been among paretics, and no fatalities had occurred after the treatment of tabetics. The number of fatalities in the total number of treatments was not alarming, considering the desperate outlook in this condition. Another criticism was that arsenic had access to the spinal fluid when present in the blood stream, and therefore its direct introduction into the subarachnoid space was needless. This point was at least open to argument, since Camp stated that he was unable to discover arsenic in the subarachnoid fluid after salvarsan had been administered intravenously. The main question was whether this method of treatment was productive of symptomatic and functional improvement as well as the indubitable improvement in laboratory findings. It was to aid in answering this question that this series of cases was reported. While the number of cases was limited, the value of the report was enhanced by the length of time through which they had been able to continue their observations. In addition to two preliminary cases that were under their care for so short a time that they could not be considered, they had treated eight patients suffering from definite tabes or syphilitic meningo-endarteritis. They had followed rigidly the Swift-Ellis technique which they outlined. Their cases were divided into three classes accordingly as they showed decided clinical improvement, moderate or slight clinical improvement, or had been under observation so short a time that it was unfair to draw conclusions. The cases were all reported in detail and carefully tabulated records of the laboratory findings were presented. The first patient, a man of twenty-nine years, having cerebrospinal syphilis, had been under observation for over two years. During this time he had received twelve intravenous injections of salvarsan or neosalvarsan (the total being equivalent to 5.4 grams of salvarsan), and seven injections of serum intraspinously. In addition to this much mercury had been given in the form of intramuscular injections and inunctions. He now reported that he had had only one attack of pain during the past year. The second case was one of moderately advanced case of tabes dorsalis in a man forty-five years of age, in whom serologically there was marked improvement. The neurological physical examination showed absolutely no change except a restoration of sensory perception. From a functional and symptomatic standpoint this patient was vastly improved. The third case was also one of moderately advanced tabes dorsalis who had been under observation for eleven months and clinically his case was one of great betterment. The pains had disappeared except for recrudescence in a mild form when fatigued. Physical examination showed no change in pupils or reflexes, but the Romberg sign was less marked and the muscle sense was improved. The laboratory findings were the most gratifying in the entire series. In the fourth case, one of early tabes in a woman of thirty-four years of age, the improvement after the institution of intravenous and intraspinous treatment was rapid and striking. The laboratory findings were most satisfactory while the clinical result was the most striking in the series. The pupillary reaction and the ankle and knee jerks were unchanged. The fifth case was one of moderately advanced tabes in a man of thirty-nine years. The clinical results in this case were a restoration to economic efficiency, a marked gain in weight, and the removal of certain unpleasant symptoms due to the marked sensory changes which occurred early in the condition. The laboratory findings in this instance were greatly improved. Of the class showing moderate or slight improvement one of advanced and one of moderately advanced tabes, the latter was notable in the entire disappearance of the Wassermann reaction. The spinal fluid of the advanced case showed no improvement over the first barring the reduction in the cell count. After reviewing the histories of the cases that had been under treatment too short a time to enable one to draw any conclusions, they summarized their work as follows: They had given forty-eight intraspinous injections of serum and seven treatments of a similar nature not reported in detail, making a total of fifty-five.

They had had no untoward or unfortunate results in any instance. With all the patients but two sharp reactions had occurred following the intraspinous injections. When any form of crisis or lancinating pain had been present the reaction had usually taken the form of an exacerbation of this symptom. The greatest improvement had usually followed the severest reactions. With reference to changes in the laboratory findings, study of the tables showed that lymphocytosis disappeared quite promptly, after one, two, or three injections. The globulin test was usually slower to disappear. In their experience the Wassermann reaction was the most obdurate of the laboratory findings. Practically the only changes in the physical condition which they had been able to detect had been restoration of sensation, when this had been impaired, disappearance of Romberg's sign, increase in muscular strength, and a diminution in ataxia. In no instance had they noted pupillary reactions return to normal, nor had absent deep reflexes reappeared. The greatest improvement had been obtained in symptoms. Lancinating pains had disappeared entirely or were greatly diminished, and in one instance gastric crises had disappeared. The striking feature was the improvement in general condition, in weight, strength, and well being. In conclusion they felt that they could state fairly that the Swift-Ellis method was safe when the original technique was followed painstakingly. Persistence was necessary to obtain the best results. This treatment was a valuable adjuvant in the treatment of syphilitic diseases of the central nervous system; claims of the originators were

sustained as far as tabes and central nervous system syphilis was concerned. It was a method which was not necessary in all cases, but applied carefully and controlled intelligently it would bring about a definite amelioration in laboratory signs and in symptoms where the accepted form of treatment had failed.

Dr. WILLIAM E. ROBERTSON of Philadelphia said he had reached the same conclusions as the authors with respect to the amounts of spinal fluid to be used in making the Wassermann test. In his earlier work he stated that 0.4, 0.6, and 0.8 were routinely employed, but a series of observations led him to the conclusion that larger amounts were necessary, and for two years he had used routinely three tubes containing 0.5 c.c. and 1 c.c. and 1.5 c.c. respectively. Occasionally only the largest amount would yield a positive result, the others being negative. In paresis, however, it was the rule to find all three tubes positive. In every instance he not only made a Wassermann on the spinal fluid but counted the cells, did a Nonne, Noguchi, Fehling's, and gold solution test. With regard to the count he referred to the very interesting work of Dr. Weston of the Warren State Hospital, Pennsylvania, who made a very large number of counts and found that they varied day by day and without any apparent reason. So striking was this that Dr. Weston was led to the conclusion that counting the cells was of no practical value. In all instances Dr. Weston's counts were made within a few minutes of taking the spinal fluid so that no opportunity for cytolysis was given. Dr. Robertson said that he had had no opportunity to make such daily studies of the cell counts, but in his experience there was always a direct relationship between the degree of pleocytosis and the protein content of the spinal fluid. As to the gold solution he said that though the preparation of the solution was extremely difficult, the application of the test was very simple and the results of considerable value.

Dr. GEORGE P. SANBORN of Boston, Mass., said they had made 200 observations. In paresis they had obtained from the analysis of the cerebrospinal fluid just what had been obtained at the Johns Hopkins Hospital in Baltimore in tabes. In tabes they had never gotten tubes that were absolutely decolorized. In the suspected cases which gave the clinical signs of tabes and those alone, the tubes were decolorized in the first three or four days; but in these cases the nerve infection was more extensive than the clinical diagnosis suggested. In other words there might have been a paretic element in the case. They had also found that after the injection of the salvarsanized serum in a number of cases the intensity of the gold chloride reaction diminished with successive treatments. In some instances from three to four days. He had never seen a case of tabes in which they could get any definite decolorization in one tube and an ordinary growth in the rest of the tubes.

Dr. RICHARD DEXTER of Cleveland, Ohio, said that the use of small doses was an admirable titration in the treatment and one could see the reaction diminish under such a treatment. It was well to continue the treatment with small amounts made of a definite titration. With regard to the so-called typical curves occurring in tabes, in Germany and in America, as well as other countries, there had been described the typical curve of tabes. Take ten tubes; find the highest in one, the first, and the lowest in the last. The typical curve in tabes should show decolorization in the tube with certain reagents. They had been able to get the typical curves. So far as his work was concerned he could not get the swing he looked for. However they found positive reactions in a great number of cases of syphilis of the nervous system. This all showed that this took a part that was necessary in the laboratory examination of the spinal fluid from now on.

The Blind Dental Abscess.—Dr. HENRY L. ULRICH of Minneapolis read this paper, which he prefaced by stating that blind dental abscess was rather a loose term though the other names thus far suggested such as alveolar abscess, peridental abscess, or apical abscess, were not very satisfactory. Apical abscesses were never found at the roots of vital teeth. The pathological anatomy of these areas was not very well understood. The skiagraph indicated a range from a rarifying infiltration to a well-defined area of bony necrosis. Extraction of these teeth showed root necrosis and absorption. Microscopic section of these so-called pus sacs showed an outer dense area of connective tissue with infiltrating areas of round cells made up of plasma cells and lymphocytes. Various stages of acute and chronic inflammatory processes were shown. Besides round-celled infiltration polymorphic types were noted. Sections stained for bacteria proved unsuccessful. At the University of Minnesota Hospital, in an effort to correlate oral sepsis with systemic lesions, a special inspection of mouths was made for pyorrhea, gingivitis, caries, and, by means of the *x*-ray, for apical abscesses. They were struck by the frequency of apical abscesses in these cases. Further search was made for these lesions by studying the roentgenograms of the mouth in a medical *x*-ray laboratory. The findings were startling. A little over 68 per cent. of all artificially devitalized teeth were found with apical abscesses and a total number of abscesses, including those found in pulpless teeth due to caries, or death from accident, or too proximal fillings, was 83 per cent. In the examination of 500 cases, 1350 dead teeth were found and of these 976 had root canal fillings. Of these cases 159 with apical abscess had had bacteriological review and of 107 cases from the University Clinic 100 gave a streptococcus viridans. Fifty-two were from the author's private clinic and fifty of these gave a viridans or a hemolyticus; occasionally mucosa was recovered. Thus 150 of these 500 cases gave evidence of streptococcus, either in pure culture or as the dominant organism. Occasionally the staphylococcus aureus, or albus, or the micrococcus catarrhalis was also observed in conjunction with the streptococcus. To the writer the apical abscess was merely another evidence of a focus of streptococcal focal disease, just as the heart, the mucosa of the stomach, the articulations or the kidneys were evidence of secondary deposits. In other words it was hematogenous in origin. The pathogenicity of these abscesses and their relation to other concurrent foci had had ample clinical verification: First, because acute exacerbation of systemic symptoms followed their removal, that was, focal reactions occurred due to autoinoculation at the time of their reduction. Second, acute new systemic symptoms had followed reduction of these areas; in other words, other foci had been established. Third, improvement and sometimes total recession of other focal areas followed the extirpation of these sites. Fourth, local and focal reactions occurred with vaccines prepared from apical areas. A recent analysis of seventy-six cases in which a streptococcus was isolated from apical pockets showed that thirty-eight cases belonged to the rheumatoid group; six cases to the cardiovascular group; three to the asthenic; four to the gastrointestinal; two to the genitourinary allied to the rheumatoid group. A subgroup of eight cases consisted of those in whom the streptococcus focal infection was superimposed of syphilis, tuberculosis, primary anemia, or vice versa. The striking feature of this analysis was the diversity of clinical manifestations for which streptococcal focal infection was responsible. The diversity of symptoms was so marked that he had suggested the term "Streptococcicosis" for streptococcal focal disease. Experience with alveolar infection in which systemic symptoms were present had made them very cautious concerning the apparently innocent looking tonsil. Invariably the same tonsil on closer inspection, and particularly after it had been removed under protest, had proven their suspicions correct. To those who were attempting active immunization to disease, the blind dental abscess had a very practical significance; it might be the only focus left and might hold the balance of power in the struggle of the body for complete sterilization. In every case of streptococcal focal infection its presence or absence must be established. Such a focus would furnish material for the preparation of vaccines and much trouble and disappointment from attempting cultures from glands and tonsils could thus be avoided. Of the more striking symptoms in these groups they had manifestations of rheumatoid conditions in 51 per cent.; heart lesions, 47 per cent.; secondary anemia, 43 per cent.; tonsils, 40 per cent.; pyorrhea, 25 per cent.; kidneys (albuminuria and nephritis), 34 per cent.; caries, 15.8 per cent.

Dr. GEORGE P. SANBORN of Boston, Mass., said that in cases of rheumatism or joint infections it was up to them to find some local infection which was the cause of the trouble. Eliminate that cause and good results would follow. There were so many cases, however, where it was impossible from the clinical history to tell where the local infection was. In such cases the use of the *x*-ray was of great value in seeking for the local infection, or the foci in the mouth. He also wished to emphasize the importance of having a man examine the

throats, a man who was one up to date and experienced in this work. He reported an interesting case of a chauffeur who every two or three months, after being exposed to cold while driving the automobile, suffered with chills, high fever, which after a short time disappeared. In looking carefully in the throat nothing could be noted which might be attributed as a cause of his disturbance. A casual examination of the tonsils was made but with the use of the tongue depressor pus was expressed from the tonsil. He had had no evident trouble with his tonsils; they had never been even sore. A tonsillectomy was performed and he then was relieved of his rheumatic affection and was entirely cured of his attacks which caused him so much annoyance. It was interesting to note that there might be these foci of infection and yet no clinical symptoms were evident.

Dr. Judson Daland of Philadelphia said he wished to speak regarding the occurrence of a tonsillar infection without any clinical evidences of such a condition being present. He thought that many of them had met with many such cases and where the pus foci were deep in the tissues. In many cases even after the tonsils were removed the symptoms would persist and, after careful search, there would be found a post-tonsillar abscess which they had not been able to diagnose. There seemed to be an extraordinarily large number of such cases.

Dr. Joseph Head of Philadelphia recalled a case in which the condition of the tonsils appeared to be all right; the tonsils however were removed and the joint affection persisted. It then occurred to him that the use of the *x*-ray might have revealed some foci of pus around the roots of the teeth which accounted for the symptoms complained of—certain depots of pus around the roots. Was it the tonsil that caused the trouble? He did not wish to have them think that he in any way discredited the value of the paper just read.

Dr. Claud P. Brown of Glenolden, Pa., said that in doing tonsillectomies there had been no tonsils completely removed but that they found myriads of bacteria and many of them of a pathogenic nature. After searing the cut parts, inoculations were done and other measures carried out, and then they started to inject guinea pigs with 2 c.c. emulsion; every guinea pig so injected was killed. This seemed to prove that the tonsils were undoubtedly the habitat of bacterial flora, even when the tonsils appeared to be in a normal condition.

Dr. A. Parker Hitchens said he wished to relate a personal experience. He suffered from pyorrhea alveolaris while in this neighborhood and once in a while there would occur an acute "blow up." He also had a severe tonsillitis which he had treated with nitrate of silver, sprays, and so forth. The interesting thing was that the tonsillitis always came alone with the acute exacerbation of the pyorrhea alveolaris. Since the pyorrhea had been cured by the extraction of certain teeth he had not since been troubled with tonsillitis.

Dr. Gerald B. Webb of Colorado Springs, Colo., asked Dr. Ulrich if the use of the *x*-ray would enable them to make a diagnosis of the apical portion of the teeth when there was a pus focus present. Would not the *x*-ray fail to show such a focus of infection?

Dr. Henry L. Ulrich of Minneapolis, Minn., closed the discussion. He showed some pictures which were quite characteristic. With regard to the *x*-ray interpretation, this was a matter about which they were still at sea; they did not care to extract teeth to find out the cause of trouble, but when they had done so they had found bacteria. As a matter of fact, after extracting teeth because of abscess formation, and when they made sections, they did not find necrosis but the results of ordinary inflammatory conditions. Histologically they had not yet worked out the study to their satisfaction. There was nothing to be found in the literature. There was merely a round cell infiltration present. What was of particular interest to him was that these abscesses were found so frequently and he believed that they must be secondary abscesses and not any primary foci or infection. With regard to the relief of tonsillitis after the extraction of teeth, that was readily explained by the vaccine theory.

Therapeutic Inoculation in a General Hospital; Personal Experience Covering Seven Years.—Dr. George P. Sanborn of Boston presented this paper. He declared that among the most important problems of the present day in connection with specific treatment of infectious disease in general hospitals was the development of an organization to carry on this important work. That these cases could be treated at present successfully, efficiently, and economically in the various departments in which they occurred was out of the question. The writer said that since his return from the Wright Clinic in 1908 he had made it his chief work to organize a department in the Boston City Hospital, which should receive from the various already organized departments suitable cases for active immunization, in order that they might be grouped and thus receive the careful treatment they deserved. It was felt that present and future developments in the specific treatment of infectious disease would yield a sufficiency of interest and required a sufficient amount of specific detail laboratory and clinical work to engage the exclusive attention of one department designated for the purpose. At the start in 1908 the activities of this department were limited largely to the out-patient clinic, with the idea of furnishing the greatest good to the greatest number. In connection with the work of others in the same direction it had been the writer's hope to bring forward sufficient volume of scientific data as to the methods of treatment and as to end results to make possible a more definite standardization of method of vaccine therapy and a more general acceptance of its efficacy in the treatment of some of the acute, but chiefly the subacute and chronic localized infections. The paper was not intended as an analysis of the cases treated, but to show the amount, character, and scope of the work which was being done with the above end in view. The work of the department included curative vaccine inoculations, prophylactic inoculations against typhoid, salvarsan chemotherapy, and later chemoserum therapy for nerve syphilis. The following data summarized the routine work of the past two years. During this time curative vaccine inoculation had been practised in 994 cases. These patients visited the clinic 6,697 times and had received 5,880 bacterial vaccine inoculations. As a basis for their treatment more than 650 cultures had been examined and over 600 vaccines had been prepared. The type and number of cases treated were as follows: Acne, 161 cases; furunculosis, 369 cases; carbuncle, 39 cases; gonorrheal arthritis, 101 cases; tuberculous adenitis, 162 cases; other cases of local tuberculosis, 37 cases; superficial pyogenic infection, 49 cases. These conditions had furnished about 75 per cent. of all the cases treated. Excepting in tuberculosis and gonorrheal arthritis, it had been the rule to prepare autogenous vaccines for every patient in which proper cultures could be obtained, and this had added greatly to the amount of laboratory work. The results had justified the extra labor. It had been possible to shorten the course of treatment compared to that of 1912 in at least 70 per cent. of all cases, the average number of visits per person having dropped from 10.8 visits in 1912 to 6.7 in 1913 and 1914. It was believed that the regular attendance at the clinic showed the satisfaction of the patients with the treatment and the results. Antityphoid inoculation had been applied since June, 1911, to a total of 535 individuals, mostly nurses. Since the introduction of the antityphoid inoculation no nurse had developed typhoid fever in the hospital though there had been two cases developed more than two years after protective inoculation had been given. It was their custom to repeat the inoculation after two years. In the division of chemotherapy 327 cases of syphilis had been treated. These had visited the clinic 3,589 times and had received 954 doses of salvarsan and 608 intramuscular injections of salicylate of mercury. There had been 866 blood specimens taken for Wassermann test, 57 lumbar punctures made for diagnostic purposes, and numerous salvarsan injections were given also for diagnosis. The laboratory work had involved the preparation of 954 doses of salvarsan and the solutions necessary for their preparation, and the examination of 57 spinal fluids to determine the question of syphilitic involvement of the nervous system. The cases of syphilis had been mostly in the tertiary stage, in which the requirements were elaborate and had been thoroughly met. The most important aspect of this work had been the early detection of nerve syphilis. Unless intravenous salvarsan of itself might prove to be efficient in the prevention of nerve syphilis, it was reasonable to suppose that in the natural course of events as large if not a larger percentage of cases would be candidates for nerve syphilis unless further preventive measures were applied. This has led to a systematic study of all cases of tertiary syphilis with the possibility of nerve syphilis in mind. It had been the rule to perform lumbar puncture at the beginning of treatment, if consent could be obtained, in order that the spinal fluid could be tested for syphilitic

abnormalities. These patients had also been referred to the nerve department for detection of the earliest nerve symptoms. Through the cooperation of the *x*-ray department study was being carried on in regard to the involvement of bones and great vessels in tertiary syphilis. In the treatment of primary and secondary syphilis no reliance had been placed on a single dose of salvarsan; the results of following this principle had been most satisfactory. There had been no deaths and no untoward happenings due to the administration of salvarsan. In the treatment of tertiary syphilis in the presence of nerve involvement, the experience of the writer corroborated that of Swift and Ellis and others, in showing this method to be efficient in producing clinical improvement in eliminating in varying degree conditions in the spinal fluid pathognomonic of syphilis. During the past two years the author had treated 150 cases of nerve syphilis to whom had been given 870 injections of salvarsanized serum according to the method of Swift and Ellis. In the hospital clinic 81 cases had been given 348 injections. In summing up Dr. Sanborn emphasized the advantage of this laboratory whose final interest was specific therapy and the advantages of the interrelation of clinic and laboratory and recommended the installment of such a department in all large general hospitals.

An Analysis of the Value of Laboratory Methods Used in the Examinations of Cerebrospinal Fluid.—Drs. Richard Dexter and Clyde L. Cummer of Cleveland presented this paper. They stated that they had examined a number of spinal fluids by means of the Wassermann reaction, cell count, globulin reaction, and, more recently, by the Lange colloidal gold reaction. During the past year and one-half they had been using even larger amounts of spinal fluid in doing the Wassermann reaction than had been used by Swift and Ellis. They had followed the technique described by Walker and Swift using increasing amounts of spinal fluids 0.1, 0.2, 0.3, 0.4, 0.5, and 1 c.c. In a series of 177 spinal fluids from cases with indubitable signs of lues of the central nervous system in which these various amounts were used it was evident that by using 1 c.c. of spinal fluid as a maximum amount a positive Wassermann reaction was obtained in 21.4 per cent. more fluids from known luetics than when only 0.5 c.c. was used as a maximum. A comparison of the positive Wassermann reactions in the spinal fluids with their cellular content and globulin was of interest. Out of sixty-three cases in which the cell count and globulin was done and in which the Wassermann reaction was positive with amounts of 0.5 c.c. of spinal fluid or less, they found that both cell count and globulin were increased in 69 per cent.; the cell count alone was increased in 1.5 per cent.; globulin alone was increased in 14.3 per cent. Neither cell count nor globulin was increased in 14.3 per cent. On the other hand out of eighteen fluids showing a positive Wassermann reaction in 1.0 c.c. only, they found that both cell count and globulin were increased in 16.5 per cent.; cell count alone was increased in 11.1 per cent., and globulin alone was increased in 16.5 per cent. Neither cell count nor globulin was increased in 55.5 per cent. It was apparent therefore that when the Wassermann reaction was positive in 0.5 c.c. of the spinal fluid or below, the greater were the chances that there would be an accompanying increase in the cell count and globulin content. Whereas, in those fluids which showed only a positive reaction in amounts above 0.5 c.c. one was less likely to find an increase in the cellular elements or the amount of globulin. The importance of this from a diagnostic standpoint was obvious. The question as to whether non-specific binding might not occur when such large amounts of spinal fluid were used would naturally arise and they felt that the answer to this question might be found in the following observations. Out of a total of 132 spinal fluids where lues was either non-existent or non-active, they found only one which reacted positively to the Wassermann reaction when the maximum dose of ten times the lowest dose of spinal fluid was used and this was by no means a strong reaction, as against 131 which were negative under the same conditions. After describing Lange's colloidal gold reaction and his findings, the essayists stated that it was their experience that the curves described by Lange occurred with considerable regularity. They had followed the technique laid down by Lange in his original article. In summing up the results of this investigation of forty-eight cases of syphilis involving the nervous system, they had found the cell count increased in 33 or 68.7 per cent. The globulin content was increased in 32 or 66.6 per cent., which paralleled the cell count very closely. The Wassermann reaction was positive in 34, or 70.8 per cent. of these forty-eight spinal fluids, while they found either strong or weak positive colloidal gold reactions in 77.1 per cent. of the cases. It was probable that the high percentage of positive Wassermann reactions obtained in this series was due to the fact that 1.0 c.c. of spinal fluid, ten times the Wassermann test dose, was used as the maximum amount. In spinal fluids from twenty-three cases without any sign of syphilis they had found twenty-one negative colloidal gold tests and two very weakly positive reactions. In three cases of tuberculous meningitis from which they had examined the spinal fluid they had not seen the typical curve described by Lange and others.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

State Board of Medical Examiners of Georgia.

Atlanta, October, 1914.

(*Concluded from page* 130.)

SURGERY.

1. What is surgical shock, and how treated? What is differential diagnosis between coma from injury, cerebral apoplexy, uremia, opium poisoning, and alcoholic intoxication?

2. What is a fracture? What is dislocation? Differentiate between fracture and dislocation. What are the cardinal principles in treatment of fracture? Describe Kocher's method of reducing dislocation of shoulder joint.

3. What is understood by amputation of contiguity and continuity of limb? What conditions demand amputation?

4. Give approved classification of burns. Give briefly local and constitutional treatment of burns. Is opium contraindicated? If so, why?

5. Differentiate between scrotal hernia and hydrocele. What is hernia? Give briefly approved operation for radical cure of oblique inguinal hernia.

6. Name briefly most common varieties of fistula. Describe briefly operation for fistula in ano.

7. What is understood by congestion? Inflammation? Give differential diagnosis between abscess and aneurism, and treatment of each.

8. Describe an operation for empyema.

HYGIENE.

1. What is meant by temperament, idiosyncrasy, and diathesis?

2. What is a virus?

3. What are the parasitic diseases that may be caused by eating insufficiently cooked meats?

4. Describe proper ventilation of a room of a pneumonic patient.

5. How long does a diphtheritic patient remain infective after local symptoms cease?

6. How would you instruct a nurse attending a case of diphtheria?

7. What is a disinfectant?

8. How would you disinfect rooms after occupancy by a typhoid and a tubercular patient?

9. Name the diseases, the prevention of which would lengthen the average of human life.

10. What is bubonic plague and how would you handle a case to prevent spreading?

ANSWERS.

SURGERY.

1. *Shock* is the name given to a sudden and general depression of the vital powers, due to some strong stimulation (such as injury or emotion), acting on the vital centers in the medulla and producing vasomotor paralysis. Shock is *primary* when the symptoms appear promptly; it is *secondary* when the symptoms don't appear for several hours (often observed after railway accidents, intoxication, etc.). *Treatment of shock:* Place the patient in the recumbent position, with the head low, apply warmth to the body, administer a stimulant, and give a hot saline infusion; morphine, hypodermically, may be necessary for the relief of pain. Adrenalin and pituitrin have been used with benefit. It is often very

difficult to differentiate shock from hemorrhage; but as a rule, in shock the symptoms are at their worst immediately after the injury, and tend to improve with time; and the nervous symptoms are more prominent from the first (dilated pupils, unconsciousness, etc.).

The following table (from Eisendrath's "Surgical Diagnosis") gives the diagnosis:

COMA FROM INTRACRANIAL INJURY.	APOPLECTIC COMA.	UREMIC COMA.	ALCOHOLIC COMA.	OPIUM POISONING.
Deep coma; may have history of onset after fall or injury. Evidence of fracture of vertex or base.	Deep coma; sudden onset. If any injury, only a scalp wound.	Deep coma. Slow onset unless convulsions have preceded the coma.	Can be aroused by supraorbital pressure unless very profound.	Can be aroused unless very deep.
Pupil dilated on side of lesion. Choked disc.	Pupils unequal or dilated. Contracted in hemorrhage into the pons.	Albuminuric retinitis.	Pupils normal or somewhat dilated.	Pupils contracted to pinpoint size.
Pulse very slow.	Pulse full and slow, often arteriosclerotic high-tension pulse.	Pulse rapid.	Pulse more rapid than normal and full.	Pulse rapid, may be irregular.
Respiration slow and stertorous.	Respiration slow and irregular.	Respiration frequent and irregular.	Regular respiration.	Respiration very slow —may be 6 to 8 per minute.
Temperature higher—101°.	Temperature higher on paralyzed side, but lower in rectum.		May be low or normal.	
Urine normal or contains trace of albumin.	Urine contains trace of albumin, but may be same as in uremia.	Urine shows albumin, casts, and low urea percentage.	Normal.	Normal.
Hemiplegia on opposite side to that of injury. If contusion of brain is also present, may have generalized convulsions.	Hemiplegia with convulsions on one side.			

2. *Fracture* is a solution in the continuity of a bone, caused by violence.

Dislocation is more or less sudden and persistent separation of two articular surfaces.

FRACTURE	DISLOCATION.
1. Crepitus may be present.	1. Crepitus never present.
2. Preternatural mobility.	2. Rigidity rathen than mobility.
3. Easily reduced—but	3. Difficult to reduce—but
4. Deformity more liable to recur after reduction.	4. Deformity less liable to recur after reduction.
5. The head of the bone is in its proper place.	5. The head of the bone is not in its proper place.
6. The socket containing the head of the bone is not empty.	6. The socket which should contain the head of the bone is empty.
7. When rotated the bone does not move as one piece.	7. When rotated the bone moves as one piece.

The *cardinal principles in the treatment of fractures* are: Reduction, coaptation, immobilization, and suitable measures for promoting the nutrition of the part and for preventing adhesions in the neighboring joints and muscles. Compound fractures, in addition, demand: Asepsis, removal of foreign matter or damaged tissues, stopping the hemorrhage, and measures to combat shock.

Kocher's method of reduction is: to flex the forearm, press the elbow to the side, rotate the arm outward. Bring the arm forward and upward to a right angle with the body, then rotate inward, while the elbow is brought down over the body so that the fingers sweep the opposite shoulder.

3. *Amputation in contiguity* is amputation at a joint. *Amputation in continuity* is amputation elsewhere than at a joint.

Conditions which justify amputation of a limb are: "Any injury, disease, or malformation rendering retention of the limb incompatible with life or comfort; avulsion of limb; compound fracture; compound dislocation; fracture with great comminution of bone; laceration of important vessels; extensive contusion; extensive laceration; gunshot injuries; aneurysm; effects of heat and cold; gangrene; extensive bone disease; tumors; elephantiasis; tetanus; snake bite; deformities."—Bickham's *Operative Surgery.*)

4. *Degrees of Burns.*—Dupuytren's classification: *First degree,* reddening of the skin. *Second degree,* blistering. *Third degree,* destruction of the epidermis, Malpighian layer, and papillæ of the derma. The sensitive nerve terminals are exposed; consequently this is the most painful degree. The sweat and sebaceous glands and hair follicles are not destroyed, and from these epithelium spreads in healing, so that repair is rapid, and the scar is not a contracting one. *Fourth degree:* the whole thickness of skin and part of the subcutaneous tissues are destroyed. *Fifth degree:* the muscles are injured. *Sixth degree:* the whole limb is charred.

Treatment.—General: If carbonic-oxide-poisoning is present, artificial respiration and administration of oxygen. For the relief of shock, opium and stimulants are called for.

Local: For burns of the first degree, powder with boracic acid. Puncture blisters, and cover the part with an antiseptic dressing.

Burns of deeper degrees than the second must be made aseptic with 1 in 1,000 perchloride of mercury. Carbolic acid is absorbed readily, and must not be used. Antiseptic gauze dressings should then be used. Picric acid (20 grains to 1 ounce of water) is used as a dressing. It lessen the pain, and can be left on two or three days. The continuous bath may be used. If the burn be of any size, it should be skin-grafted, as the scars of burns contract very much, and may produce deformities. —(*Aids to Surgery.*)

Opium is not contraindicated.

5.

REDUCIBLE SCROTAL HERNIA.	CONGENITAL HYDROCELE.	HYDROCELE OF CORD.
Impulse on coughing.	No impulse, unless combined with hernia.	No impulse, unless actually in abdominal ring.
Percussion clear if intestinal, dull if omental.	Percussion dull.	Percussion dull.
Ring and inguinal canal occupied, spermatic cord obscured.	Ring and canal clear.	Ring and canal usually clear.
Intestine to be felt, and returned with slip and gurgle, and remains up till effort is made, when it returns from above.	Fluid to be felt, and readily returned when patient lies down, and reappears slowly when he stands up, filling from below.	Small, ovoid, elastic tumor, connected with but movable upon spermatic cord.
Opaque.	Translucent.	Translucent.
Testicle below tumor.	Testicle behind tumor.	Testicle below tumor.
Any age.	Childhood.	Childhood.

—(Heath's *Surgical Diagnosis.*)

IRREDUCIBLE SCROTAL HERNIA.	HYDROCELE.
Sausage-shape.	Pyriform.
Intestine clear, omentum dull on percussion.	Dull on percussion.
Intestinal or knotty in feel, according to contents.	Elastic or fluctuating.
Testicle below tumor.	Testicle behind tumor.
Opaque.	Translucent.
Sudden.	Chronic.

—(Heath's *Surgical Diagnosis.*)

Hernia is a protrusion of an internal viscus through an abnormal opening in the parietes.

Bassini's operation: "An incision 2½ inches long is made over the inguinal canal, exposing the structures of the cord and the external oblique. The external oblique fibers are split from the apex of the external ring to expose the canal. The sac is found, opened, emptied of its contents, and isolated from the structures of the cord up to the internal ring. If the hernia is irreducible, the intestine is freed and returned to the abdomen, omentum being ligatured and removed. The neck of the sac is then transfixed and tied with silk, and the fundus removed. The stump returns to the abdomen, three or four stitches are then passed through the conjoined tendon and arched fibers of the internal oblique and transversalis muscles above, and the deep part of Poupart's ligament below. These are tied behind the cord. The external oblique is then sutured in front of the cord, leaving just sufficient opening for it to pass through without pressure. The skin is then closed by a continuous stitch. The patient should be kept in bed for three weeks, and should not exert himself for at least six weeks. If the wound has suppurated, or if the case is one in which the abdominal muscles are weak, it is advisable that a light truss should be worn afterwards for six months."—(From *Aids to Surgery.*)

6. FISTULA IN ANO.—*Classification:* There are four varieties: (1) The *complete*, which opens into the rectum internally and on the perineum externally; (2) the *external incomplete* or *blind external*, which opens on the perineum but not into the rectum; (3) the *internal incomplete* or *blind internal*, which opens into the rectum but not on the perineum; (4) the *horseshoe* fistula, which extends around the rectum and opens on each side. The internal opening is generally between the two sphincters, but may be above the internal sphincter and below the external sphincter. There may be several pockets or side tracts extending in different directions.

Treatment: This consists in "the conversion of the fistula into an open wound so that it may heal from the bottom. A grooved director is passed through the fistula into the rectum, and the overlying tissues severed with a bistoury. The sphincter should never be cut more than once, because of the danger of incontinence. All branching sinuses likewise should be opened, and all fibrous tissue, with undermined skin, cut away with scissors. The bleeding is then checked, and the wound packed with iodoform gauze. If the fistula is lined with mucous membrane it must be completely excised. A blind external fistula may be excised and the wound sutured. A blind internal fistula may be converted into a complete one and treated as above. The bowels are confined for the first three or four days and the wound dressed after each defecation, being irrigated with creolin and repacked with iodoform gauze."—(Stewart's *Surgery.*)

7. *Congestion* is excess of blood in the more or less dilated blood vessels of a part.

Inflammation is the name given to the series of changes occurring in a part as the result of injury, provided that the injury is not sufficient to kill the part.

An *aneurysm* is characterized by a pulsation, which is expansive; if firm pressure is made on the artery above the aneurysm the pulsation ceases and the swelling disappears; on relaxing this pressure the pulsating enlargement promptly reappears. Pressure on the artery below the aneurysm causes the enlargement to increase in size; by placing a stethoscope over the aneurysm, a bruit may be heard. In the case of an *abscess* over a vessel, there may be a transmitted pulsation, but it is not expansive; the pulsation ceases when the abscess is lifted away from the vessel; pressure on the proximal side does not cause the growth to disappear; there is never a true bruit.

Abscess should be opened as soon as possible.

Aneurysm is treated *medically*, by lowering the diet, especially the quantity of fluid; iodide of potassium or calcium chloride may be given. *Surgically*, complete extirpation of the sac is advised; or ligature of the artery, or compression of the artery may be tried.

8. "*Treatment of empyema* should be undertaken without delay. Aspiration seldom cures, but may be undertaken where the dyspnea is great, and an anesthetic given afterwards for the excision of a piece of rib. Drainage is always necessary, and is best done by excising a portion of the fifth or sixth rib in the mid-axillary line. The patient should be allowed to come round quickly from the anesthetic, so that the coughing which occurs will expel the masses of coagulated lymph and help to expand the lung. A big drainage-tube is then inserted. Daily dressings are necessary, but irrigation of the cavity is seldom needed. If, because of delay in treatment the cavity does not soon close, Estlander's operation, or some modification, must be performed. The wound must be enlarged and a number of ribs exposed, and sufficient of them removed to convert the cavity into a pyramidal one, the base of which is the open wound. This is packed with gauze and allowed to heal from the bottom. If the operation has to be extensive, the flaps are allowed to fall back upon the granulating surface of the lung, and in these cases marked scoliosis and weakness of that side of the chest follows."—(*Aids to Surgery.*)

HYGIENE.

1. *Temperament* is the character of a person's physical constitution as affected by his mental disposition.

Idiosyncrasy is a special peculiarity of temperament or constitution which makes a person different from other persons.

Diathesis is a bodily condition by virtue of which a person is specially liable to certain diseases.

2. A *virus* is the specific poison of an infectious disease. Vaccine lymph is also called a *virus*.

3. *Parasitic diseases that may be caused by eating insufficiently cooked meats:* Infection by tapeworm, by trichina, and by echinococcus.

4. *In the management of lobar pneumonia* "ordinary ventilation is not enough. It is often better to place the bed directly at an open window, day and night, the patient being allowed to breathe the pure cold air; but his body should be protected from the cold by warm, light coverings. It is often better, when possible, to have the patient out of doors, in a tent, on a veranda or roof, and when this cannot be done, he should be given the benefit of the open air for a few hours each day. The relief experienced by the patient in a severe condition from removal to the open air is remarkable, and it undoubtedly makes recovery possible in many cases that are hopeless without it."—(French's *Practice of Medicine.*)

5. *Period of infectivity of diphtheria.* "The length of time during which a patient who has suffered from diphtheria may remain infectious is very variable. The bacillus has been found to be absent from the throat as early as the end of the second week. In view of the uncertainty which attends the recovery of the bacillus from the throat it is well to consider that all patients are infectious for at least six weeks, and no child should be allowed to return to school until eight weeks have elapsed from the beginning of treatment."—(McClure's *Handbook of Fevers.*)

6. The patient must be isolated; no one but the physician and nurse must enter the room; the physician should put on a large washable gown when he goes in, and remove it on leaving, at the same time washing his hands in a disinfectant; the nurse, when she leaves the sick room should also remove her clothes and put on others, at the same time disinfecting herself. At the termination of the disease everything should be disinfected; toys and books, etc., are better burned.

7. A *disinfectant* is an agent which restrains infectious diseases by destroying or removing the micro-organisms which cause them.

8. *Formaldehyde* is a good surface disinfectant, has poor penetrating qualities, does not destroy fabrics and injure objects, and is non-toxic. *Sulphur dioxide* damages textile fabrics, tarnishes metal objects, and is very poisonous.

To disinfect a room by formaldehyde: (1) By Trillat's apparatus, which "allows the solution of formalin to flow in a fine stream through a copper coil heated to redness by a flame beneath, and the gas and vapor passing directly into the room. The apparatus may be

operated outside of a room, and the amount of gas liberated depends directly upon the strength and quantity of the solution evaporated. (2) In Schering's method the solid paraform is heated in a receptacle over an alcohol lamp, and is especially valuable in disinfecting small rooms, closets, etc. (3) The cheapest and most common form develops the gas directly by the oxidation of methyl alcohol, the vapors of the latter passing over and through tubes or coils of heated metal. The amount is uncertain and results indefinite."—(*Cyclopedia of Medicine and Surgery.*)

To *fumigate by sulphur dioxide:* For each 1,000 cubic feet of space, three pounds of sulphur are burned, care being taken to prevent accidents. In all cases all apertures and crevices of the room should be closed, all closets, drawers, or other receptacles opened; and after the fumigation the room should be well ventilated and thoroughly cleansed with a solution of corrosive sublimate.

9. *Diseases, the prevention of which would lengthen the average of human life:* Tuberculosis, typhoid, pneumonia, syphilis, gonorrhea, malaria, yellow fever, diphtheria, influenza, cerebrospinal meningitis, septicemia, pyemia, dysentery, cholera, plague, smallpox, measles, scarlet fever, hydrophobia, leukemia, endocarditis, hypertrophy of the heart, angina pectoris, heart-block, arteriosclerosis, aneurysm, asthma, pneumokoniosis, emphysema, pleurisy, empyema, gastric ulcer, gastric cancer, appendicitis, constipation, cirrhosis of liver, abscess of liver, cholecystitis, gallstones, tumors of pancreas, peritonitis, nephritis, pyelitis, diabetes mellitus, alcoholism and addiction to drugs, various poisonings, sunstroke, and industrial diseases.

10. *Bubonic plague* is an acute infectious disease associated with glandular enlargement, and due to the *Bacillus pestis* which is conveyed by fleas on rats.

To prevent the spread of the disease, the following routine was followed in Glasgow, during the epidemic of 1900: "(1) Within the infected area, ashpits were emptied thrice weekly and washed once a week with chloride of lime solution. (2) Back courts were hosed every night with chloride of lime solution. (3) A special inspection of the district was undertaken for the detection of dirty houses, entries, etc., and for the overcrowding of houses. (4) Medical inspection of the district was carried out and the inhabitants of infected buildings and all 'contacts' were offered injection with Yersin's serum or Haffkine's vaccine, while all suspected cases were visited with their own medical attendants. (5) Handbills were distributed offering the service of the medical staff at any time. (6) the crews of all ships were inspected on arrival in port. (Fumigation of infected houses was carried out by liquefied SO_2 for twelve or twenty-four hours, after which the house was entered and all articles of bedding, clothing, etc., were wetted with a 2 per cent. solution of formalin (1 gallon of a 40 per cent. solution of formaldehyde to 50 gallons of water), removed to the sanitary wash-house, and then boiled or steamed. All articles which could not be boiled or steamed were burned. (8) All houses where cases had occurred or from which contacts were removed were sprayed with the formalin solution, as were also the lobbies and entries. (9) Clinical demonstrations were given daily to medical practitioners at the hospital. (10) A pamphlet descriptive of the varieties of the disease was distributed among the medical practitioners of the city. (11) Physicians to out-patients at the various hospitals were specially circularized. (12) A campaign against rats was entered upon; rat-catchers were engaged and the bodies of rats were investigated for the signs of plague. The sewers of the hospital were treated with liquefied SO_2, and the rats driven from the hospital by this method. (13) The bodies of those who died from plague were drenched with formalin and enclosed in an airtight leaden shell before burial. (13) The holding of wakes over any dead bodies was prohibited."—(McClure's *Handbook of Fevers.*)

Ichthyosis with Superficial Ulceration of Tongue.—J. L. Bunch reports the case of a boy aged twelve years who had generalized ichthyosis of the trunk, limbs, and face. There were marked roughness and thickening of the skin and hyperkeratosis of the palms. The boy had a chronic glossitis, with superficial ulceration, which had been present all his life, but varied somewhat in severity at different times. His mental capacity was somewhat deficient.—*Proceedings of the Royal Society of Medicine.*

Therapeutic Hints.

A Chalk Paste and Its Indications.—Unna has devised a new employment of the chalks by combining them with mucilage of gum arabic as follows:

℞ Calcium carbonate, 40 grams.
Zinc oxide, 20 grams.
Mucilage of gum arabic, 20 grams.
Glycerin, 10 grams.
Lime water, 10 grams.

To this may be added a small amount of thymol or menthol, to keep it. It forms a homogeneous paste which leaves a firm, dry mass upon the skin. Its chief indications are the following: It causes the rapid drying up of large edematous, erythematous, and oozing surfaces. Severe edema of the face, neck, and extremities in the course of chronic eczema is a condition specially suited for the paste. A second indication of great importance is the chance to dry up all fat salves and fat pastes by covering them with the chalk paste. This is especially valuable in the case of very irritating applications, such as chrysarobin, as it limits the secondary inflammatory action upon the adjacent parts of the skin. A third indication for the chalk paste is to keep the skin dry about wounds, oozing skin affections, and fistulæ.—*Dermatologische Wochenschrift.*

For Renal Colic.—G. Sabatini credits A. Robin with the following prescription:

℞ Morphine hydrochloride, 0.05 gram.
Potassium bromide.
Cherry-laurel water, āā 10 grams.
Syrup of ether (Belg. phar.), 30 grams.
Valerian water (Fr. phar.), 110 grams.

M. et. Sig.: One tablespoonful every hour.—*Il Policlinico.*

The Treatment of Pneumonia.—H. J. Mathison recommends the administration of the following:

℞ Potassium iodide, ʒ j.
Creosote, ʒ s.
Alcohol, ʒ ij.
Fluid extract of licorice, ʒ iij.
Water, q. s., ad ʒ vj.

M. et Sig.: One tablespoonful every four hours.—*The Polyclinic.*

A New Method of Obstetrical Analgesia.—Ernesto de Aragón reports good results following the use of hypodermic injections of the following solution:

℞ Heroin hydrochloride, 0.005 gram.
Scopolamine hydrobromide, 0.0004 gram.
Neutral, atropine sulphate, 0.0003 gram.
Sparteine sulphate, 0.01 gram.
Polyatomic alcohol, 0.5 to 1 c.c.

The above is sufficient for one hypodermic injection.—*Revista Medica Cubana.*

Treatment of Heart Weakness.—Moczulski is said to recommend the inhalation of a mixture of 10 drops of tincture of strophanthus in 30 c.c. of water, kept at a temperature of 40° C. The following is administered by mouth:

℞ Tincture of strophanthus, 2 grams.
Tincture of nux vomica, 8 grams.
Compound spirit of ether or anisated solution of ammonia, 10 grams.

M. et Sig.: 10 to 20 drops every 2 hours.—*Boletín de la Revista Ibero Americana de Ciencias Médicas.*

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Original Articles.

LYMPHANGIOMA AND RADIUM.*

BY ROBERT ABBE, M.D.,

NEW YORK.

IN working out the problem of the utility of radium in the surgical field, it is evident that its supreme efficiency lies in its specific action. By this is understood the effective change, wrought on tumor cell growth, neither destructive nor constructive, but alterative. That there is such a specific action is shown in several types, most typically in myeloid tumors, massive growths of soft tissue, constituted of marrow cells of bone, which have overgrown, absorbed the bone surrounding them, and destroyed its form and usefulness, thus by its destruction justifying its classification as malignant.

When the proper dosage has been given the tumor shrinks, gritty bone forms here and there in the pultaceous mass, general ossification follows, and the bone takes on its normal outlines as the shrinking progresses. Finally, the restored bone remains normal indefinitely, cases remaining well ten years to date.

This same specific action is also shown in basal cell epithelioma, in round cell sarcoma, in all papillomas and hyperkeratoses, and in myomas of the uterus. This legitimately called specific action is not a destructive, but a restorative one.

To this growing list I would add one that takes up a new field which though not so large is equally important—that of lymphangioma. The first case that interested me was one of a massive tumor of the tongue which I will illustrate by a photograph taken some time after it began to improve, but while it still showed the characteristic signs. It is a well-known type of tumor of the tongue which combines overgrowth of blood and lymph vessels, plus coincident cell hyerplasia making a massive affair, unmanageable and deforming—a hemolymphangioma. For this trouble so great an authority as Butlin voices the experience of the world, that there is no resort but that of cutting out great masses from it, or if possible all of it. Experience further shows, as I shall soon demonstrate, that even this sometimes fails.

FIG. 1.—Lymphangioma of the tongue before treatment by radium.

FIG. 2.—Lymphangioma of the tongue (same case as Fig. 1) cured by radium

The case shown (Figs. 1 and 2) was that of a young man who at seven years of age began to have

* Read before the American Surgical Association, June 11, 1915, at Rochester, Minn.

an enlargement on the left half of the tongue. In three years it was a foul overgrown mass, intermittently bleeding severely and affecting seriously his speaking and eating. At fourteen years of age I saw him and applied radium to it. In two months it showed notable change for the better. At that time I showed him hopefully to the Practitioners' Society and took this photograph. Year by year it shrank, under occasional treatments, given only at three month intervals. In four years I again showed him to the society—cured. The tongue surface has its normal color and papillary appearance, showing a retrograde to normal.

To the uninitiated four years sounds like a long time to give treatment, but one must remember that in all new fields the observer has to feel his way along cautiously and judge of the proper curative dosage of radium, without injury to the tongue. At the present time much of the same result could be obtained in perhaps a quarter of the time.

In a second case a tumor appeared in the anterior part of the tongue of the daughter of a Boston physician. This was cut out by able surgeons. It recurred in two months. After it had grown larger and more threatening it was again cut out and pronounced sarcoma. It recurred, and was for the third time cut out and microscopically regarded as lymphangioma. The future seemed hopeless for cure by excision. She was brought to me with a bean-shaped recurrence in the scar. This I radiumized well by Wickham's crossfire method for one hour. It rapidly melted away in six weeks and the tongue has remained normal for over a year.

A third case of hemolymphangioma of the tongue came to me recently in a man who was annoyed by a small raised purple growth on the side of his tongue, which was to a large extent naevus, but had the firm consistency of a pearly tissue combined with the enlarged vessels. Its recent appearance and characteristic quality on close study decided me to treat it without excision as a hemolymphangioma. One radium application to create good reaction has produced a cure, cell angiomatous and overgrown lymph structure being replaced by a simple cicatrix.

An unusual type of extensive nevus of the entire right leg in a seven year old boy was presented to me last year (Fig. 3) which had developed hyperkeratosis over much of its surface, with deep lying masses of tissue, varying from an eighth to a half inch in thickness; and in many places ulcerated and bleeding from a curious granular surface of purplish color. The child had been taken to many surgical clinics in the country with hopeless prognosis, and was finally referred to me by Dr. J. B. Murphy of Chicago. I recognized a condition analogous to that of the lymph hemangioma of the tongue, and asked the critical diagnosis of Professor George T. Elliot without prejudicing his opinion by my own. He studied the margins of the surfaces, which showed raised and striated crêpe-like angioma, and called my attention to great numbers of small white vesicles scattered everywhere which could be nothing but lymphangioma, combined with the hemangioma structure, thus fixing the diagnosis and explaining the unusual exulcerated masses and ridges over much of the diseased area, and which were not arranged anatomically like vessels, but like overgrown lymph channels choked with cells. I then expressed the belief that radium ought to cure the lymphangioma as it certainly would the nevoid condition. I made many color photographs of the lesion for identification and show one plain photograph here.

The technical methods of using radium taxes the operator's ingenuity, but being a new field will not be detailed here. Suffice it to say that steady progress has been made and a promise of ultimate cure can be asserted.

Another rare type of *pure* lymphangioma was presented to me by Dr. George T. Jackson of New York and Dr. Engman of St. Louis in the case of a little girl who had a congenital group of vesicles on the skin of her neck below the hair line on the right side, extending downward two inches and a half by an inch and a half wide (Fig. 4). In

Fig. 3.—Hemolymphangioma in process of cure by radium.

this space were packed a hundred white glistening vesicles, the size and height of rice grains, constituting a notable deformity. Occasionally one would rupture, occasionally one would turn black and dry up. I am inclined to explain the latter by union of a capillary blood vessel with the dilated lymphatic, thus in a feeble form simulating the other enormous tumors with interchange of the lymph and blood capillaries. One application of radium to this patch of pure lymph angiomata for one hour and a half caused a sharper action with rapid disappearance of all but six marginal vesicles, to which at four months' interval a second treatment has been given. Photographs of plaster casts taken

before and after treatment are most convincing.

A second case of pure lymphangioma of the skin of the neck of a four year old child has also received radium treatment lately. It is the exact counterpart of the one just narrated. This plaster

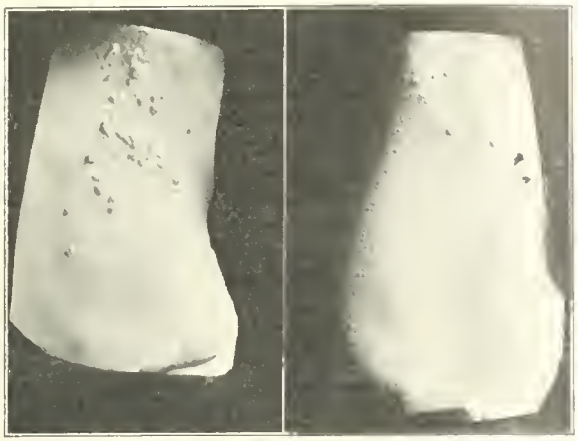

Fig. 4.—Pure lymphangioma of the neck, before and after one radium treatment.

cast shows the location. Not the least interesting occurrence was the occasional filling of white vesicles with blood, or at times breaking and discharging clear fluid. Before coming under my care the patch of vesicles, measuring one inch in diameter, had been treated, first by caustics and then by freezing. A keloid scar remained at the margin of which were a few lymph vesicles. A most interesting statement was made by the mother that a new crop of vesicles had come up through the scar. This shows that the caustic had not obliterated the lymphangioma.

In this brief series of six cases my endeavor has been to show that by culling out similar types from thousands of various surgical cases treated by this wonder working agent, we are slowly accumulating evidence of the unique and specific action of radium, whose essential output is a discharge of beta rays, negative electrons—which in some mysterious way restore order to the disordered cell growth.

The public hue and cry for a specific cancer cure has but a remote interest to the scientist, who uses radium only for what beneficial effects he obtains. Certain it is that in the broadening field of its successes it fills a need that no other agent does. Incidentally it transpires that the virulent squamous cell and scirrhus types of cancer, so dreaded by all, is not cured by radium as now used.

The output of radiant energy from radium and that from the Röntgen tube are alike as far as the neutral gamma radiation goes, but this has been shown to be efficient only by its development of beta rays—the negative electrons—which alter the cell growth. On the one hand the *x*-ray output is a gamma discharge, creating betas in the tissue on meeting resistance; on the other, radium emits a free discharge of beta electrons with enormous energy and short range. This explains satisfactorily why the local action of radium is so intense and efficient on lesions lying near or upon the surface, and why it also reaches deeper, when the beta rays are screened off, and long exposures are permitted. In the lymphangioma structures which I have described great depth is not desired in treatment. Hence the success following its application.

What the rationale of its efficiency is must be conjectured. Certain it is that charging up the disordered cells of the tumor with negative electric particles shot into them in proper quantity completely changes their habit of growth and restores them to permanent healthy action.

13 West Fiftieth Street.

THE *X*-RAY TREATMENT OF RINGWORM OF THE SCALP.

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The geographical distribution of ringworm of the scalp is not uniform. In this country, for instance, the Mississippi Valley is comparatively free of the disease, and when the affection does occur in this locality it readily responds to the ordinary therapeutic measures. On the other hand, the disease is exceedingly common in New York, especially among the poor, and, as is well known, constitutes one of the most recalcitrant of dermatological affections.

We desire to emphasize the inefficiency of the older methods of treatment. Such methods consist, briefly, in pulling out the affected hairs as fast as they grow and applying strong antiparasitic agents to the diseased areas. This procedure is practical in intelligent and wealthy families, where, through the perseverance of the nurse, a cure may be effected in from a few months to three years. For obvious reasons, however, such a method is impracticable among the poor, and as a result the disease remains more or less active until puberty, when it disappears spontaneously.

Fig. 1.—Single patch of small-spored ringworm. Shows scaliness and broken-off hairs.

(From the Department of Dermatology and Syphilology, College of Physicians and Surgeons, Columbia University.)

Now, inasmuch as the disease is contagious, the afflicted children are rightly refused admission to the schools, with the result that a great many individuals are deprived of the desired and essential elementary education at a time when the brain is

Fig. 2.—Disseminated small-spored ringworm. The patches are numerous but for the most part discrete. On the side of the head, however, the lesions are becoming confluent.

most receptive. In the majority of instances the disease is acquired early in life, under the age of six or eight, and continues to the age of from twelve to fifteen. And during this entire period the child receives very little, if any, schooling. Inasmuch as most children of the poor obtain positions at the age of sixteen or less, it may be seen that elementary education in these instances is sadly neglected. Now, this is not just to the State nor to the individual. The handicap to the individual, occasioned by the loss of an early education, needs no comment. But it is doubtful if the State has ever seriously considered ringworm as a cause of illiteracy, or if it has, it has shown no disposition to remedy matters. Another fact that should be considered is that children with tinea tonsurans, although kept out of the schools, do mingle with and infect other children after school hours. In this sense such individuals are a real menace to the community. It must not be forgotten, too, that domestic animals, cattle, etc., may be infected and become carriers of the disease.

Before entering into a discussion of the *x*-ray treatment of ringworm of the scalp, we desire to call attention to some facts regarding the disease that are not sufficiently appreciated by medical practitioners. The affection is not always such a mild disease as physicians are wont to believe, nor is the clinical diagnosis easily made in all cases. Every physician, of course, recognizes the typical patch of ringworm of the scalp which manifests itself by slight erythema, scaliness, and broken off hairs (Fig. 1). Disseminated ringworm, especially when confluent, produces quite a different picture (Figs. 2, 3, and 4). The large-spored fungus is capable of causing pus formation and in this variety of ringworm vegetating tumors containing multiple pus foci are frequently encountered (Figs. 5, 6, 7, and 8). These tumors are called kerions. The small-spored fungus never produces permanent alopecia nor is the affection serious. On the other hand the large-spored variety may often cause permanent loss of hair through destruction of the follicles. Occasionally this follicular destruction tends to bring about a spontaneous cure. Contrary to the benign, although obstinate course of the small-spored variety, the large-spored ringworm may prove quite serious, as illustrated by the following example:

The patient was a boy, about eight years of age. He contracted the ectothrix variety of ringworm from a cow while he was on his summer vacation in the country. The child was under the observation of Drs. Fordyce and Howard Fox and was referred to us for *x*-ray treatment. When first seen the entire scalp was covered with crusts, which, when removed, revealed innumerable split-pea to palm-sized, boggy tumors which exuded a purulent fluid. In addition the pus had collected under the scalp, lifting the latter from the skull. The little fellow was emaciated, highly nervous and irritable, and ran a high temperature. His condition was so serious that his family's physician made multiple incisions for the purpose of drainage and one palm-sized tumor was completed ablated. The entire scalp was later treated by the intensive *x*-ray method at one sitting, and the lad made a prompt and uneventful recovery.

In closing this part of the discussion we desire to call attention to the so-called bald ringworm and black-dot ringworm, varieties that are not infrequently mistaken for alopecia areata.

The use of the *x*-ray in tinea tonsurans is based

Fig. 3.—Confluent ringworm. Here, every hair in the head is diseased and broken off. This is the same patient as shown in Fig. 1. The single diseased area shown in Fig. 1 was depilated and the falling hairs infected the rest of the scalp. The dark spot in the center of Fig. 3 is the hair returning after the *x*-ray treatment. This hair is darker than the untreated hair.

upon its ability to cause a defluvium—to make the hair fall out. The *x*-ray does not have a destructive effect on the fungus, although it is possible that in some way it so modifies the soil that the organism finds a less favorable medium upon which

to grow. In any event, most of the spores are removed with the hair and those remaining disappear or are destroyed by the use of antiparasitic remedies before the hair regrows at the end of about three months.

In general there are two ways in which the *x*-ray can be employed for this purpose—namely, the divided dose and the massive or intensive dose methods. With very few exceptions the former is the procedure used in this country, while in Europe the latter method has been employed since it was advocated by Sabouraud and Noiré in 1904.

The older method (divided-dose) is unscientific and has been relegated to the past. We desire to remind the reader that we are dealing solely with the treatment of tinea tonsurans. It is only employed now by those who will not or cannot modernize their technique. It precludes accurate direct measurement and cannot be employed to produce a defluvium of the entire scalp, at least not without considerable danger. Its use, therefore, is limited to the individual treatment of one or more areas

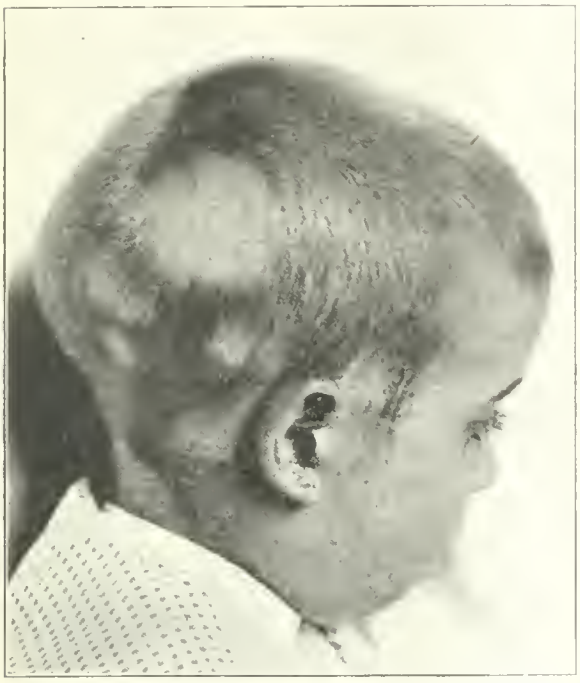

Fig. 4.—Multiple patches of small-spored ringworm.

and even here the result is uncertain and unsatisfactory; at least the results are not constant. We will support these statements by adding that when individual lesions are treated, the diseased hairs, when they fall out, are scattered over the scalp and new patches of disease develop. This may be prevented, to a certain extent at least, by applying adhesive plaster to the treated area after the application of the *x*-ray. This is removed in three weeks with the loosened hair. Fig. 1 represents a case of ringworm of the scalp. Fig. 9 shows the same patient after a local defluvium produced by a single *x*-ray treatment. The original patch of ringworm may still be seen and it will be noticed that the hair has been removed for quite a distance from the margin of the lesion. Careful inspection of the photograph will also demonstrate that the disease has involved the hairs at the margin of the bald area. The disease then spread over the scalp as shown in Fig. 3, which was taken a few weeks subsequently. Here the affection is disseminated and confluent and there is not a single healthy hair remaining on the head. The entire scalp was then depilated by means of the modern technique, with the result as shown in Fig. 10. In three months the hair returned and the child has since been en-

Fig. 5.—Large-spored (ectothrix) ringworm, producing a boggy swelling containing numerous pus foci. Such a tumor is known as a kerion.

tirely free of the disease. It is well known that if the *x*-ray produces a marked erythema, the hair will not return and visible atrophy and even teleangiectasia may be the sequelæ. With the older technique permanent alopecia may occur even in the

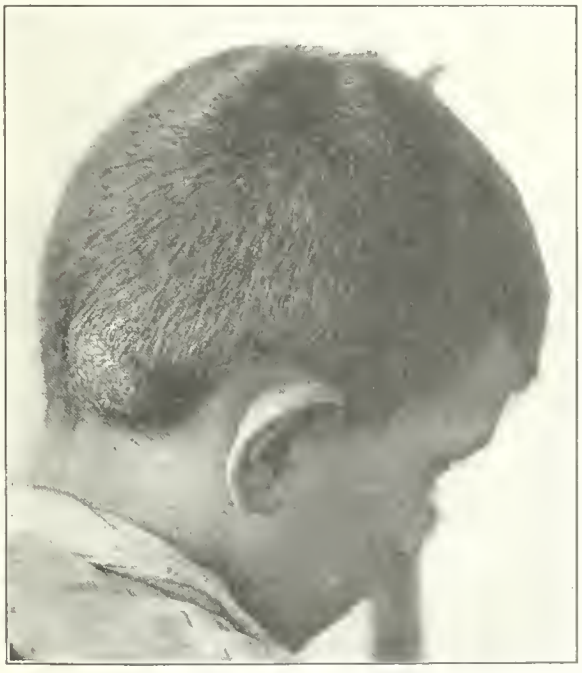

Fig. 6.—A typical kerion.

absence of a preceding erythema. The reason for this is possibly explained by the following hypothesis: If administered at one sitting it requires from 4 to 5 Holzknecht units to produce a complete temporary defluvium. On the other hand, if this

amount is divided into eight treatments which are administered twice weekly, depilation will not result; at least this has been so in our experiments. In other words, by the divided-dose method considerably more ray is used than when a single epi-

Fig. 7.—Here the ectothrix has produced a condition resembling eczema. The skin is thickened and scaly with here and there a follicular pustule.

lating dose is given and, of course, this additional ray is unnecessary and injurious. The older tech-

Fig. 8.—Large-spored ringworm resembling seborrhoeic eczema. Here the scales or crusts are yellow and waxy and the skin is somewhat thickened.

nique consists of employing a small amount of *x*-ray (too small to be accurately measured) two or three times a week until depilation occurs. Now it must be remembered that after the epilating dose has been administered there is an interval of three weeks before depilation occurs. It is possible, therefore, that in the divided dose method the *x*-ray is being applied during this period of latency and that this extra dosage may be enough to produce permanent baldness, atrophy and even teleangiectasia without the advent, necessarily, of an erythema.

Our German colleagues were the first to advocate and employ large and carefully measured doses of the *x*-ray in radiotherapy. In 1904 attention was called to the practical application of the intensive method in the management of tinea tonsurans by Sabouraud and Noiré, who were able to show remarkable results. Subsequently nearly all the European clinics treated the disease in this manner with uniformly good results. In fact, comparatively speaking, and as a direct result of this modern technique, tinea tonsurans has been almost eradicated from several European cities. But in spite of the reliable technique of our European confrères and the excellent results obtained by them, it is only within the past few years that American radiolo-

Fig. 9.—Same patient as shown in Fig. 1, after a local *x*-ray treatment. The ring in the bald area is the former margin of the disease.

gists have entered this field. Even at the present writing, however, there are very few clinics in America where individuals afflicted with tinea tonsurans can receive the benefit of modern *x*-ray therapy without expense to themselves.

While it is true that most of the New York clinics are equipped with *x*-ray apparatus and ringworm cases receive *x*-ray treatment, the results are extremely unsatisfactory for the simple reason that the technique has not been modernized. Under the old régime, while a small proportion of cases are cured, most of them are practically unaffected.

As an example we desire to relate the following incident:

Each child of a family of seven had a disseminated ringworm of the scalp. The children were treated at various clinics with and without the *x*-ray, but the disease was not controlled—in fact, no hope was given of a cure by any method. The children were, of course, refused admission to the schools, and the father, fearing the results of il-

literacy, managed to borrow enough money to take his children to London, where they were treated in Sequeira's clinic.

Now such an example does not reflect credit upon our city nor upon American dermatology. Unfortunately these cases relapsed and the treatment must be repeated. Such a result is, however, the exception rather than the rule.

The following technique is the one in use at Dr. Fordyce's clinic. There is nothing original about the method, it being the result of the work of many investigators in the same field—Sabouraud and Noiré, Holzknecht, Kienböck, Adamson, Sequeira, Hampson, Pirie, Corbett, Coolidge, Macleod, and many others.

The first step, for convenience, is to cut the hair close to the scalp. The next step is to divide the scalp into four equal sized triangular-shaped areas in the following manner: A mark is made (with a skin pencil) about 2 inches inside of the hair line above the forehead in the median line (Figs. 11

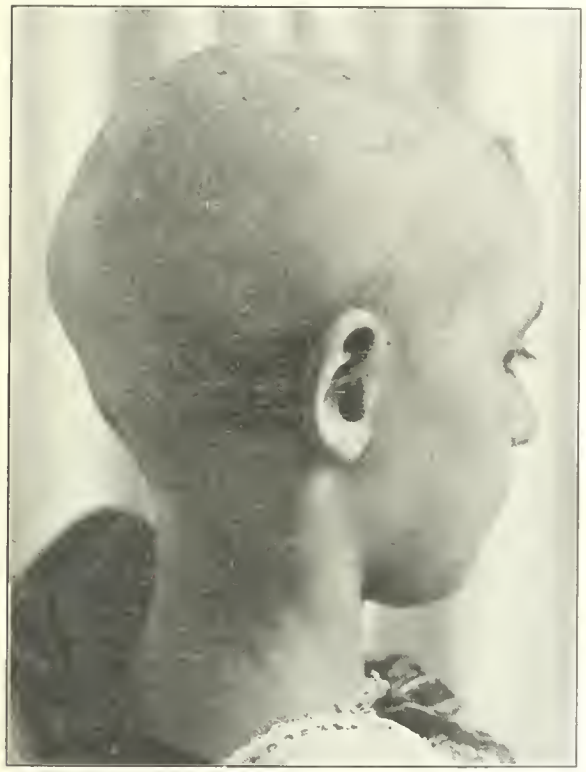

Fig. 10.—Same patient as shown in Figs. 1, 3, 9 and 11, after complete defluvium by the Kineböck method. The disease disappeared shortly after the hair fell out; the hair began to regrow in less than three months and there was no relapse.

and 13). This we will designate point A. A steel tape measure is then placed with zero on point A and stretched along the median line over the vertex to the neck. At 10 inches another mark is made—point B (Fig. 11). This will usually be about 2 inches inside of the hair line of the neck, but will vary somewhat in accordance with the size of the head. Points A and B should be adjusted so that they are about the same distances inside of the anterior and posterior hair lines. As a matter of fact, A and B, in some instances, may fall exactly at the hair line, but this makes no difference so long as the distance between them is exactly 10 inches. Point C is then indicated by a mark in the middle line exactly half way between points A and B (Figs. 11 and 12). On every skull there is a flat surface just anterior to the occiput and point C will fall from 1 to $1\frac{1}{2}$ inches in front of the center of this area. As a matter of fact it is a good idea to insist upon point C being exactly at this location and adjust A and B so that they will

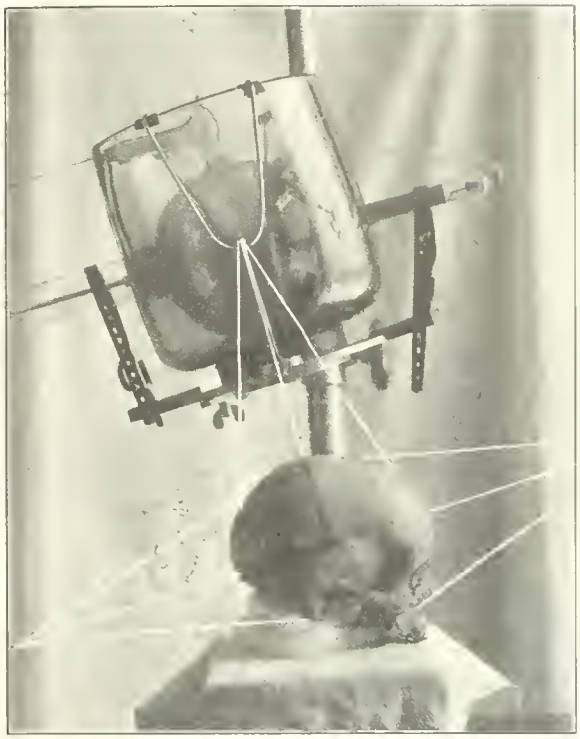

Fig. 11.—Showing Points A, B, C, and D. Also the lines drawn between the various points and how the angles of incidence are obtained.

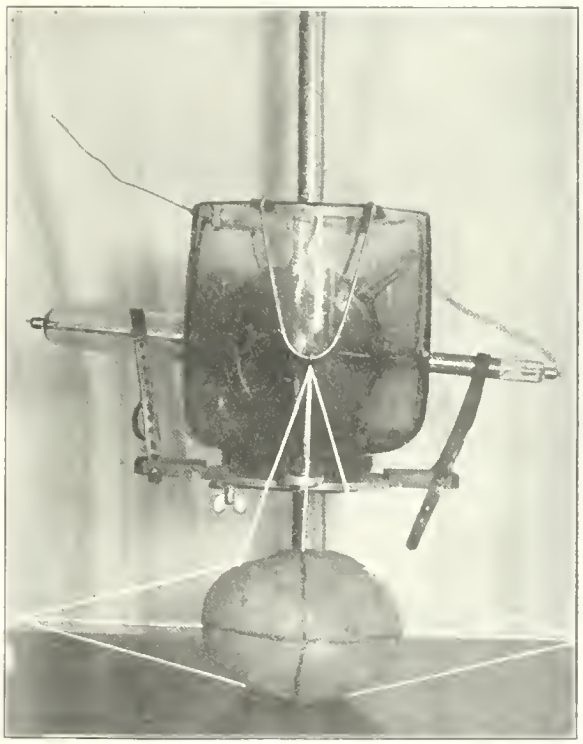

Fig. 12.—Showing Point C.

be just 5 inches anterior and posterior to C. Point D is then located just above and in front of the right external auditory meatus (Fig. 11). The exact position of this spot is found by measuring 5 inches from A, B, and C. Point E represents the

same location on the left side. It is essential that each point be exactly 5 inches from every other point, with the exception, obviously, of the distance between points A and B, which should be 10 inches.

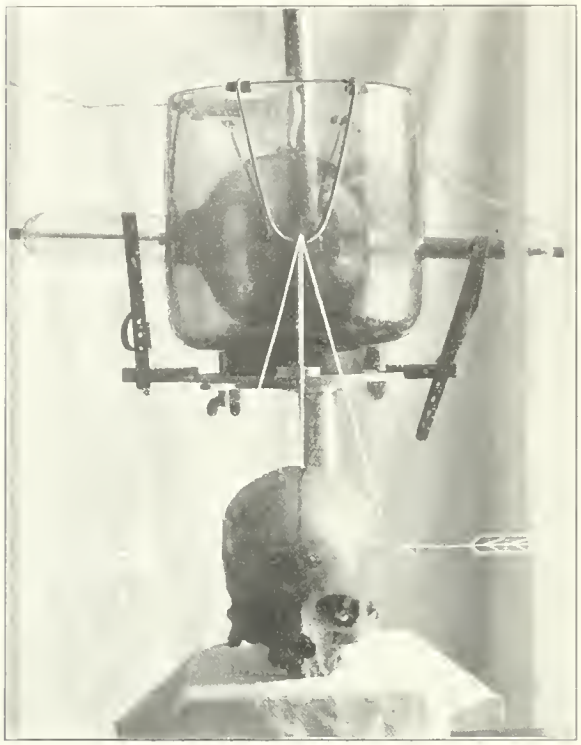

Fig. 13.—Showing Point A.

The next step is to draw lines between the various points (Figs. 11, 12, and 13). This will divide the scalp into four triangular-shaped, equal areas. The reason for this will be made clear later.

Next, each point—A, B, C, D, and E—receive an epilating dose of *x*-ray in the following manner:

For point A the child lies on its back on a table. The entire face below the hair line is protected by a lead mask. The tube is placed with the anode exactly over and $6\frac{1}{2}$ inches from point A (Fig. 11). It will be seen that the vertical rays will strike point A, while half of the oblique rays will fall upon the anterior portion of the scalp, and the remaining half will strike the protecting shield on the face and be wasted (Fig. 11). The measuring pastille is now placed on point A, and the epilating dose administered.

Points B, C, D, and E are now to receive the epilating dose in the same manner with the following exceptions: For point C the patient may recline on a table or sit upright on a chair. No protection is required. Here the oblique rays spread over the anterior, posterior, and lateral portions of the scalp (Figs. 11 and 13). For point B, the child may lie on his side on the table or sit in a chair with his forehead resting on the table. It is necessary to protect the neck, shoulders, and back. Here half of the oblique rays will reach the posterior portion of the scalp while the other half will spread over the shoulders and back (Figs. 11 and 12). For points D and E the patient lies on his side on a table and the ears, face, and neck are protected (Figs. 12 and 13). Here, as in points A and B, half of the oblique rays are lost.

It is of the utmost importance that each treatment be at right angles to every other treatment. For instance, an imaginary line drawn from the anode to point A will be at right angles to lines extending from the anode to points C, D, and E. Figs. 11, 12, and 13 will explain these angles better than words and, also, they will demonstrate that the lines drawn on the scalp between the five points aid one in quickly determining the correct angle.

A study of these illustrations will show, also, how the vertical rays strike the five points while the oblique rays from one treatment overlap and reinforce similar rays from other treatments. For instance, if a full epilating dose is administered to point E and to no other portion of the scalp, the hair will fall out over only a very small area (Fig. 14). But when similar doses are applied to points A, B, and C the oblique rays overlap and complete alopecia is the result (Figs. 10 and 15). In explanation it may be stated that point E, being in the field of vertical rays, receives the full epilating dose, while a point half way between E and B receives one-half an epilating dose. But this point also receives one-half an epilating dose when point B is treated. In this way the entire scalp, when the five points have been treated, receives a full epilating dose. Scientifically, the well-known laws of intensity being in inverse proportion to the square of the distance and directly with the size of the angle of incidence, account for the equal distribution of the dose. This method of treating the entire scalp by five exposures was originated by Kienböck and is exceedingly accurate, as shown by Adamson, Pirie, Sequeira, and many others.

For the purpose of determining the epilation dose, both the quality and quantity of ray must be estimated. There are numerous radiometers designed for the purpose of measuring the quantity, but we rely entirely upon either the Holzknecht or the Corbett radiometer. They both are modifica-

Fig. 14.—Showing the extent of hair loss as a result of an epilating dose applied to Point E. This is the same patient as shown in Figs. 1, 3, 9, and 10.

tions of the original Sabouraud-Noiré method of utilizing the change in color produced in platinocyanide of barium when under the influence of the *x*-ray. The Corbett radiometer, the most recent and most scientific quantity instrument, consists of

a series of colored glass tablets, each piece of glass representing the color assumed by the double-cyanide of barium after it has received varying amounts of exposure—in other words, they represent doses of *x*-ray measured in Holzknecht units.

Fig. 15.—Complete depilation in a case of disseminated ringworm by the 5-exposure method at one sitting.

The Sabouraud (barium) pastille is placed on the scalp and the *x*-ray is applied until the pastille matches in color the particular glass tablet that corresponds to the epilating dose (5 H). The pastille and the tablet are compared in a black chamber under the influence of reflected artificial light. The colored glass tablets are standardized by the tintometer and are both accurate and permanent. The Holzknecht instrument has a strip of celluloid which, colorless at one end, gradually assumes color which becomes deeper as the other extremity is approached. One-half of a Sabouraud pastille is placed under the celluloid strip, the other half is placed on the scalp and exposed to the *x*-ray. It is then compared with the half pastille under the celluloid and moved along the colored strip until the colors register. A scale of figures on the instrument allows a reading to be made in Holzknecht units. There are many technical details connected with the work that we cannot discuss here. Suffice it to say that in experienced hands this method of measuring the quantity is absolutely reliable.

In such delicate technical work it is, of course, advisable to utilize, especially in the beginning, as many safeguards as possible; therefore, it is advisable to work with a constant amperage, voltage, and milliamperage, and a fixed parallel spark gap, a fixed distance, etc. In our technique, however, we are constantly changing these factors and, therefore, disregard the indirect and depend entirely upon the direct methods of measurement of quantity.

Since the advent of the Holzknecht radiometer we have had no difficulty in estimating the quantity of ray employed. We have, however, had a great deal of trouble in measuring the quality, and this was entirely due to the impossibility of obtaining tubes that would maintain a constant vacuum during the treatment. Water and air-cooled tubes lessened the difficulty. The air-cooled hydrogen tube, also, has given good satisfaction. But the remarkable Coolidge tube has completely overcome all difficulties in this respect. This tube will maintain a constant vacuum with light or heavy currents for long periods of time and may be used on one case after another throughout the entire day. For the direct estimation of quality we utilize the Benoist penetrometer, aided by indirect instruments such as the Heinz-Bauer qualimeter, the milliamperemeter, etc.

We employ a "hard ray"; never less than No. 8 of the Benoist scale, and earnestly advise against the use of soft rays. The original epilating dose, as devised by Sabouraud and Noiré, (B 1 or H 5) was based upon the use of "hard rays," obtained by exciting a tube with a static machine. This fact has been generally overlooked and the use of "soft" rays has been one of the causes of bad results in the past.

We place the pastille on the scalp as advised by Hampson and others, instead of half way between the anode and scalp. There is no doubt in our mind that both accuracy and safety are enhanced by placing the pastille on the scalp. At half distance the slightest movement of the child will alter the relative positions of the head, pastille, and anode, and this will cause a faulty estimation of the dose. With the pastille placed on the scalp it makes no difference if the head moves a little closer to or a little further from the tube during the exposure. Lateral motion, however, must be avoided in any case. Furthermore, the changes in color are less

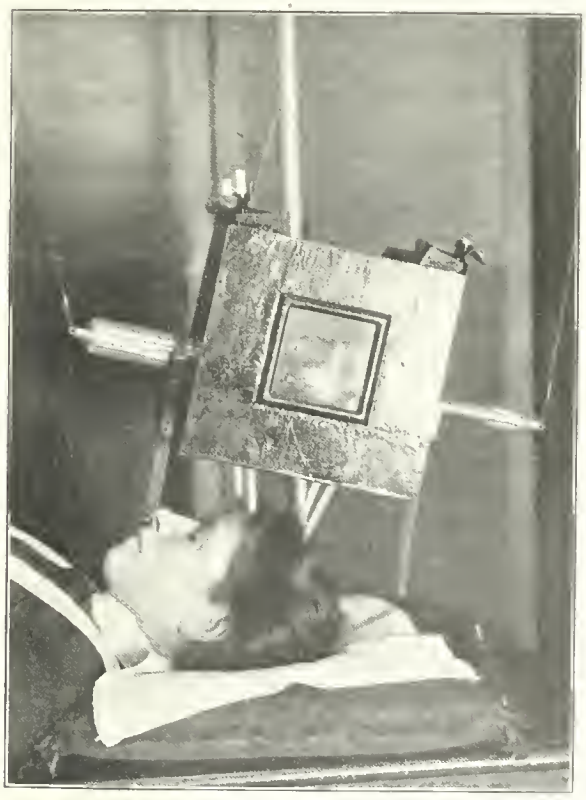

Fig. 16.—Showing tube stand and shield fitted with the wooden pegs for the purpose of holding the head steady.

marked at "skin distance" than at "half distance," and these light brown shades are more easily estimated than are the deeper orange tints. The original dose of 5 H was estimated with the pastille at "half distance," so that when the "skin distance" is

employed the color change in the pastille will be four times less than at "half distance." In other words, when the pastille is placed on the scalp the dose must be multiplied by four. Therefore, the epilating dose at "skin distance" will be $1\frac{1}{4}$ H.

Fig. 17.—Permanent alopecia, atrophy, and teleangiectasia following an erythema as the result of the divided-dose method.

As a matter of fact $\frac{3}{4}$ H to 1 H will usually suffice, and $1\frac{1}{4}$ H is the maximum. If this is exceeded, permanent alopecia is likely to result. The maximum dose will produce a complete depilation, but experience has shown that if most of the hair falls out the result will be perfectly satisfactory, so that a dose of 1 H at "skin distance" will usually suffice for all practical purposes. When employing the "skin distance" the distance between the scalp and anode of the tube is a matter of little moment so long as it is not too close and the same distance is employed for each of the five exposures. A working distance of $6\frac{1}{2}$ inches has been found satisfactory.

The age of the patient makes no difference if the head can be kept quiet during the exposures. For this purpose a shield, fitted with pegs made of soft wood, may be used, as shown in Fig. 16. The pegs must be made of very soft wood, so as not to act as a filter to the ray and should be of a length that will fix the anode at the proper distance from the scalp.

To recapitulate, the essential points in the technique are briefly as follows:

1. Cut the hair short. Indicate points A, B, C, D, and E with a skin pencil. Be certain that the points are exactly five inches apart. Draw lines between the various points as indicated in the illustrations.

2. Apply an epilating dose (H 1 at skin distance, B 9 or 10) to each of the five points. Apply protection only to the face, ears, and neck. The vertical rays are aimed directly at the point under treatment and each exposure must be at right angles to the other exposures.

3. Measure the quantity accurately with a reliable radiometer. The quality must be estimated by means of some reliable penetrometer, such as the Benoist instrument, together with indirect methods such as the milliamperemeter, ammeter, etc.

4. The head must not move very much during the exposure. Absolute immobility is desirable.

This intensive method of treating ringworm of the scalp is scientific and accurate, but on account of the delicate technique it can be employed only by trained radiotherapeutists.

The hair falls out at the end of about three weeks and starts to regrow in about three months. It is essential that no irritating applications be applied to the scalp for two weeks prior to the treatment. As a matter of fact, if chrysarobin, tar, or iodine has been applied, it is better to await the lapse of four weeks. Subsequent to the treatment such chemicals as iodine, tar, and chrysarobin are prohibited. It is preferable to allow no application for about a month, at which time a 5 per cent. ointment of sulphur or ammoniated mercury or some other mild antiparasitic agent may be employed. While the hair is falling the child should wear a linen cap which, with the fallen hair, can be destroyed, so as to protect other children.

Sometimes, a week or two after the treatment, all the patches of ringworm become erythematous and even painful. This is no indication of an error of technique and should not cause alarm. Also, occasionally, a transitory erythema may be noticed a day or two after the treatment. This is an "electrical" erythema and will have no bearing upon the end result. On the other hand, a true radiodermatitis indicates an error in technique and may be followed by more or less permanent alopecia. Fortunately, however, with the modern technique and a skillful operator, such an undesirable occurrence is rare, indeed. Not infrequently, a few hours after the treatment, the child may feel indisposed, but this disappears in a day or two.

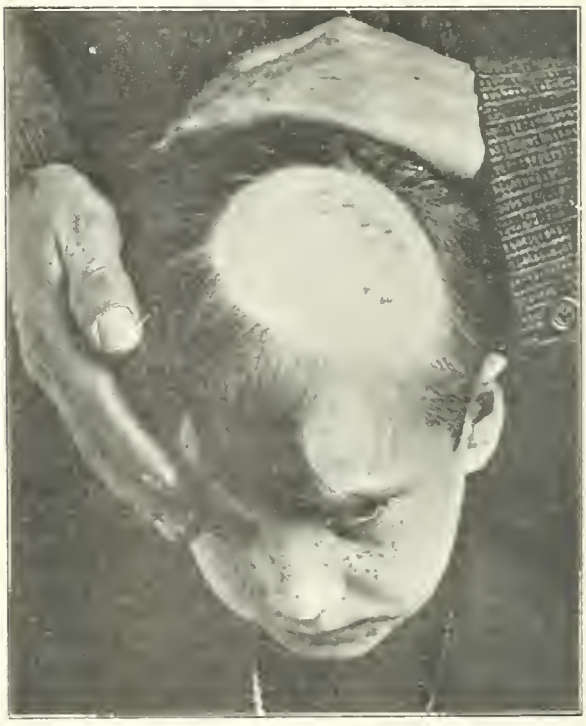

Fig. 18.—Local depilation as a result of a single treatment in a case where the lesions were limited to a small area. In this instance the remainder of the scalp remained unaffected and the result was satisfactory.

In Dr. Fordyce's clinic, Drs. Steinke and Scheer have been treating several cases each week for the past two years and there has not been a single un-

toward result, and this is in accord with the findings in the European clinics. One of us (MacKee) has been employing the intensive method for over eight years, with only two bad results. In one instance, a girl of eight, the hair failed to regrow

Fig. 19.—The areas where the growth of hair is most vigorous are areas in which depilation was provoked on two occasions.

in one area. This was due to the faulty construction of a tube in association with the half-distance method. The same error could not happen with the present technique. The other case was that of a baby where the regrowth of hair was sparse in two areas the size of a silver dollar. This was the result of an erythema following the use of iodine within a short time after the treatment.

In the early days of the intensive treatment of ringworm of the scalp accidents were plentiful, but experience, reliable apparatus, and skill in following out a technique have all combined to make the method reliable and practical (Fig. 17). We will state, too, that there has never been an injury to the brain or to the general system. Not infrequently the new growth of hair will be a little lighter or a trifle darker in shade. Again, the new hair may be curly, while the former hair was straight, and vice-versa.

It is not always necessary to depilate the entire scalp. If there are only one or two lesions, the regions occupied by these lesions may be treated, but when the diseased hair falls out it must not be allowed to infect healthy portions of the scalp. Fig. 18 represents a case of tinea tonsurans where there were three or four lesions in an area about the size of an adult palm. The remainder of the scalp was unaffected. A local defluvium was produced by a single treatment as shown in the photograph. The treatment resulted in a cure.

Inasmuch as we estimate the quantity by direct measurement, the element of time does not enter into our calculations. With the apparatus and technique in use at present an epilating dose can be administered in a few seconds or in a few minutes. We usually give the dose in three minutes, making a total exposure, for the five areas, of fifteen minutes. Considerable time is lost in mapping out the areas on the scalp, arranging the position, obtaining the confidence of the child, etc., so that it usually requires about an hour to complete the treatment in one case. It is not necessary to expose all the areas at one time. If one desires to do so one area may be treated each day, five consecutive days being utilized for the complete procedure.

Relapses occur occasionally, making it necessary to depilate a second time. In such instances it is usual to allow a period of from six to twelve months to elapse. We doubt, however, if this long interval is essential. We have had numerous cases where we have depilated a single small area and later the entire scalp has become infected, necessitating a universal defluvium. In these instances we waited until the hair began to grow in the original patch, about three or four months, and then depilated the entire scalp. To our surprise the hair reappeared in the original area before it began to grow over the remaining portions of the scalp (Fig. 19). However, it is probably wise to allow an interval of at least six months so as to avoid any possibility of an accumulative effect, especially if the hair is not growing vigorously. In several instances, where the entire scalp was depilated by the intensive method, we noticed that the hair grew more rapidly in the areas previously affected by the disease than in the normal scalp.

The question of idiosyncrasy undoubtedly occurs to the reader. We cannot deny that a true idiosyncrasy is a possibility, but it must be extremely uncommon. We have personally never detected a single instance of true idiosyncrasy in connection with the scalp. Thousands of cases have been successfully treated in Europe and our foreign colleagues ascribe the comparatively few bad results to faulty technique rather than to idiosyncrasy.

Although, in the hands of experienced radiologists, accidents are extremely rare, yet it cannot be said that the *x*-ray treatment of tinea tonsurans is entirely devoid of danger. On the other hand there is no question but that if properly conducted it is the best means that we have at the present moment for combating ringworm of the scalp; and we should here include the hitherto practically incurable disease, favus. Here, however, the crusts must be removed before the application of the

Fig. 20.—Favus, showing the thick crusts which must be removed before applying the *x*-ray.

x-ray, because they absorb the ray, thereby acting as filters, and interfere with the accuracy of the dose (Fig. 20). In this connection, however, we desire to call attention to some recent work conducted by Strickler of Philadelphia with the vac-

cine treatment of tinea tonsurans. He succeeded in curing several cases by this method and it is quite possible that the future will see this procedure supersede the *x*-ray treatment of ringworm of the scalp. For those who are interested, Strickler's article was published in the *Journal of Cutaneous Diseases* for March, 1915.

For those who desire to study the technical details of *x*-ray measurement and, also, to obtain additional information relative to the intensive *x*-ray treatment of tinea tonsurans, we append an incomplete bibliography of useful articles in the English language.

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THE PEACE AND WAR FOOTING OF ALCOHOL.

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THE physiological and pathological effects of alcohol have probably been more thoroughly investigated, contended over, and disagreed about during the last quarter of a century than almost any other subject. Physiologists and chemists have studied the action of alcohol upon normal organs; pathologists and clinicians have investigated its morbid and therapeutic effects; and its moral and economic significance have been subjects of contention that rival the religious and metaphysical discussions of the Middle Ages.

Yet the net results of this active fermentation—that is, the actual facts about which all investigators agree absolutely—may be summed up in the simple statement that excessive quantities of alcohol are harmful. A similar statement may be made about at least a hundred other substances. Nevertheless, a certain number of positive discoveries have been made, and a somewhat larger number of fallacious pathological and therapeutic bubbles have been definitely pricked.

Events in Europe during the last few months have added material for digestion. Thus the edicts of certain governments against the sale and manufacture of distilled liquors emphasize the belief among physicians that the effects of concentrated beverages are especially harmful. But perhaps the most disconcerting, as well as one of the most important events in recent years, in its bearing on the problem, was the discovery that paresis is caused by syphilis, not by alcohol, as widely believed heretofore. This discovery, although intrinsically important, is even more so in its implication. This implication is, obviously, that there may be other pathological conditions where the verdict against alcohol seems quite as justifiable as in the case of paresis, but in which the decision may be reversed at any time by the higher court of scientific investigators. Indeed, several similar decisions have been handed down recently. But although such decisions tend to clarify the atmosphere in certain regions, the general effect is somewhat disconcerting.

Positive and Negative Findings of the Court.—The verdict against large quantities of alcohol as a poison is confirmed beyond question. But the cases involving the poisonous effects of small doses is more complicated. Thus, we may measure the action of large doses of alcohol by a series of definite effects, whereas the results of persistent small doses can seldom be measured by specific and uniform pathological conditions. In this respect, then, alcohol differs from most substances officially rated as poisons.

There is, of course, a great difference in the effects of a large dose of any poison, and small amounts of the same poison distributed over a long period. Lead, arsenic, mercury, and opium offer examples of this. But even slow poisoning by these substances can be measured in pathological terms with reasonable accuracy. Such is not the case with alcohol, however. What particular organ of the alcoholic will succumb, or whether any organ will be demonstrably affected at all, is entirely a matter

for speculation. The drunkard may develop nephritis, or cirrhosis of the liver, or multiple neuritis, or pay one of a dozen other seeming penalties. Yet any of these conditions may be produced by some agency other than alcohol, since the total abstainer is not immune. Indeed, exhaustive investigations raise strong doubt in many cases where formerly the circumstantial evidence was regarded as convincing.

The effect produced upon the blood by alcohol is a case in point. It has been asserted repeatedly that alcohol causes the blood corpuscles to shrink, "lose their round form, and become ragged," as stated by Henry Berg. The recent experiments of Jaillet, Evelin, and Quensel, however, absolutely refute this, and Quensel makes the definite assertion that, "in investigations made upon human beings who have misused alcohol, no morphological changes in the blood have been proven."

The effect produced upon the normal liver by alcohol seems entirely enigmatic, although our predecessors confidently stamped cirrhosis as "drunkard's liver." Recent, and more scientific investigations, however, fail to find complete justification for this stigma. Thus Baumgarten found cirrhosis of the liver in only 6 per cent. of autopsies among hard drinkers, and Fahr found only a trifle over 4 per cent. (13 cases in 309 autopsies). From their investigations it appears that total abstainers suffer from this disease about as frequently as alcoholics.

Investigations of cases among moderate drinkers offers confirmatory evidence. The official statistics of the hospitals in Sweden, for example, show that there were 21 deaths from cirrhosis of the liver annually to 10,000 patients. Considering the character of the cases investigated the evidence seemed sufficiently conclusive to the investigators, who state that, "as a basis for the hypothesis that a moderate use of alcohol may originate the disease, the number of cases is exceedingly small; the number found seem to furnish a direct proof for the incorrectness of such an assumption."

However, these conclusions need not remove the suspicion that the abuse of concentrated alcoholic drinks may be an etiological factor in cirrhosis, even if not a specific cause, although animal experimentation has failed to demonstrate such action. Yet cirrhosis seems to have decreased in recent years, while the per capita consumption of alcohol has steadily increased. Possibly the universal change in diet may be a factor. But Lambert attributes this decrease in the disease to "the more general use of malt liquors," making the obvious implication that concentrated alcoholic drinks may cause the disease, although the lighter beverages do not.

The case against alcohol as the cause of organic heart disease will not stand close scrutiny. Indeed, our knowledge of the toxic action of certain proteins and other nutritive agents makes it fairly certain that, at most, the action is indirect, and of no more importance etiologically than many staple articles of diet. Functionally, the heart is affected by alcohol like other muscles of the body through the central nervous system—that is, the immediate effect on the heart's muscular effort is "to diminish the efficiency of the individual contractions, and the remote effects, to delay the onset of fatigue. Under its influence the muscle contracts less perfectly from the start but continues at this slightly lower level for a longer time, with the result that more work is performed before it becomes exhausted." The clinical value of alcohol, therefore, is well recognized; but there seems to be no evidence to support the contention that even chronic alcoholic abuse produces organic heart changes.

The old conception of alcohol as a direct etiological factor in diseases of the blood vessels, particularly arteriosclerosis, has been recently reversed. The older writers stated positively that alcohol is a direct cause of arteriosclerosis, but recent investigations all tend to refute this. Thus Cabot, reporting on these conditions, states that "only 6 per cent of 283 cases of chronic and excessive alcoholism under 50 years of age showed any evidence of arteriosclerosis." And, "of 45 cases of arteriosclerosis examined by me at the Massachusetts General Hospital, only 13 per cent gave a history of alcoholism." In the opinion of Louis Faugeres Bishop, "pure alcohol well diluted and taken in appropriate quantities with relation to food, probably has no effect" in producing arteriosclerosis. While the investigations of Lancereaux, Duclos, Orth, Schell, and Fahr offer evidence that not only may arteries in pronounced drinkers show an absence of arteriosclerotic changes, but also that arteriosclerosis is not found earlier or to a greater extent in alcoholics than in other persons.

The close relationship between diseases of the heart and blood vessels suggests that the conclusions about alcohol as an etiological factor in nephritis would be practically the same as in the case of the other organs. This appears to be the case. In a comparative series of cases investigated by Lafont, for example, there were 6.3 per cent of cases of nephritis among alcoholics, while in non-alcoholics there were 7.3 per cent. Even where nephritis was present in alcoholics, the etiological factor was so doubtful that Lafont stated, "we cannot assert that nephritis in alcoholics is of alcoholic origin." In Fahr's series, chronic nephritis caused the death of but eight cases, and was less commonly noted than among the non-alcoholics. And Hultgren, in a long series of investigations, found no evidence of nephritis in 85 per cent of alcoholic cases, and concludes that the tissues eliminating alcohol, such as the kidney, suffer less from its effects.

Probably the most exhaustive investigation of this question has been made recently in Leipzig, with the net result that "no specially prominent influence of alcoholism was established over that of other substances." In this investigation the cases were divided into age groups, and although the age class between twenty-five and thirty-four showed a slight difference unfavorable to the alcoholic, the difference was so slight that the general conclusion was not affected in view of the showing in the other classes. In this connection it should be borne in mind that the subjects investigated were not merely habitual drinkers, but confirmed alcoholics.

Our knowledge of the effects of alcohol upon the gastrointestinal tract is apparently somewhat more definite, or at least, positive, in character, than in the case of most of the important organs. Our present knowledge is summarized in the succinct statement that "gastric digestion is not materially affected by moderate amounts of beer and wine of low alcoholic content, and they may even promote digestion, but brandy and whiskey, containing about 50 per cent of alcohol, interrupt digestion when taken in sufficient amount, and digestion is not resumed until the concentration of the alcohol is reduced sufficiently through absorption or diluted with the

gastric contents." It is also accepted as a physiological fact that small amounts of alcohol are absorbed rapidly from the gastrointestinal canal, and favor the absorption of other substances, while larger amounts of concentrated liquors produce the opposite effect, with resulting disorders.

The objective effects of alcohol upon the central nervous system are so definite and characteristic that an analysis of these effects would appear relatively simple, and demonstrable by pathological findings. But such is not the case, particularly as regards the effects of small quantities of alcohol. Thus, Binz and his followers, hold that alcohol stimulates the nervous system; Schmiedeberg maintains that its action is wholly depressant; and pathologists assert that, organically at least, small quantities of alcohol produce no effects whatever. Moreover, there is no uniformity in organic changes, even in cases of marked alcoholic abuse. In delirium tremens, for example, such investigators as Bonhöffer, Trommer, and Lambert find no specific pathology by microscopic examination.

On the other hand there are certain fairly constant organic changes, such as hyperemia of the membranes, cloudy thickening and adhesions of the pia, edema, minute hemorrhages, and perhaps actual degeneration of the cells and fibers, which are often the concomitants of inebriety. And although it may be fairly pointed out that these changes are also produced by other toxic substances, and that none of these conditions are constant even in alcoholics, we are justified in the belief that these changes may be produced by alcoholism.

It appears, therefore, that the demonstrable organic changes produced by excessive quantities of alcohol are confined almost exclusively to the nervous system, and the alimentary tract. Any definite organic changes in the blood, bloodvessels, heart, liver, kidneys, and muscular system, have not been established. So far as we have been able to demonstrate, specific changes are not produced.

Effects Produced Upon Pathological Structures.—The moment we consider the effects of alcohol upon pathological structures, however, particularly the effects of concentrated liquors, we find ourselves on firmer ground. It is generally accepted without reservation that any considerable quantity of ardent spirits is harmful in cases of heart disease, nephritis, arteriosclerosis, diabetes, and many other pathological conditions. The fact that other substances, such as tea, coffee, tobacco, and certain foods also act detrimentally in these conditions, indicates that the action of alcohol is not that of a selective poison, but rather one of a group of substances whose action upon pathological structures differs somewhat from the physiological effects.

Similarly, we have a striking example of the effects of alcohol upon abnormal structures in the alcoholic insanities. Probably alcohol acts in these cases as the spark for igniting the mental powder mine, which results in disrupted mentality, with characteristic manifestations. Perhaps the explosion would have occurred without this particular spark, for it is the consensus of opinion among psychiatrists that the train itself was already laid. In short, that the person in whom the use, or even abuse, of alcohol produces insanity is mentally unstable, and conversely, the person of normal mental stability seldom, if ever, develops an alcoholic psychosis.

Moreover, it seems pretty clearly established that, even in cases of unstable mental equilibrium which develop into alcoholic insanity as the immediate result of alcoholic abuses, the kind as well as the quantity of beverage consumed is an important factor. An overwhelmingly large proportion of persons who develop alcoholic pyschoses in America are drinkers of whiskey, or some corresponding ardent spirit, whereas this condition is seldom seen in beer and wine drinkers. This difference is so pronounced that the drinking habits of the different nationalities may be pretty accurately measured by the heterogeneous asylum populations in this country. Thus we find the highest percentage of alcohol psychoses among the whiskey drinkers who come from Western Europe, while the wine and beer drinking races of central and southern Europe show a distinctly lower percentage, in some instances only about one-fourth as many per capita.

There are undoubtedly other factors besides the kind of liquor, which must be considered in explaining this difference in race-susceptibility to alcohol. But it is evident that quantity of alcoholic content in the beverage, and quality of mental endowment, are highly important elements.

The deleterious effects of alcohol in certain pathological conditions suggest its value as a therapeutic agent in others. This value is, of course, recognized universally among clinicians. Yet therapeutically, as well as physiologically and pathologically, alcohol presents some curious paradoxes even in the course of the same disease. Take the case of diabetes, for example. Apparently alcohol plays no direct part in the etiology of this disease. But once the disease has developed, the harmful effects of liquors having a high alcohol content, such as whiskey or brandy, is unquestioned. Yet there are phases of diabetes in which a veritable drenching of the system with whiskey lifts the patient over an abyssmal chasm. At these critical periods, von Noorden "advises no food, but large quantities of whiskey. * * * He calls these days 'alcohol days,' and says it is astonishing how well large quantities are borne even when the patient is not accustomed to them. It is followed by a large reduction of ketonuria, and the general condition of the patient is greatly improved."

This, and kindred clinical experiences, simply emphasize the complexities of the alcohol problem from a medical standpoint. In therapeutic effects, as in physiological and pathological manifestations, our knowledge is still largely empirical, which, from a strictly scientific point of view, is rather haphazard, and peculiarly dependent upon personal prejudice.

The War Status of Alcohol.—A leaf from the book of the great war shows the status of alcohol from a European standpoint. We see the warring nations issuing sweeping edicts against the sale and manufacture of distilled liquors, thus emphasizing the deleterious effects of concentrated alcoholics as a social factor, and presenting a unique feature of modern warfare. But following this we are given abundant evidence of the belief in the therapeutic value of alcohol by the action of these same governments. England, urging temperance upon her soldiers and civilians, sends liquor to the trenches and hospitals in hundred thousand gallon lots. France, having interdicted the use of absinthe, increased the daily wine ration of the soldiers. Germany first closed all bars until mobilization was effected, then lifted the edict against beer, and encouraged its gift to armies and hospitals. And Russia expressed the universal sentiment against the use of concen-

trated liquors by a sweeping and permanent (it is to be hoped) edict against the deadly vodka.*

This action of the great European powers suggests an attitude toward alcohol legislation that is wholly novel, at least in America. The action was discriminatory against a certain class of alcoholics that is entirely justified by clinical experience. But it is a curious commentary on American legislative acumen that this rational first step to abolish alcoholism should be taken in countries where an appreciation of the urgency of some reform is of recent origin, rather than in our own country where the quest for some practical legislative control has been acutely active for years.

If we consider war as a pathological condition, the action of these belligerent governments in regard to alcohol may be considered as a therapeutic measure, confirming the belief that alcohol is a useful remedy, even though a harmful economic factor. But war is only pathological from a political standpoint. Physiologically it is precisely the reverse, for the effectiveness of an army is dependent upon the physical efficiency of its units. When, therefore, the European governments encourage the use of a certain type of beverage among these units, and forbid others, it is not for the purpose of correcting a pathological condition, but to enhance a physiological one. In short, the beverages are not given as medicine, but as nourishment.

The use of alcohol in the military hospitals seems to accord with the practices in civil hospitals. Ardent spirits have lost ground in popularity, and the lighter beverages distinctly favored by the military surgeons, this attitude presenting a striking contrast to the attitude of the surgeons in former wars. In our Civil War, for example, whiskey and brandy were used in tremendous quantities, wine to some extent, and malted beverages scarcely at all. In the European war this order of precedence seems to be reversed.

Thus the tendency in war, like the tendency in civil life, is to condemn, or restrict, the use of ardent spirits, therapeutically and generally. There is a lesson in this quite outside the field of medicine that may well be taken to heart.

Exchange Building.

*According to the *British Medical Journal*, 2½ ounces of rum are issued to each man in the British Army twice a week. For men in the trenches, this allowance is increased to 3 ounces twice a week under ordinary weather conditions, and to 2½ ounces daily in very bad weather, making a minimum of 5 ounces a week and a maximum of 17½ ounces. The regular ration of 2½ ounces is estimated to contain 25.5 grams of alcohol. The French soldier receives daily 50 grams of rum containing 20 grams of alcohol. The German soldier is allowed 1,793 grams of beer and 20 grams of brandy a day. The beer, which is of course the ordinary lager variety, has a low alcohol content of only about 3.5 per cent., but this quantity would amount to a total of 70.7 grams of actual alcohol a day. Austrian soldiers receive each day 0.5 liter of wine, equivalent to 40 grams of alcohol.

Intestinal Obstruction Caused by Ascarides.—Y. Takaki reports a case of this condition in a child aged three years in whom a diagnosis of intussusception had been made because of the existence of a long tumor running across the right side of the abdomen just above the umbilicus. Doubt as to the diagnosis was raised by the detection of a second tumor which was small and round and was situated in the right iliac fossa. There was considerable abdominal pain associated with a moderate degree of distention. The patient vomited ascarides at various times. Following the administration of santonin, a large number of the worms passed with the feces and the tumors disappeared.—*Sei-I-Kwai Medical Journal.*

TUBERCULOSIS IN CHILDREN.*

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Human history may be divided into several more or less well-defined eras. Antiquity, as portrayed in mythology, represents the era of the warrior. In those days, as Plato subsequently taught and all Athens believed, man existed for the benefit of the State, and man's "summum bonum" consisted in the sacrifice of self for the glory of Greece. Later we come to the era in which some of the world's best philosophy and poetry received the stamp of immortality, and during which majestic monuments, temples, and triumphal arches were built; during which wealth was pouring into the Eternal City from all the corners of the earth, and during which a new religion, destined to be world-wide, came into being. That was the era of philosophy, poetry, architecture, and sculpture. Following the era of intellectual triumph and material prosperity, there came an era of asceticism and mysticism, the days of the hermit and the monk. The intellect of man fell asleep and the Dark Ages had come. The darkness was like ebony and the night long; but dawn came and ushered in the era of the Renaissance, when man was aroused from his mental inertia and the intellect came into its own again. And as we travel thus through subsequent centuries to our own day and generation, we ask ourselves the question, "What characterizes this era in which we are living?" Some may say that this is the era of industry and commerce; or the era of great wealth; or the era of discoveries and inventions; or the era of scientific achievements. All these characterize our era, but over and above all these, *this is the era of the child.* The efforts of the disciples of eugenics; the workers interested in the conservation of child life, improving the sanitation of our factories, regulating the working hours of children, inspecting the dairies and their products, opening milk-stations for the babies; the activities of the Little Mothers' League; education through the distribution of pamphlets fighting under the slogan "It is not the babies born but the babies saved that count"; the establishment of Fresh-Air Camps, the widows' pensions, clinics for the study of child tuberculosis, the systematic medical school-inspection, the recognition of the importance of prenatal care, and the recent establishment of the Children's Bureau by our government and the free distribution of its literature, all these bear witness to the fact that the child has at last inherited its birthright. To say it again, this is the era of the child.

You have heard it said that the child is the father to the man; and that as the twig is bent so will the tree grow. The child is like clay in the hands of the potter; we can mould it as we will. Bad habits are just as readily acquired as good ones. And thousands of mothers are this day making bricks in Egypt because of the pernicious habits they themselves taught their children. How important is it, therefore, that our twigs grow straight, in fertile soil and wholesome atmosphere, for in this era of the child the weaklings have no chance and only the strong become efficient.

* Read at the meeting of the Association of Attending Physicians to the Hudson County Tuberculosis Clinics, May 10, 1915.

This brings us to the subject of prophylaxis in infancy and childhood. It has been said that it is more blessed to give than to receive. I would like to paraphrase this truism into terms of medicine and say that it is more blessed to prevent than to cure. Combating the ignorance of the parent will prove more arduous than combating the disease. When we appreciate the fact that we possess the magic word—the open-sesame—that brings before our eyes enormous wealth of knowledge, when we realize that the unanswered mysteries of other ages are now as understandable as the alphabet, what a sad commentary on our civilization is it that there are many humans among us who in their mental equipment are still back somewhere in the days of Hildebrand. Where is the man who said that ignorance is bliss? What is blissful about the mother who moistens her nipple with her tuberculous sputum in order to facilitate the introduction of her nipple into the mouth of her nursling? Can door-crevices stuffed with rags and window-crevices passe-partouted lead to bliss? Can a child living in overheated rooms and raised like a hot-house plant or vegetable bring bliss? The character of the odor that greets one's nostrils on entering a home thus hermetically sealed challenges description. Hebraic tradition tells us of the nautical experiences of Mr. and Mrs. Noah and relatives who, together with the greatest menagerie ever assembled before or since, lived, during a certain stormy season, in an ark the *only* window of which remained closed for 40 days and nights. How the sailors could stand it will ever remain a mystery to me. The crusts of dirt that we find on not a few of our patients bespeak a shiftless habit that is incompatible with the results we seek to attain. Cleanliness has ever been next to godliness; and as someone has said, "a healthy skin is the best undergarment ever invented." But one cannot get blood from a stone; and it is just as impossible to have cleanliness without a bathtub. Therefore we should advocate the erection of municipal bathhouses in the congested districts of our cities. A sin against hygiene that is common to all classes is that of overdressing. The binder, woolen-shirt, petticoat, top-coat, stockings, booties, and cap, and over them all the mother's heavy shawl, or among the rich a fur sleeping-bag, may constitute the proper wearing apparel in the land of the penguin and the bear, but never in the temperate zone. Overcrowding is another condition that causes tubercle bacilli to frolic gleefully in pulmonary tissue. Before the days of urban life, when man was enjoying the primitive privileges that were his in the Valley of the Euphrates, infectious diseases were rare and man was as disease-free as the game he hunted. But with the advent of large industries and the multiplication of man's necessities and the added demands made upon him by society, man ceased to live for himself only and found himself with others of his fellows herding into cities. As someone has said, "tuberculosis is a disease of man who lives in houses and of cattle that live in stalls." Tuberculosis is a disease of crowds.

Fresh air is nature's true panacea, given gratis to all mankind. In these days when children frequent the movies, and dancing is taught to develop gracefulness, we may justly wonder where are the good old days when children rolled the hoop, skipped rope, and played London-bridge-is-falling-down, when children sported in the open air and were rewarded with healthy lungs and rich, red corpuscles. A healthier and happier youngster never lived than our poet's "barefoot boy with cheek of tan," whose red lips were "kissed by strawberries on the hill," and not by doting parents and misguided relatives. Open-air schools should be advocated for both therapy and prophylaxis. In our large cities there are open-air schools for *non*-tuberculous pupils. These schools report that the children eat better, play better, sleep better, look better, and study better than students in the ordinary type of school. The reason is obvious. The question of food is an important one. When a poor child has coffee and bread for breakfast, and tea and crackers for luncheon, and a large plate of soup (with the emphasis on the "large") and a piece of dry, flavorless beef besmeared with mustard or some other useless condiment for dinner, is it any wonder that in this wasting disease the tubercle bacilli are coaxed out from their dugouts and a most serious conflict ensues? This being so, our public schools should give a light, nutritious luncheon during the morning and afternoon recess periods to the tuberculous, and the anemic, and the underfed.

If ever an ounce of prevention was worth a pound of cure, it is worth that in our tuberculosis work. *The proper individual to begin with is the newly-born.* Indeed, it is well to begin with the fetus by instructing the mother in the hygiene of pregnancy and by explaining to her the value of certain pathological danger signals. Two centuries before the Christian era, the Emperor of China caused a collosal wall to be built along the entire length of the northern frontier of his country, in order to keep the Mongolian Tartars from invading his kingdom. But the formidable wall of Chi-hwang-ti accomplished nothing, for the Tartars invaded the country and spread destruction everywhere. In our tuberculosis work we, too, are endeavoring to build a wall—a wall of resistance—against one of the worst bands of marauders known to man—the tubercle bacilli. But this great wall will accomplish nothing, its masonry will crumble to the earth, and our efforts will be for naught if we delay our constructive work until the marauders have become too powerful for us. What has made malaria an infrequent disease? Surely not the tons of quinine that had been used, but the tons of dirt that had been dumped over the marsh lands. And so, what will it profit us in our tuberculosis propaganda if we arrest tuberculous lesions in the adult and fail to attack the mischief at its source? You have heard of the two Scotchmen, who, all breathless, reached the railroad station just as their train was pulling out. Malcolm turned to his comrade and said, "Donald, tha did na run fast enough." Whereupon Donald replied, "Ah did run fast enough, but ah didna start soon enough." And so in our tuberculosis work we may be displaying energy and enthusiasm enough, we may "run fast enough," but if we fail to begin with the infant then we "didna start soon enough," and, like the Scotchman in our story, we will miss something—in our case an opportunity to use one of the masterstrokes in prophylaxis. For to guard against the spread of tuberculosis we must prevent contact with individuals suffering from the disease.

Hess of New York says, "Unless the infection of young children is adequately guarded against, what basis is there for any hope of eradicating the disease in succeeding generations?" And he cuts the Gordian knot by advocating the establishment of tuberculosis preventoriums for infants. Fishberg

of Bellevue, writing in the *Archives of Pediatrics*, presents the following startling revelation: Among 588 apparently healthy children of *non*-tuberculous parentage, 52.72 per cent. gave a positive reaction to tuberculin:

Of those from 1- 2 years, 33% reacted positively,
Of those from 3- 4 years, 41% reacted positively,
Of those from 5- 6 years, 50% reacted positively,
Of those from 7-10 years, 64% reacted positively,
Of those from 11-14 years, 69% reacted positively,
and at 14 years, 75% reacted.

And according to Hamberger, 90 per cent. of all children become infected before reaching the twelfth year of life.

This leads us to the study of *infection*. It is no longer claimed that the bovine and human tubercle bacilli are identical. Baumgarten claims that at the present time the discussion centers about the point as to whether there are two different and separate species, or one species descended from a common ancestor, that has in the course of time acclimated itself in man and cattle and subsequently developed two different varieties with characteristic differences in morphology, in cultural peculiarities, and in virulence for rabbits. In the English translation of Pfaundler and Schlossman's voluminous work on Diseases of Children, Schlossman writes, "In tuberculous individuals the bovine type is found relatively seldom, and as yet *only in children under eight ears of age*." Of course, the greatest danger of infection by the bovine type lies in the use of milk from tuberculous cows and from dairy products such as cream, butter, cheese, and curds. Those of you who are familiar with the milking process in vogue in the ordinary unsanitary dairy, and have noticed the total absence of milk-cooling facilities, and have observed the milk can with its contents standing for hours in the sun, during which time millions of microorganisms were warmed into life, will agree with me that the infant using such milk has the sword of Damocles hanging over it. Reports from our laboratories tell us that tubercle bacilli are not killed by pasteurization. Boiling of the milk will be our best preventive. A. Philip Mitchell of Edinburgh found that in 90 per cent. of his cases of tuberculosis of the cervical glands infection was due to the bovine bacillus, and that 84 per cent. of these children had since birth been fed raw cow's milk.

Before discussing *the portals of entry*, it is well to heed the advice of Simon, and differentiate between an "infection" and an "infectious disease." An infection is the invasion of the body by a microorganism, while an infectious disease is the symptomatic, clinical manifestation of such an invasion. Four portals of infection are recognized: (1) the placentogenous form, (2) the dermatogenous, (3) the enterogenous, and (4) the bronchogenous. In the placentogenous form, infection of the fetus is said to occur through the placental blood circulation. It was Schmorl who published the first proof of the passage of tubercle bacilli from the maternal blood to the placenta, and from it into the fetal liver. Although there are several cases on record to prove placentogenous infection, and reported by men who can speak *ex cathedra*, this form of infection is, however, very rare. Furthermore, infection may occur through the aspiration of infected amniotic fluid. Ghon in Europe and Wollstein in America have shown that the bronchi become infected, when the infection extends to the lymph nodes at the hilum and to the lungs. Another investigator claims, through his experiments on animals, that tubercle bacilli can at the same time fecundate and infect an ovum. The dermatogenous form, like the form just mentioned, is very infrequent. Primary infection of the skin in a baby two months old has been reported, the child having been bitten on the cheek by a tuberculous nurse. Infection of the skin occurred and necropsy showed pulmonary involvement with cavity formation. The enterogenous form may be dismissed by giving the testimony of von Pirquet, who says that no characteristic lesion of primary intestinal tuberculosis has been found. But Osler mentions a series of 3104 cases of tuberculosis in children, with fifteen cases of primary intestinal tuberculosis. This leaves us the bronchogenous form, mentioned last in order to get the most emphasis. Von Pirquet has found that in 95 per cent. of all cases of tuberculosis, infection took place through inhalation. Baumgarten says that the tubercle bacillus has the property of latency, infection having occurred in infancy and the bacillus lying dormant for weeks, months, or even years. There is then a general mobilization of the fighting forces of the body, trenches are built before the enemy, our heaviest artillery holds the vantage ground and the forward movements of the foe adequately guarded against. But when the general is out-maneuvered, when there comes to pass a most successful flanking movement by a new enemy just arrived—let us call him "measles" or "pertussis"—the trenches are destroyed, the mobilized forces are routed, and when the smoke of battle lifts we stand appalled at the extent of the destruction that was wrought.

Rach, von Pirquet's assistant, has been able to isolate six types of pulmonary tuberculosis in children, arriving at this conclusion through his radiographic studies. These six types are: (1) Ghon's primary focus; (2) intumescent tuberculosis of bronchial glands; (3) intrapulmonary hilum tuberculosis; (4) miliary tuberculosis; (5) Nursling's phthisis, and (6) apex tuberculosis. For this classification I am indebted to Dr. Michael, who presents an exhaustive résumé of the subject in the *American Journal of Diseases of Children*. *Ghon's primary lesion* is a sharply defined bean-sized shadow found isolated and free in the pulmonary field, and at the same time showing an enlargement of the glands draining this area. Ghon's lesion may appear anywhere in the lung. *Intumescent tuberculosis of bronchial glands* produces a shadow to the right of the median shadow, the convexity extending upward, then running parallel to the median shadow, finally turning backward and again joining the median shadow. Their enlargement may produce pressure on neighboring structures. The glands become infected from a primary focus in the lungs as a result of inhalation, periadenitis with adhesions follows, the glands become attached to a neighboring bronchiole two or more tubercles coalesce, softening and caseation occur, the cheesy matter breaks through the wall of the bronchiole and is discharged into its lumen. This then may be aspirated into the finer bronchioles and eventuate in a caseous bronchopneumonia. *Intrapulmonary hilum tuberculosis* consists of caseated intrapulmonary glands in the vicinity of the hilum, and of caseated areas extending laterally from the hilum in streaks. These streaks are thickest in the region of the diseased glands, and become thinner and thinner as the periphery of the lung is approached.

In *miliary tuberculosis* the *x*-ray will give the characteristic picture weeks before clinical symptoms appear. In *nursling's phthisis* the *x*-ray shows numerous areas of caseous pneumonia with cavity formation. *Apical phthisis* is the same as seen in adults. It may begin as early as the seventh year.

We come now to the subject of *diagnosis*. Lees, writing in the *British Medical Journal*, says that accurate and careful percussion in the diagnosis of pulmonary diseases in children takes precedence over any other form of investigation. Goldschneider suggests a form of percussion which he uses in percussing the chests of infants. The finger is placed vertically on the infant's chest, and the distal phalanx percussed. The tracheobronchial lymphglands constitute the most common location of tuberculosis in children. I shall therefore limit my paper to this form. The two chief symptoms on which a diagnosis of enlarged glands is made are *cough* and *dyspnea*. The cough is brassy and nonproductive, and becomes more pronounced after an injection of tuberculin. The dyspnea is inspiratory and expiratory, the point of importance being that in spite of severe dyspnea the voice is clear, proving that the obstruction is below the larynx in the lower air passages. The danger signs—the "stop, look, listen"—that are suggestive of glandular involvement, are: (1) cough, (2) dyspnea, (3) failure to gain weight, (4) visible veins over chest, neck, and temples, (5) palpable glands, (6) *x*-ray findings, (7) reaction to tuberculin, (8) temperature changes, (9) history of exposure to infection. And in addition, I have gleaned the following from recent literature, and offer it to you for what it may be worth: (1) the lymphatic diathesis (the pasty look, swollen lips, thin nose, rhagades, swelling of lymphatic tissue, inflammation of the cornea, phlyctenular conjunctivitis, and catarrh of the upper air passages; (2) changes in the percussion note over the sternum at the level of the second or third rib; (3) relative lymphocytosis which can be increased by an injection of tuberculin; (4) d'Espine's sign; this consists of bronchophony over the spinous processes at a lower level than normal—at the seventh cervical in young children, at the first dorsal in those eight years old, and at the second dorsal in those twelve years old; (5) dullness on percussion in the right interscapular region; there exists normally on each side of the spine and extending for one inch from the midline and between the first and fifth dorsal vertebræ, an area of slightly impaired resonance elicited by gentle percussion, but which in cases of enlarged glands extends out for two or three inches from the midline and downward to the sixth, seventh, or eighth dorsal spine. Yet over against this mass of research, witness this pessimism of Henoch, who says, "can we diagnose the condition of bronchial glands during life by any definite symptoms? As far as my own experience goes, I must answer the question in the negative in the great majority of the cases. The clinical descriptions that authors give of glandular enlargement have the look of having originated in the study and not at the bedside." Commenting on Henoch's opinion, Clive Riviere says, "the *x*-ray has helped us some at present, but in the main Henoch's opinion still stands."

A word about *tuberculin* which, like the *x*-ray, may help us in diagnosis. In using von Pirquet's test the ordinary method of scarifying may produce a traumatic reaction which causes confusion in the proper interpretation of the reaction. Only the gentlest and mildest scarification should be used. If positive, a red papule will appear in from twenty-four to forty-eight hours, and which, in the course of a few days, will leave a pigmented area similar to the one following Schick's present-day test for diphtheritic immunity. Von Pirquet says that the reaction-area should measure from 10-30 mm. in diameter, and if it measures less than 5 mm. the reaction should be classed as doubtful. If negative, the test should be repeated again in three weeks. Clive Riviere says that the reaction will be negative in tuberculous cachexia, after treatment with tuberculin, and during acute infectious diseases such as measles and scarlet fever. A positive reaction is of little value after school age is reached. The younger the child the more valuable the positive reaction. A new test described by Blumenau is the *plaster test*, which I mention only because of its newness. The skin of the forearm is cleansed with ether, a drop of tuberculin is placed on the flexor surface near the bend of the elbow and covered with a piece of adhesive plaster 3 cm. square. The edge of the plaster is pressed down and care taken that the tuberculin does not run from under the plaster. In from twenty-four to forty-eight hours a characteristic eruption resembling a tuberculide appears if the reaction is mild, and rose-red papules capped with vesicles or nodules appear if the reaction is intense. This test resembles the Moro test, and the author claims that it is just as sensitive as the von Pirquet. The percutaneous test of Moro is less sensitive than the von Pirquet and inferior to it. The test "par excellence" is the subcutaneous tuberculin test. Small (decimilligram) doses should be used. Three reactions should be noted: viz., the general, local, and focal. The general reaction consists of a rise in temperature, headache, malaise, chilliness, and even nausea and vomiting. The temperature should be taken every four hours for three days preceding the injection, and every two hours following the injection. A slight and temporary rise of temperature may not be observed if the thermometer is used only every four hours; and a dangerous focal reaction may result from a second larger dose. One must remember that in active tuberculosis tuberculin is a powerful poison and should be handled as cautiously as the poisonous alkaloids. A rise of at least 1° Fahrenheit is considered a positive reaction. Recent and active disease responds promptly to small doses. The local reaction is that usually seen at the site of a subcutaneous injection of any substance. The most valuable sign is the *focal reaction*. This consists of increased cough and expectoration, pain or feeling of oppression in the chest, breathlessness, an appearance of râles if previously absent, or an increase of râles if already present, and tubercle baccili previously absent may appear in the sputum. This reaction is specific for only a tuberculous focus can attract tuberculin and react to it in this way. Under contraindications to the use of tuberculin Riviere mentions the presence of fever, obvious phthisis, recent hemoptysis, recent severe illness, advanced arteriosclerosis, kidney disease, myocarditis, and epilepsy.

If in this paper I have succeeded in convincing you of the child's exalted place in the present era, and of the precedence that prophylaxis must take in our tuberculosis work, and of the diagnostic pitfalls that we may meet, then my effort has not been in vain, and I am sufficiently rewarded.

25 West Twenty-sixth Street.

THE INFLUENCE OF AUTOLYTIC PRODUCTS ON TUMOR GROWTH.

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FROM COLUMBIA UNIVERSITY, GEORGE CROCKER SPECIAL RESEARCH FUND, F. C. WOOD, DIRECTOR.

While the authors do not believe in the curative effects of autolytic cell products on tumors, so many supposed beneficial results have been reported by C. Lewin,[1] I. Levin,[2] Blumenthal,[3] Fichera,[4] and others, that further investigation of the subject, in order to determine whether any of the individual products have any curative effects, seems warranted.

Theoretically the results of treatment with autolysates may be due either to the intracellular enzymes concerned in the process of antolysis or to the chemical products of autolysis. We have restricted ourselves in our experiments to the chemical products, of which thirty-three different ones have been studied.

Crocker tumor No. 180, an invasive rapidly growing medullary carcinoma, was the neoplasm used. Fourteen days after subcutaneous tumor inoculation, mice in groups of ten were given daily injections of one-fourth c.c. of one per cent. solution or suspension of one of the various products (a dosage equal to nine gms. per diem for a 150 pound man). These injections were given subcutaneously in a region of the body remote from the tumor, and were continued for fourteen days. At the end of this period of observation the mice were killed and several tumors of each group were examined microscopically.

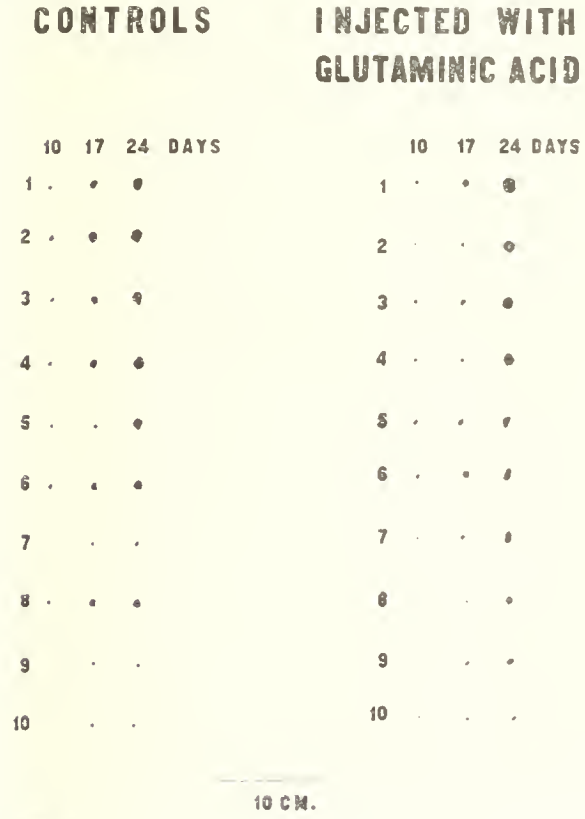
As will be noted in the table, with the exception of nucleinic acid from animal cells and phenylalanin, none of the various groups showed any variation from the normal course of growth. The typical course as observed in all of the other groups is well illustrated by the behavior of the group injected with glutaminic acid (see chart). Microscopically no changes were observed in the treated groups which were not also observed in the controls.

Effect on Tumor Growth

Chemical	Bigger	Stationary	Smaller	Disappeared	Number of Animals	Died
Controls	37	3	0	0	47	7
Alanin	10	0	0	0	10	0
Alloxantin	9	0	0	0	10	1
Amidoacetic Acid	8	1	1	0	10	0
Amidobutyric Acid	9	1	0	0	10	0
Asparagin	7	2	0	0	10	1
Aspartic Acid	8	1	0	0	10	1
Cholesterine	9	0	0	0	10	1
Creatin	6	1	0	0	10	3
Cystine	9	1	0	0	10	0
Dextrine	8	1	0	0	10	1
Glutaminic Acid	10	0	0	0	10	0
Glycocoll	8	1	0	0	10	1
Glycogen	9	0	0	0	10	1
Guanine	8	1	0	0	10	1
Guanine Hydrochloride	5	0	0	0	10	5
Guanine Sulphate	8	0	0	0	10	2
Guanosin	6	0	0	0	10	4
Hypoxanthin	8	1	0	0	10	1
Inosite	8	0	0	0	10	2
Leucin	8	0	0	0	10	2
Methylglycin	8	0	0	0	10	2
Nucleinic Acid (Animal)	7	3	0	0	10	3
Nucleinic Acid (Yeast)	8	0	0	0	10	2
Phenylalanin	5	3	2	0	10	0
Skatol	7	0	0	0	10	3
Sodium Amido formate	9	1	0	0	10	0
Sodium Hippurate	8	1	0	0	10	1
Sodium Urate	8	1	0	0	10	1
Thymine	10	0	0	0	10	0
Tyrosin	10	0	0	0	10	0
Urea	10	0	0	0	10	0
Uric Acid	8	2	0	0	10	0
Xanthin	9	1	0	0	10	0

Inasmuch as one of the substances (nucleinic acid) which showed a very slight retarding influence (an influence, by the way, which is so small that it may be disregarded), has been recommended as a cancer cure, it was determined to repeat the experiment using the two products nucleinic acid and phenylalanin on a larger (40 to the group) number of animals. With the use of larger numbers the supposed retarding influence disappeared, showing again the fallacy of regarding slight variations in small numbers of animals as of any importance.

A final series of twenty-four animals was treated with protonuclein. Twelve of these animals were given daily injections of one-fourth c.c. of a quarter-of-one per cent. solution, the remaining twelve being given four times that dose, amounts equivalent to 2.25 and 9 gms. respectively, for a human adult weighing 150 pounds. After the third injection, seven of the twelve animals receiving the larger dose died suddenly in what appeared to be anaphylactic shock. The animals surviving the course of two weeks' treatment, nineteen in all, showed no difference in growth as compared with the control group.



Minor variations, or even differences of 10 to 20 per cent. in small groups of treated animals, are due to accidental and uncontrollable variations in the growth of neoplasm. This factor of error can be eliminated only by the employment of a much larger number of animals than are recorded in any of the published papers. A full knowledge of the biology of the tumor used is also necessary. Thus it has been shown (Wood and McLean[5]) that while one investigator has reported cures with a certain therapeusis using the Buffalo rat sarcoma, his deductions are faulty in that the tumor in question spontaneously recedes in from 5 to 40 per cent. of all inoculated animals. Variations in the rate of tumor growth occur also in parallel series of animals from the same source and under exactly similar conditions of inoculation site, dose of tumor, food, and

age of the animals. Unwarranted conclusions are too often announced because these facts are either not common knowledge, or, being known, are blithely disregarded.

Our experiments fail to show any inhibition of tumor growth when the chemical products of autolysis are used. In particular, nucleinic acid, derived from animals cells, and protonuclein are without effect on the malignant tumors of mice; their therapeutic use, therefore, in human cases can be expected to produce nothing but the psychic exaltation common to the use of every new remedy.

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THE HIGH CALORY DIET IN TYPHOID FEVER.*

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The progress of the science and art of internal medicine in the last few decades, and the application of modern knowledge to the management of infectious diseases, are in many instances equally radical, though perhaps less striking than the brilliant results achieved by contemporaneous surgery.

A good example is afforded by the high calory diet in typhoid fever, a drastic departure from the starvation method which not so long ago was considered as inseparable from the therapeutics of fevers in general, and enteric fever in particular. We have since learned that in disease no less than in health, the body requires an uninterrupted replenishment of its protein store.

Briefly sketched, the dietary history of typhoid fever is as follows: Eighty years ago, carbohydrate water, jelly, and broths were advocated by Graves. In the seventies of the last century, two quarts of milk made the daily menu for Austin Flint's patients. No dissenting voice was raised against an exclusive milk diet in typhoid fever until Shattuck, in 1897, advocated more liberal feeding, as he found no greater frequency of perforation or intestinal hemorrhage on a high than on a low calory diet in this disease. By a high calory diet is meant one of 4,000 to 6,000 calories daily, a considerable increase over and above the 1400 calories which were regarded as sufficient by Austin Flint.

The matter of feeding in typhoid fever was placed on a scientific basis in 1909, when the investigations of Shaffer and Coleman showed that the loss of protein, connected with the fever and inseparable from all the old restricted diets, can be lessened or altogether avoided, by means of a carefully selected diet of easily digested foods, notably carbohydrates, which protect the body-protein better than any other food. One of the chief objections against the high calory diet was removed when von Hoesslier showed that its use does not increase the temperature in typhoid fever.

At the time of its first introduction, the high calory diet aimed at supplying typhoid fever patients with the same food values as needed by a healthy person. Schottmüller, in Germany, now fixes the daily allowance at 130 to 150 g. of albumin, in typhoid fever; healthy persons require only about 60 g., as a little more than double that amount is needed to balance the disintegration-processes of typhoid fever. The body-albumin is indirectly protected against combustion by an abundant intake of carbohydrates, sugar, and flour. Approximately 40 calories per kilo of body-weight is a reasonable calculation.

The investigations of Du Bois have shown that contrary to expectations, the typhoid patient is perfectly capable of digesting and absorbing a high calory diet. At the present time the capacity of the gastrointestinal tract in fever to digest an abundant mixed diet is no longer doubted.

The absorption of fats is alone disturbed in the first stage of the disease, according to the findings of Du Bois. The normal course of digestion in typhoid fever is illustrated by the entirely normal appearance of the stools. There is less diarrhea with a mixed high calory diet than when fluids alone are given. Recent findings have shown that no more than 5 per cent. of the calories ingested is lost in the feces.

It is the aim and object of the high calory diet to protect the body against excessive loss in weight until the disease has either run its natural course or been cut short by measures of immunization. The importance of an abundant supply of carbohydrates is especially emphasized by all the advocates of the method, both in this country and abroad. Barrs, in England, and von Müller, in Munich, are leading foreign exponents of the high calory treatment, in form of a mixed diet, for typhoid patients. The plan is widely adopted in Russia.

The prevention and control of typhoid fever is one of the urgent problems of modern warfare. Writing from the seat of war, Dr. Romberg (of the First Medical Clinic, in Munich) emphasizes the decisive importance of a liberal diet, *i.e.* high calory feeding, from the very first day of the disease. He says that at least 30 to 50 calories per kilo of body-weight should be given every day. The failure of the general circulation in these cases is often merely the result of insufficient nutrition, not of the disease itself. Bedsores and furunculosis are likewise referable to under-feeding. The diet especially recommended by him consists of 2 to 2½ liters milk, ¼ liter cream, four to five eggs, porridges sweetened with lactose, on account of the liability of cane sugar to ferment. There is no objection against giving tender meats, scraped or minced, creamed toast, mashed potatoes, or purées of green vegetables. All these foods are transformed in the intestine into bland and innocuous chyme.

It is sometimes claimed that the high calory diet has substituted the classical milk menu of these patients, but this is not strictly true, in so far as milk forms the basis of the high calory feeding and can be exclusively given in the early stage of severe cases, up to an amount of 3,000 calories. In a case of well-marked anorexia, it may not be possible to persuade the patient to partake of other than liquid food, during the first week or two. Soups and porridges, prepared with 100 g. farina, rice,

*Read at the annual meeting of the Hartford County (Conn.) Medical Society, April 6, 1915.

oats, sage, or tapioca, are then in order. Other articles of food are gradually added, such as buttered toast, scrambled eggs, junket and custards, cereals, mashed potatoes, apple sauce, etc., until about 4,500 calories are reached, which is usually a sufficient quantity to offset the loss in weight due to the fever itself and the toxic disturbances in its train. In the steep curve period, and during convalescence, as pointed out by Coleman, patients take readily from 4,000 to 6,000 calories daily. Still higher feedings are sometimes advantageous. In his experience of over one hundred cases, the high calory diet apparently modified the course of the disease, shortened convalescence, and reduced the mortality. The incidence of hemorrhage and perforation was lessened.

The fear has thus been shown to be ungrounded that a solid diet, especially meat, might cause mechanical irritation of the ulcers, thereby favoring intestinal hemorrhage and perforation-peritonitis. The frequency of relapses is not in any way affected by the dietary régime of typhoid fever cases. A recurrence is now known to be a reinfection of the mesenteric lymphatic apparatus of the bowel, associated with a general infection of the blood.

In view of the fact that the infection originates from the lymph-vessels, but not from the intestinal epithelium, it is not likely that the passage of normal chyme through the ileum favors the onset of these recurrences. This is borne out by the findings of Kinnicutt, who analyzed 600 cases of typhoid fever, fed on a liberal diet, and noted that the number of relapses was not increased, while there was less hemorrhage and perforation than under the old method of treatment.

In describing the clinical picture of typhoid fever, as governed by the diet of the patient, Rajewski (1913) states that no bad results were observed to follow upon a solid diet. His observations were made upon 864 patients, who were kept on a diet of milk, meat, eggs, and white bread. Complications followed in 492 of these cases, primarily of the respiratory organs. Bedsores occurred less frequently than otherwise. The average duration of the disease was thirty days. The mortality amounted to 10.3 per cent., increasing with the patient's age and with the time which had elapsed between the onset of the disease and the day of admission to the hospital.

Recent very exhaustive studies of the influence on the high calory diet on the respiratory exchange in typhoid fever lead Coleman and Du Bois to the conclusion that the large amount of food administered exhibits no specific dynamic action, thus removing the chief theoretical objection to the use of a liberal diet in typhoid fever. Their observation of a sharp rise in the level of the respiratory quotients during the last days of the fever, in the majority of high calory patients, leads them to the interesting interpretation of this rise as marking the onset of regenerative processes, *i.e.* the beginning of convalescence, before the temperature has become normal.

Advantages of a Mixed Diet.—The patient is protected against inanition and progressive loss of strength, a fact which acquires special importance in the troublesome cases running a protracted course with repeated exacerbations and relapses. The organism which does not lose in weight becomes automatically more resistant, and develops an increased capacity for the formation of antibodies. Undoubtedly, a mixed and liberal diet tends to raise the general resistando, and thereby lessens the liability to secondary infections. Sicard, from an analysis of 29 cases occurring in the second division of Bellevue Hospital during the summers of 1911 and 1912 concludes that the most evident features of the high calory feeding are the maintenance of weight and nutrition, the appeasing of hunger, and the lessened tedium of convalescence.

A practical point worth remembering is that about three tablespoonfuls of granulated sugar, mixed with the liquid food, equal the addition of 50 g. to the diet.

There are certain disadvantages connected with a purely liquid diet which were not always taken into proper consideration when mapping out the dietary régime of a protracted disease, such as typhoid fever. The high calory diet does not tax the heart by an excessive amount of fluid, two liters being amply sufficient under a mixed diet, while nearly twice as much was formerly found necessary to maintain the patient's nutrition on an exclusively liquid diet. These large quantities of fluid were apt to favor the development of edema, in cases with a weakened heart-action. A minor although by no means negligible advantage of the full diet in typhoid fever is the resulting improved condition of the patient's mouth, tongue, and teeth, brought about by the act of chewing.

Following a safe medium course in prescribing the dietary of a given case of typhoid fever, it is advisable to adhere to the rule of Forchheimer, that every patient having the disease should be fed with reference to his digestive power, with exclusion of such articles as in themselves or in their residue may be irritating to the raw surface of the gut or may produce undue peristalsis. As to the amount of food to be given, so as to achieve the best results, conditions vary in individual cases, each patient being a law unto himself. The desire for nourishment, and the benefit obtained therefrom in form of added pounds to the patient's weight, are reliable guides in this respect. Not the disease, but the patient, must be the first care of the clinician, for individualization, based on scrupulous attention to detail, is the master-key to success in the dietetic treatment of typhoid fever as throughout the domain of internal medicine.

173 Main Street.

Esophageal Stenosis Following Typhoid Fever.—H. H. Grant reports two cases of this condition. One of the patients was a boy thirteen years of age who had had typhoid fever two months previously. At one time there had been considerable hemorrhage from the mouth. There had been frequent vomiting. Three weeks after recovery the patient first experienced difficulty in swallowing solid food. This gradually increased until no solids could be taken. Later practically nothing could be gotten into the stomach. The emaciation and exhaustion became so marked that gastrostomy was imperative as a life-saving measure. *X*-ray examination showed the site of constriction near the cricoid cartilage. At the preliminary operation the stomach was simply brought into the incision and anchored. The next day the stomach was opened and a tube inserted. Since then the patient has been nourished through this tube. The second case reported is that of a man who experienced difficulty in deglutition after recovery from a severe attack of typhoid fever. With the use of dilating bougies the lumen of the esophagus was practically restored in about three weeks.—*Pediatrics.*

MEDICAL RECORD.

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A NEW THEORY OF THE CAUSE OF ENTEROSTASIS.

INTESTINAL stasis has been much before the medical profession and the public during recent years, owing largely to the very active propagation of his views by Sir Arbuthnot Lane and his followers. Both in Great Britain and in this country, however, a large number of medical practitioners have dissented from Lane's theory of the cause of intestinal stasis, some partly and others wholly, and the question has been made one for vehement discussion. A new view of intestinal stasis has been lately put forward by Dr. Arthur Keith, Conservator of the Museum of the Royal College of Surgeons, England, who took as his subject for the Cavendish lecture which he delivered this year a new theory of the causation of what he terms enterostasis (*West London Medical Journal*, July, 1915).

In this lecture Keith first pointed out the extent to which our knowledge of the living human body had been revolutionized by the discovery and application of the Roentgen rays. He found that an account published four years ago by L. R. Müller on the innervation of the bowel, states definitely that the myenteric plexus differs from a true nerve plexus both in structure and in staining reaction. He therefore adopted the working hypothesis that the myenteric plexus represents a nodal and conducting system. He says that, if he is right in presuming that the myenteric plexus represents in the intestine a system which corresponds to the nodal and conducting system of the heart, then it is also to be expected that both systems should be developed in a corresponding manner. The other parts of the alimentary canal where peristaltic movements are known to arise were examined carefully without results, and then the various sphincteric regions of the alimentary tract were examined and the conclusion was reached that there was such a nodal center at the gastroesophageal junction of the mammalian stomach.

When Keith's search for a nodal system along the alimentary canal had reached an encouraging stage he visited Dr. W. B. Cannon in his laboratory at Harvard University, who told him that Alvarez had lately discovered that the commencement of the second part of the duodenum dominated the rhythm for the whole duodenal loop. When the duodenal loop was cut out in segments and each segment kept alive in Locke's solution the rhythm or beat was fastest in the segment from the commencement of the second part and slowest in the segment from the end of the loop. On Keith's theory the upper segment had the greater amount of nodal tissue and was therefore the pacemaker of the duodenal rhythm. Alvarez found that the first segment of the jejunum had a slightly higher or faster rhythm than the last part of the duodenum, but that from the first part of the jejunum to almost the last part of the ileum the rate of rhythm decreased. At the last part of the ileum, if a piece of the ileocecal junction were left attached to it, the rate actually increased; but only if the ileocecal junction were left attached. This was explicable if Keith was right in regarding the ileocecal collar as a nodal center, as a pacemaker for the cecum and ascending colon.

Keith does not think either mechanical conditions or even derangements of sphincteric mechanisms can give an adequate explanation of all the phenomena of enterostasis. But when we transfer from the heart to the alimentary tract not only the anatomical and physiological data relating to its nodal and conducting system, but also our knowledge of cardiac pathology of heart block, or auricular fibrillation, of extra systole, and of delay in conduction, we seem to reach a more rational explanation of the motor derangements of the alimentary tract.

Keith does not agree with Lane in his explanation of enterostasis as the "drag, band, and kink" theory. In the first place Keith brings into the foreground the musculature of the alimentary tract, which is recognized at the sole propelling power in the intestinal wall. In Lane's theory a defect in the musculature of the bowel takes a very minor part in the causation of stasis. Further, Keith is of the opinion that his theory is the more in harmony with the appearances observed by clinicians and pathologists, and because it rests on a better basis of anatomical and physiological fact, he believes it will finally be accepted.

DYSPNEA AND ITS RELATION TO BLOOD REACTION.

IN 1913 Lewis, Ruffel, Wolf, Colton, and Barcroft described a peculiar symptom complex associated with reduced alkalinity of the blood occurring in elderly subjects. This symptom complex comprises continuous dypsnea, often intensified for short periods, especially at night; good or fair blood aeration as judged by the absence of cyanosis; Cheyne-Stokes breathing, with or without full apneic periods; an increase of pulse rate (80-100 per minute), and a subnormal temperature. This syndrome may be associated with uremic or cardiac manifestations, but the association is not a necessary one.

In a series of further observations upon this subject, Thomas Lewis and Joseph Barcroft (*Quarterly Journal of Medicine*, January, 1915), note that only in rare instances can the above symptom complex be recognized owing to the accompanying conditions—cardiac, renal, or respiratory—to which the dyspnea is usually attributed. In the later series of

cases the authors have studied the blood "acidosis," *i.e.* the excess of acid, exclusive of CO_2, in the blood as compared with the bases present, this acidity being determined by the percentage of saturation of the blood with oxygen when exposed at 37 deg. C. to 17 mm. pressure of that gas. The percentage of saturation of normal blood when exposed to the pressure is 75 to 80. In proportion as the quantity of acids relative to bases is excessive, the percentage saturation drops.

The fact that the dyspnea usually occurs in patients with cardiovascular or renal disease is apt to point to either of the latter as the cause. Nevertheless, the dyspnea may be out of all proportion to the degree of cardiovascular or renal impairment and the evidence of acidosis may be so pronounced as to leave little doubt that the latter is the actual cause. These facts are illustrated in the cases reported. In one of these a man fifty-three years old with signs of myocardial and renal disease suffered from nocturnal attacks of dyspnea; on two occasions there was distinct evidence of blood acidosis. Another man, aged forty-seven years, with cardiovascular disease, had dyspnea on exertion and nocturnal angina pectoris; acidosis was found. Four other cases are cited to illustrate the same association. Aortic disease was present in two of these cases, in one of which an aneurysm was also present.

Cases of heart disease are roughly divided into two classes. The first includes the relatively simple cases, in which, although cyanosis may be present, there is but little dyspnea. In these there is no acidosis. To the second class belong those cases of heart failure in middle-aged or elderly subjects in which acidosis is a frequent accompaniment, and in which the dyspnea is pronounced and persistent. The rôle of the kidney in the production of dyspnea in cases in which manifest disease of this organ is present is as yet veiled in obscurity. At any rate the reduced alkalinity of the blood as demonstrated in these cases leaves little doubt that this reduced alkalinity is an important factor in the production of the dyspnea. The suggestion is made that in the cases of acidosis one is dealing with a changed metabolism as profound in its symptomatic effects as is the altered metabolism of diabetes, and of greater consequence than the latter because so much commoner.

There are cases of dyspnea attributed to mechanical causes, in which cases, however, analysis of the blood shows that acidosis plays an important part in the causation. In this connection the important observation is made that in acute pneumonia there is present an acidosis during the febrile stage of the disease and for some time after the crisis, disappearing hand in hand with the breathlessness during convalescence. A case of exceptional interest is reported in which paroxysmal dyspnea, occurring in a man with signs of cardiac and renal involvement with aortic aneurysm, was associated with an exaggerated acidosis during the attack. In this instance the paroxysm of breathlessness may have been due chiefly if not entirely to a sudden flooding of the system with acid products.

THE AUTOMOBILE AND ITS DRIVER.

THE increasing use of the automobile, both for pleasure and for profit, has been accompanied by a far greater proportionate increase in the number of casualties incident to this mode of transit. Public authorities are beginning to awaken to the need of a more strict supervision of automobile traffic. The ordinances and regulations now in force are grossly inadequate in controlling incompetent and reckless driving. An absurd inconsistency exists in the law and practice in New York which requires an examination of the applicant for the chauffeur's license and at the same time exempts from examination the owner or private individual who drives his own car. An irresponsible youth or reckless schoolgirl may drive unmolested through the congested streets of a city or may speed unhampered along the country roads. The toll of severe injuries and deaths reported in the daily papers mark the lack of restraint upon this serious menace of public safety.

In checking this evil a number of measures are already operative. The fining and even the imprisonment of offenders are but poor deterrents. An educational campaign has been inaugurated by railroads, of course for their own interest primarily, in the use of "safety first" signs and warning bulletins. Societies of public safety have been organized. One of these in New York City has recently advocated the periodical inspection of all motor cars so that those with defective brakes, signals, lights, etc., may be barred from the streets and roads. This is an excellent measure for there can be no doubt that a fairly large percentage of all motor accidents are the results of defects in machinery, the consequence partly of cheap construction and partly of inefficient care by the owner. A far more important provision, however, would be the examination of the driver himself, not only as to his knowledge of the mechanism of the car, but also as to his ability to drive safely. All owners and drivers should be licensed, and, as has been the practice in Berlin for some time, no license should be issued until the applicant has demonstrated to the official accompanying him that he has the proper qualifications.

This leads to the subject that brings automobile driving within the sphere of interest of the medical man, himself an ardent devotee of the cult, namely, the psychology of the driver. As long as the automobile is a toy the owner will assume these personal risks that are inherent in all sports, with the exception, however, in this particular case, that the life and limb of individuals not partaking of this sport are seriously endangered. The pleasurable sensation associated with the smooth and rapid progression of the automobile tends to relax those psychic inhibitions that are an essential in all human pursuits. Hence the "mental brakes" are often at fault. If the driver is defective in his psychic makeup the recurrence of accidents befalling the same driver would apparently point to this deficiency—there is demonstrated a woeful weakness in the mental brakes. Another shortcoming is a lack of presence of mind. It is possible with

the simple tests of the psychological laboratory to determine the so-called "reaction-time" of the individual. His mode of reacting to various signals can thus be readily determined. If his response is slow or incorrect his obvious unfitness as a driver can be determined.

The fact that a large proportion of automobile accidents occur after "dining out" suggests the undoubted rôle of alcoholic stimulation in removing the restraining influence of prudence and caution. The exhilaration produced by an amount of alcohol that would not ordinarily intoxicate may be sufficient to transform a cautious driver into an unsafe and dangerous one. The effect of physical and mental fatigue in removing the barrier of wise mental restraint is almost too obvious to require comment.

To sum up, safe automobile driving requires sane laws and their efficient enforcement, a safe car, and a clear-headed driver.

THE PRACTICAL USE OF DISINFECTANTS.

After the discovery that many diseases are communicable, that is to say caused by the action of specific organisms of the most minute size, which have taken up their abode as parasites in the body of man or other members of the animal kingdom, disinfectants came into intelligent employment.

In *Public Health Reports*, July 9, 1915, H. E. Hasseltine, Passed Assistant Surgeon, U. S. Public Health Service, writes on the above subject. He points out that the ancients used heat and sulphur for purposes probably more or less allied to the disinfection of the present day, but the rational use of disinfectants did not begin until the early eighties, when bacteriology became a field for scientific work. Since that time they have been much used and much abused. Too much altogether has been claimed for disinfectants, and, as Hasseltine says, there are two terms often used synonymously, viz., disinfection and fumigation, but while they may be synonymous in certain cases, they are not necessarily so. To disinfect is to free from infectious or contagious matter, to make innocuous. To fumigate is to apply smoke, gas, or vapor.

Briefly summarized, the points emphasized by the writer are: (1) Disinfecting procedures, properly applied, have an important part in the prevention of communicable diseases. (2) Their efficiency decreases as the distance between the place of origin of the infection, the patient, and the point of their application is increased. (3) Natural disinfection, or the destruction of infection by processes of nature, increases in efficiency in direct proportion to the length of time and the degree to which the processes, drying, sunlight, etc., are allowed to act. (4) The point at which natural disinfection becomes sufficiently nearly complete to warrant the discontinuance of terminal disinfection should be determined under more exact conditions than have obtained in the past. (5) The choice of disinfectants must be made with due consideration of conditions, always bearing in mind that a good mechanical cleansing is one of the efficient means of disinfection. For gaseous disinfection formaldehyde, evolved by the formalin permanganate method under proper conditions of temperature and moisture, is the simple and most efficient method. (6) Control tests should be used to check the efficiency of disinfection. (7) Though the results obtained in some cities since abandoning terminal disinfection after certain diseases seem to show that heretofore much useless disinfection has been done, it is not felt that the evidence thus far adduced fully justifies its discontinuance.

A New Microorganism Causing Pulmonary Abscess.

This finding is reported by A. Josefson and L. Bladini in the *Beiträge zur Klinik der Infektionskrankheiten und zur Immunitätsforschung*, Vol. IV, No. 1. The microorganism was isolated from the pleural and pulmonary exudate in a man who had been admitted to the Royal Seraphim Hospital of Stockholm with the diagnosis of pleuropneumonia. Exploratory puncture of the left pleural cavity showed the presence of a thick, foul-smelling fluid of a sanguinolent color. At operation when rib-resection was performed the abscess cavity in the pleural space was found to communicate with an abscess in the lung, which was apparently the primary disease process and which had perforated into the pleural space. Patient recovered. Bacteriological examination of the germ isolated showed a gram-negative, capsule-bearing bacillus which was easily cultured. It was highly pathogenic for mice and, after four successive passages through these animals, also pathogenic for rabbits. In these instances the germ caused subcutaneous abscesses and after intratracheal injection, abscesses in the lungs. In one case a bacteriemia was demonstrated after an intratracheal injection was given. The new bacterium apparently belongs to the same group as the so-called Friedländer pneumobacillus. It differs from the latter microorganism in its appearance, and also in the fact that it is pathogenic for the rabbit. An important tinctorial reaction is perceived in the staining of the new bacillus blue by means of iodine, a property also shared by a leptothrix isolated from the lung by Leyden and Jaffé. In both instances, however, this peculiar staining property disappears in pure cultures.

Recent Views of Arteriosclerosis.

Among the revolutionary advances in our knowledge of arteriosclerosis must be reckoned the separation by Heller and his disciples of syphilitic endarteritis from arteriosclerosis. Not less important is the work of Jores in proving that so-called primary atheroma of the intima and arteriosclerosis are two phases of one process and not, as Virchow taught, separate affections. Aschoff, Benda, and others have shown in connection with child and animal (experimental) arteriosclerosis that fatty degeneration of the intima represents the début of the process. At a session last winter of the United Berlin Medical Societies (*Deutsche medizinische Wochenschrift*, May 13) Benda, in discussing a paper by Klemperer on arteriosclerosis, summed up the preceding statements. He added that very recently his pupil Fricke had succeeded in producing a typical "human" arteriosclerosis in a rabbit.

Various microscopic sections illustrated the crucial fact that fatty degeneration had occurred in tissues which had not been the seat of previous inflammatory proliferation. Such a find strengthens the belief in the toxic nature of the affection. Other factors might be required to explain the localization—which doubtless corresponds to the site of least resistance—such as functional strain and alimentary insults.

News of the Week.

Committee of American Physicians for the Aid of the Belgian Profession.—Dr. F. F. Simpson, treasurer, 7048 Jenkins Arcade Building, Pittsburgh, Pa., reports the receipt of the following contributions for the week ending July 31, 1915:

Washington County (Ark.) Medical Society, Fayetteville, Ark.		$ 14.00
Dr. J. F. Pressley, San Francisco, Cal.		5.00
Receipts for the week ending July 31st		$ 19.00
Previously reported receipts		7,750.84
Total Receipts		$7,769.84
Previously reported disbursements:		
1,625 Standard Boxes of Food @	$2.20..	$3,575.00
1,274 Standard Boxes of Food @	2.30..	2,930.20
353 Standard Boxes of Food @	2.28..	804.84
Total Disbursements		7,310.04
Balance		$ 459.80

Aid for Blinded Soldiers.—Miss Winifred Holt, who established "The Lighthouse," an institution for the aid of the blind in this city, sailed for Europe some time ago to organize a movement to aid the many soldiers blinded in the present war. She has opened a "Lighthouse" at Bordeaux, the first of several to be operated on the same lines as the one in New York. The official name of the Bordeaux institution is "Le Phare de Bordeaux pour les Matelots et Soldats Aveuglés sur le Champ d'Honneur." The enterprise has the enthusiastic support of the French military authorities and hospital officials. An American committee has been organized to attend to the financial end of the enterprise. It is known as the Committee for Men Blinded in Battle.

Winding Up the Typhus Campaign in Serbia.—The American Red Cross announces that Dr. Richard P. Strong, chief surgeon of the International Health Board at Nish, Serbia, had cabled that with $20,000 additional at his command he can finally free Serbia entirely of typhus and other epidemic diseases and put the country on a thoroughly sanitary basis. The money has been transmitted to Dr. Strong, $10,000 being donated by the Rockefeller Foundation and $10,000 by the Red Cross.

Recall of the Red Cross Units.—American Red Cross surgeons and nurses will be withdrawn from the European battlefield on October 1, because of lack of funds to maintain them longer at their stations. It is possible that the two units in Belgium, where the greatest need exists, will be continued, but the other fourteen detachments will return to the United States.

Award of the French Military Cross to an American Physician.—Dr. Richard Norton of Cambridge, Mass., founder of the American Volunteer Ambulance Corps, has been awarded the French military cross known as the "Croix de Guerre," for bravery in his work among the wounded on the battlefield. The Government, in sending him the decoration, stated that the cross was given "in token of his great bravery," especially for his heroic work in rescuing the wounded during the evacuation of a village within 500 metres of the lines of the enemy.

Death Rate in New York.—During the week ending July 24 there were 1,299 deaths reported in New York City with a rate of 11.67 per 1,000, as compared with 1,331 deaths and a rate of 12.44 during the corresponding week of 1914, a decrease in the absolute number of deaths of 32 and a decrease in the rate of .77 of a point, equivalent to a relative decrease of 86 deaths.

Death Rate in Chicago.—During the week ending July 24 there were 504 deaths in Chicago, giving a death rate 10.8 per 1,000, as compared with 12.5 during the preceding week and 14.8 during the corresponding week of 1914.

Child Labor in New York City.—According to law no child under the age of sixteen may be employed in any factory or mercantile establishment without having first secured a permit issued by the Department of Health. In order to obtain such papers the law requires that the child present a certificate of having reached at least Grade 7A in school. In addition to this, the child must pass a physical examination conducted by the Department of Health. During the quarter ending June 30, 1915, 10,606 permits were issued and 488 were refused. The total number of physical examinations made were 11,468.

Registration of Osteopaths Under the Harrison Law.—Federal regulations under the Harrison antidrug law have been changed recently to permit registry of osteopaths so they may administer drugs in states where they are registered by law as practitioners.

The Corinna Borden Keen Fellowship.—Dr. W. W. Keen has established a fellowship with this designation in the Jefferson Medical College, Philadelphia. The recipient of the fellowship, the income from which is $1,000, must study at least one year in Europe, America, or wherever he can obtain the best facilities for research in the line of work he shall select, after consultation with the Faculty, and must publish at least one paper embodying the results of his work as the "Corinna Borden Keen Research Fellow of The Jefferson Medical College." Application stating the line of investigation which the candidate desires to follow, to Dr. Ross V. Patterson, Jefferson Medical College, Philadelphia, Pa.

Pellagra.—At a recent meeting of the Louisiana State Board of Health Dr. Joseph Goldberger of the U. S. Public Health Service presented a report on pellagra, which stated that the disease is neither infectious nor contagious, but is purely and simply a dietary disease, due to a lack of animal proteins in the ration. It is not necessarily an unbalanced diet in the conventional sense, but a diet that lacks some essential constituent. Dr. W. P. Tucker of Nashville and Marcus Haase of Memphis agreed with Dr. Goldberger. They both stated that medical treatment had been eliminated in the hospitals under their control and excellent results were being achieved with a diet treatment. A rich full diet and cheerful surroundings were all that was needed, they held, to cure the disease. These views were also supported by Dr. Clarence Pierson, superintendent of the Jackson Insane Asylum.

New York and New England Association of Railway Surgeons.—The twenty-fifth annual session of this association, celebrating the quarter century anniversary of the organization of the association, will be held at Hotel Astor, New York City, Octo-

ber 21, 1915, under the presidency of Dr. W. H. Marcy of Buffalo, N. Y. A very interesting and attractive program has been arranged. Railway surgeons, attorneys, and officials and all members of the medical profession are cordially invited to attend. Further information may be obtained from the secretary, Dr. George Chaffee, 338 Forty-seventh street, Brooklyn, N. Y.

A State Board for Care of the Feebleminded.—Dr. Thomas W. Salmon, Medical Director of the National Committee for Mental Hygiene, recently presented to the State Constitutional Convention a petition for an amendment to the Constitution which would permit the Legislature to establish a special expert board to deal with the feeble-minded. The petition directs attention to the importance of providing institutional care or some form of guardianship in the community for the thousands of mentally defective persons who are now at large in the State. It says that a broad, constructive State policy for dealing with this subject can be formulated and carried out only by a special commission composed of those who have expert knowledge of the social, medical, and educational problems involved.

Nursing Care for Advanced Cases of Tuberculosis.—A formal agreement has been entered into by the New York City Department of Health with the Nurses' Settlement, whereby the latter will furnish nursing care for bed cases of tuberculosis in Manhattan and The Bronx recommended by the Department of Health. The cases are to be referred to the local office or local representative of the Nurses' Settlement by the branch offices, and thereafter no further visits are made by Department nurses, except in cases under the care of the Clinic Auxiliary, when the auxiliary continues on the case as a social worker. The regulations of the Nurses' Settlement forbid the nursing of patients not under a physician's care, so the Department of Health will furnish the necessary medical attendance for the patients cared for under the new plan, a clinic physician being assigned for that purpose.

Cheaper Radium Some Time.—Secretary of the Interior Lane announces that the production of radium from Colorado carnotite ores by the Bureau of Mines of the Department of the Interior, in connection with the National Radium Institute, has passed the experimental stage in its new process and is on a successful manufacturing basis. The cost of one gram of radium metal produced in the form of bromide during March, April, and May of the present year was $36,050. This includes the cost of ore, insurance, repairs, amortization allowance for plant and equipment, cost of bureau of mines salaries and all expenses. The secretary is at pains to add, however, that this low cost of production does not mean an early drop in the selling price of radium, which has been $120,000 to $160,000 per gram.

Dr. Charles F. Sanborn has been appointed superintendent of the new Greenpoint Hospital, Brooklyn, in the Department of Charities of New York City. He assumed his new duties on July 15.

Dr. Eva Harding of Topeka, Kan., announces that she will be a candidate for the Democratic nomination for Congress from the First Kansas District in 1916.

Dr. Harry D. McNeil of Bangor and John W. Sawyer of Dexter have been appointed by Governor Curtis of Maine medical examiners for Penobscot County to serve with Dr. E. T. Nealey, formerly the sole examiner for the county.

Obituary Notes.—Dr. DAVID STREETT of Baltimore, Md., dean of the Baltimore Medical College from 1888 until its amalgamation with the University of Maryland, School of Medicine, in 1913, and since that time professor of the practice of medicine in the latter institution, died at St. Agnes' Hospital, Baltimore, on July 30, aged 60 years. Dr. Streett was graduated from the College of Physicians and Surgeons, Baltimore, in 1878, and had served on the staffs of the Maternity, Mercy, and Maryland General Hospitals, and as a trustee of the last named and of the Baltimore Medical College. He was a member of the American Medical Association, the Medical and Chirurgical Faculty of Maryland, and the Baltimore City Medical Society.

Dr. GEORGE MORRIS DILLOW of New York, a graduate of the College of Physicians and Surgeons, New York, in 1875, emeritus professor of renal diseases at the New York Homeopathic Medical College and Hospital, consulting physician to the New York Ophthalmic Hospital, and a member of the American Institute of Homeopathy and the New York State Homeopathic Medical Society, died at his home on July 13, aged 68 years.

Dr. GEORGE J. DIRKES of Brooklyn, N. Y., a graduate of the College of Physicians and Surgeons, New York, in 1890, consulting physician to the Brooklyn Eastern District Hospital and Dispensary, and a member of the New York State and County Medical Societies, died at his home, from heart disease, on July 18, aged 48 years.

Dr. LAWRENCE BEN BITZ, JR., formerly of Pensacola, Fla., a graduate of the St. Louis University School of Medicine, St. Louis, in 1910, died at the home of his parents in Evansville, Ind., after a long illness, from tuberculosis, on July 10, aged 35 years.

Correspondence.

INTESTINAL STASIS AND EPILEPSY.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—In the MEDICAL RECORD for May 22, 1915, in an editorial article entitled "Epilepsy from Many Angles," you state "C. A. L. Reed (*Southern California Practitioner*, March, 1915) advances the view that epilepsy is the result of a specific infection from the intestinal canal. The unknown organism is supposed to be a bacillus of gas-forming series . . . and favored in its growth by intestinal stasis resulting from mechanical conditions."

We cannot hold with Dr. Reed that epilepsy is the result of a specific infection from the intestinal canal, but we do believe that there are a large number of the so-called idiopathic epilepsies due to a chronic intestinal stasis—the condition so beautifully described by Sir W. Arbuthnot Lane. The idea of an "unknown organism" whose habitat is the intestinal canal is untenable we believe, but "stasis," that condition produced by a delay in the passage of the intestinal contents and its subsequent toxic action, we feel can produce and does produce conditions which when associated with an instability of the central nervous system, are responsible for the production of the epileptic manifestations. We do not feel that anyone who will take the time to visit an institution caring for epileptics can go away without being convinced that such a condition as chronic intestinal stasis exists, and on these premises we have for some time past been "short-circuiting" some of our cases with very favorable results, a report of which we will publish

in due time. It is understood, of course, that we are not including the traumatic cases or those with well-defined central involvement. How often is it the case where an epileptic is put on a careful regimen, kept under close supervision as to diet, etc., where every effort is made to promote excretion through all the emunctories, that we see an improvement in the patient's condition, and there is more reason why this improvement should be marked and permanent when we correct defects in the "drainage scheme."

G. KIRBY COLLIER, M.D.

CRAIG COLONY, SONYEA, N. Y.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

CROONIAN LECTURES—TRYPANOSOMES AND SLEEPING SICKNESS—RESEARCH DEFENCE REPORT—REPORT OF LOCAL GOVERNMENT BOARD.

LONDON, July 17, 1915.

THE Croonian lectures for this year have been delivered at the Royal College of Physicians by Sir David Bruce, F.R.S., C.B., etc. He took for his subject the trypanosomes causing disease in man and domestic animals in Central and Southern Africa. His own experience in Zululand, Uganda, and Nyassaland gave him the opportunity of studying those parasites *in loco*, so to say, and it may be assumed, until the contrary is shown, that what he tells us may be applied to every other pathological species that may be met with in that region, and very probably some exist there and are known under other names. The tropical, equatorial, or central region corresponds with the distribution of tsetse flies and these flies are the carriers of the trypanosomes which cause sleeping sickness. It was in 1877 that Dr. Timothy Lewis of the army medical department found in a rat a trypanosome which has been named after him the *T. lewisi*. In 1880 Dr. Evans, chief of the veterinary staff (Madras) found the *T. evansi*. There are other species of the parasite with different degrees of ill-effects on man and animals. The *T. gambiense* is essentially a parasite of man and the cause of the sleeping sickness as seen on the Congo; the *T. brucei* is the cause of the form met with in Rhodesia and Nyassaland, as well as of nagana in animals. These parasites pass through an invertebrate host—the tsetse fly—which, as it feeds on blood, preferably human, becomes the carrier of infection. At this point the lecturer interposed a description of the various forms of tsetse flies found in the same regions as the pathogenic trypanosomes, which developing in the intestine of the flies pass into the salivary glands, probably by way of the proboscis, completing thus their development into the infective forms. The fly does not waste time over its meals, but rapidly takes in, as opportunity admits, from $1\frac{1}{2}$ to $2\frac{1}{2}$ times its own weight of blood. It will often settle on the skin so gently as not to be perceived and will also insert its proboscis painlessly so that very little or no irritation may follow. But if there have been many bites close to each other there may result more or less swelling, induration, redness, and irritation for a few days. The groups with which we are chiefly concerned are (*a*) the *morsitans* and (*b*) the *palpalis*—the former lives in wild districts and principally depends on the game for food; the latter dwells rather by rivers or lakes and looks to man, to the human inhabitants, usually in such places, or, if none be found, reptiles; birds will serve. The antelope seems to afford a favorite supply.

In his second lecture, Sir David Bruce gave some very interesting notes as to his investigations on trypanosomes. When he went to South Africa in 1894 he was requested by the Government to report on a disease among native cattle, called nagana, and he trekked up to the north of Zululand, where it prevailed, and made bacteriological examinations of the blood and organs of infected cattle, with a negative result at first. But soon a motile body was found among the red corpuscles. Later this was seen to be a trypanosome, but was not supposed to be pathogenic until injecting the blood of nagana cattle into horses and dogs it was found to have a causal connection, but it was later still when nagana and tsetse-fly disease were shown to be identical. Then experiments were made to determine if the fly was the carrier of the disease, and it was proved that the *Glossina morsitans* and the *pallipedes* were so. Further investigations show that a large proportion of the wild animals living in the sleeping sickness district harbor pathogenic trypanosomes. In fly-free areas they have not hitherto been found. The *Trypanosoma gambiense* was first seen in 1901 by Dr. Forde, colonial medical officer at Barthmot, and as it was not known to him he referred it to Dr. Dutton of the Liverpool School of Tropical Medicine, who described and named it; but it was not until 1903 that the Royal Society's commission concluded that it was the cause of sleeping sickness.

Kleine was the first to prove that a tsetse fly could convey infection fifty days after feeding on a diseased animal. That was in 1908, and next year the lecturer confirmed this in Uganda.

For the first three or four days after a feed on infected blood the parasites are found in all. After a further similar period they have disappeared from most of the flies and only in a small percentage does further development occur. In about 95 per cent. the parasites die out in a few days, but in the remainder they multiply to countless swarms. How long infection of the fly continues is not absolutely known. One was found to retain its infectivity for ninety-six days. Trypanosomes taken into the tsetse flies retain their shape and infectivity for about eighteen hours and then degenerate and have usually disappeared by the fifth or sixth day. In the small percentage that remain they multiply in a different form. After twenty days or so they appear in the salivary glands in their original form. Cattle, though exhibiting no sign of illness, may be a reservoir of sleeping sickness. The antelope seems able to infect for at least eighty days, although the parasites are but few compared with the swarms in monkeys, and this may account for the continuance of infection after removal of native population, which it was hoped would not be the case.

The Research Defense Society held its annual general meeting on the 30th ult., when Lord Knutsford moved the adoption of the report and statement of accounts. The society has been in existence about seven years. Sir William Osler proposed the reelection of the officials, and paid a special compliment to the secretary.

The forty-third report of Local Government Board (1913-1914), Part I, has been issued, dealing chiefly with the Poor law, the unemployed workmen act, and the old age pensions act.

Progress of Medical Science.

Boston Medical and Surgical Journal.

July 22, 1915.

1. Alcoholism. E. B. Emerson.
2. The Cerebrospinal Fluid in Diagnosis and in Treatment. W. H. Watters.
3. Results of the Treatment of Pyorrhea Alveolaris and Allied Conditions with Emetine Hydrochloride at the Danvers State Hospital—Preliminary Report. H. I. Gosline.

1. Alcoholism.—E. B. Emerson states that environment and heredity underlie most cases of drunkenness. A craving for alcohol is not inherited, but the weak and unstable nervous system which renders the individual liable to excess in all things renders him especially susceptible to alcoholic indulgence. The mental disturbances produced by the latter present every possible variation, from simple intoxication to profound dementia. The psychoses especially dangerous are those characterized by active hallucinations and delusions. Acute alcoholic hallucinosis arising on a basis of chronic alcoholism is characterized by a sudden onset, with auditory, visual, tactile and olfactory illusions or hallucinations, accompanied by persecutory delusions and little clouding of consciousness. Recovery, with little or no intellectual damage, usually follows a first attack. In acute alcoholic hallucinosis auditory hallucinations predominate, whereas in delirium tremens visual hallucinations predominate. There are two common types of chronic delusional states differing in mode of onset and clinical characteristics. In one there is usually a history of previous attacks of delirium tremens, or acute hallucinosis, in which there has been an apparent recovery, or the disease may represent the termination of an acute alcoholic hallucinosis. The other type, sometimes called alcoholic paranoia, is characterized by the gradual development of a paranoid condition in middle life in subjects who have been steady drinkers, without previous acute mental disturbance. The disease is marked by delusions of suspicion, persecution, and jealousy, usually centering about the wife or husband.

2. The Cerebrospinal Fluid.—W. H. Watters concludes that lumbar puncture is a relatively simple and safe procedure when properly performed. Examination of the fluid removed should include chemical, microscopical and serological tests. By examination of the fluid it is possible usually to recognize with certainty and to differentiate the various forms of infectious meningitis. Repeated lumbar puncture is not infrequently of definite therapeutic value in such cases. The cerebrospinal fluid should be carefully studied prior to discharging as cured any case of syphilis, irrespective of the stage in which it has been treated. Examination of the fluid is an essential in properly following the treatment of cases of syphilitic involvement of the nervous system.

3. Emetine in Pyrorrhea Alveolaris.—H. I. Gosline employed emetine in the treatment of forty-two cases grouped as spongy gums, very spongy gums, and spongy gums with loose teeth. The treatment was the so-called full treatment and the local treatment. The full treatment consisted in the administration of emetine hydrochloride, 1/6 grain, twice a day subcutaneously, and the application of the wine of ipecac to the gums twice a day for one week, followed by a second week's treatment in which the gums were swabbed with wine of ipecac and an injection of emetine hydrochloride, 1/3 grain, was administered once a day. Of fourteen cases with spongy gums, eleven showed marked improvement, two moderate improvement, and one slight improvement. Of the twelve cases of very spongy gums, those treated locally showed only moderate or slight improvement, while those treated with emetine in addition to the local treatment showed 87.5 per cent. marked improvement. The group with loose teeth and spongy gums showed 78.6 per cent. marked improvement, but in no case with loose teeth did the teeth become firmly set once more.

New York Medical Journal.

July 24, 1915.

1. Blood Pressure in General Practice. E. H. Goodman.
2. Psychotherapy. O. Lerch.
3. The Treatment of Ethmoiditis. S. McCullagh.
4. Diastolic Blood Pressure. J. S. Ferguson.
5. Michael Servetus' Book on Syrups. C. G. Cumston.
6. The Differential Diagnosis of Flatfoot. H. Finkelstein.
7. Painful Heels Due to Exostosis of the Os Calcis. Adolph L. Waechter and H. D. Sonnenschein.
8. The Differentiation between Functional and Organic Cardiac Disease in Children. M. H. Bass.
9. Typhoid Fever. C. P. Bolles.
10. The State's Efforts to Protect Life in Infancy and Youth. L. A. De Vilbiss.

4. Diastolic Blood Pressure.—J. S. Ferguson notes that there have hitherto been in vogue two ascultatory methods of reading the diastolic pressure: (1) By reading the approximate point of transition from sharp to muffled sounds; (2) by reading the last sound heard, viz., the end of the fourth phase. To these the author would add a third method, viz.: (3) Reading the level of the first sound heard on slowly returning from the fifth phase to the higher level of audible taps. For this third method there is claimed the advantage of a sharper point of demarcation than is possible with the first method, and the consequent elimination of a considerable portion of the errors due to the personal equation and the entire elimination of uncertainty as to the exact point at which the sound is to be read. The new method is said to have the advantage over the second method in that it much more closely approximates the true diastolic pressure; its readings are usually two to five millimeters above those by the second method, i.e. the difference is just about that which usually obtains between the first and second methods. In the absence of aortic disease, its results nearly always fall within the limits of successive readings by the first method. By its use the characteristic diastolic blood pressures of aortic disease cannot be overlooked. Moreover, it is not subject to variations dependent upon the rapidity with which the observation is performed.

8. Functional and Organic Heart Disease in Children.—M. H. Bass reviews the means of differentiating between the two. A large percentage of cases of functional cardiac disturbance occur in the so-called asthenics who are usually in their second decade, often about the age of puberty. They have grown rapidly and are therefore rather thin and narrow chested. The scapulae project, the abdomen protrudes, there is distinct lordosis of the lumbar spine, and the child stands in a relaxed, round shouldered posture. The epigastric angle is narrow, the tenth rib is free and not attached to the other costal cartilages. These children flush easily and often show dermographia to a marked degree. Chvostek's sign, obtained by tapping on the cheek over the facial nerve, is frequently positive. The vasomotor system is unstable, as is shown by the very red lips, the pale face, and the cold, blue, clammy hands, though blood pressure examinations fail to show any particular departure from the normal. The morning urine is free from albumin, but after the child has been on its feet for a time, albumin appears often in astonishingly large amounts. This peculiar type of juvenile neuropathy, called by Mackenzie *x*-disease, and corresponding to Stiller's asthenia congenitalis, is a very common clinical picture, and any cardiac signs or symptoms found in such a case are much more likely to be due to functional than to organic disease. By

means of the orthodiagraph one may determine whether or not the heart is of normal size, and gain also valuable information as to the shape of the heart. The elongated or "drop heart" is apparently part of the asthenic habitus. A slight ventricular hypertrophy such as occurs in the nephritis of children may be detected with the aid of the orthodiagraph. Certain forms of congenital heart disease prevent typical heart shadows. As regards murmurs it is pointed out that the majority of functional murmurs are cardiopulmonary in origin, and for this reason may be found to vary in intensity, depending on the phase of respiration, being usually loudest at the end of inspiration and faintest at the end of expiration. Change of the child's posture may change the character, and pressure of the stethoscope may change the loudness of such murmurs. Variability is characteristic of functional murmurs. Irregularity of the pulse is very common in children, chiefly in those of the asthenic habitus. The prevailing type of irregularity is the sinus arrhythmia, in which a number of slow beats are followed by a number of more rapid ones. This type of irregularity often disappears on exercise.

Journal of the American Medical Association.

July 24, 1915.

1. The Management of Burns. A. Ravogli.
2. Experiences in Military Surgery. W. E. Drennen.
3. Xeroderma Pigmentosum. Its Treatment with Autogenous Serum. J. B. Kessler.
4. Influence of Age and Sex on Hemoglobin. A Spectrophotometric Analysis of Nine Hundred and Nineteen Cases (Preliminary Report). C. S. Williamson.
5. Tuberculosis of the Frontal Sinus. Report of Two Cases J. B. Thomas.
6. Defects of the Singing Voice Due to Nasal and Accessory Sinus Disease. J. J. McLoone.
7. Involvement of the Urinary Tract as a Result of Fecal Infections in Children. C. G. Grulee and F. W. Gaarde.
8. Experiments in Animals and Their Influence on Mortality. J. H. Landis.
9. Is Insanity on the Increase? A. J. Rosanoff.
10. The Value of a Sanitary Survey in the Teaching of Hygiene. M. J. Rosenau.
11. Abortive Treatment of Typhoid Fever by Sensitized Typhoid Vaccine Sediment. F. P. Gay.
12. A Sign Diagnostic of Hyperplastic Thymus. H. A. Houghton.
13. Study of Later Cases of Scarlet Fever Occurring in Brooklyn. B. F. Knause.
14. The Diagnosis and Treatment of Gonococcal Vulvovaginitis in Infants and Young Children. C. C. Norris.
15. A Simple Outfit for the Distribution of Toxin for the Schick Test. A. Zingher.
16. Acute Yellow Atrophy of the Liver in a Child of Four W. H. Mayer.

1. Treatment of Burns.—A. Ravogli recommends for a burn of the first degree the application of dry powders, such as talcum powder, bismuth, or alum. If there is severe pain and in second degree burns compresses moistened with a solution of aluminum subacetate, 2 to 5 per cent., should be applied. When the blisters are distended with serum the fluid should be drained off by puncture. Oily substances, such as carron oil, etc., must be avoided as possibly aiding infection. When shreds of epidermis are easily detached, they are cut off with scissors and a thumb forceps. The Sneve treatment, exposing the surface to plain air for an hour at first, and later two or three hours, is very useful. The treatment for a third degree burn is nearly the same. Recovery is obtained through cicatrization. The plain air and sunlight stimulates the granulating surface. It must not be forgotten that the granulations need to be touched with a solution of silver nitrate every other day to prevent irregular or keloidal scar. After exposure for from two to three hours the wound must be covered with a suitable dressing, such as a 2 per cent. borated petrolatum on English lint. When the granulations are pale and show a tendency to pus formation, the application of a mixture of castor oil and Peruvian balsam also gives good results, but cannot be continued for a long time on account of the irritation produced. In burned areas of large size without a tendency to epidermis formation, a few Reverdin epidermic grafts are of value. Any extensive burn of whatever degree has a systemic reaction. In the beginning the patient may suffer from shock. More often there may occur gastroduodenal ulceration with continuous vomiting and sometimes nephritis and pneumonia. The fever following a burn rises and falls somewhat like that of typhoid. The administration of quinine is very useful. In nephritis the intravenous injection of Fisher's solution with the internal administration of digitalis is helpful. Gradually as the patient improves, and when the fever is gone, a substantial diet with an iron tonic preparation must be given.

4. Influence of Age and Sex on Hemoglobin.—C. S. Williamson finds that the hemoglobin value is greatest at birth. The decline begins at once and continues until at the fifth month the average value is nearly down to the minimum (about ten-seventeenths of the value at birth), and far below the average adult figure. From then on until the end of the first year it diminishes slowly and reaches the minimum in the second year of life. There is then a fairly rapid rise up to the sixteenth year and the variations are relatively small and the curve is nearly horizontal from then on to the sixty-fifth year. After seventy-six in men there is a slight rise, but the decline continues in women. The values are then identical in both sexes up to the sixteenth year. From then on to the seventieth year the sex differences manifest themselves, and the values for women are in every instance lower than those for men. Beyond seventy-one the values for both sexes come together and are practically identical.

7. Infection of Urinary Tract in Children.—By C. G. Grulee and F. W. Gaarde. (See MEDICAL RECORD, July 3, 1915, page 38.)

14. Treatment of Gonococcal Vulvovaginitis.—C. C. Norris states that desiccation quickly destroys the gonococcus. The organism does not thrive on squamous epithelium, except that of the immature variety, such as is found in the vagina of the young. Despite the fact that virulent organisms are constantly being deposited on the vulva and in the vagina, gonococcal inflammation of these areas is unusual in the adult. With these facts in mind, it is evident that cleanliness and drying should be important factors in the treatment. In most cases it is worth while to sacrifice the hymen, thus affording better drainage with more thorough treatment and cleanliness. Silver solutions are the principal therapeutic agents, beginning with a 1 or 2 per cent. solution of silver nitrate gradually increased, to be used three times a week, and during the interim the vagina should be washed out daily with a weak potassium permanganate solution as a cleansing measure. The success of the treatment is dependent largely upon its thoroughness and regularity, and one may consider a cure has been effected when negative findings are obtained after three consecutive bacteriological and physical examinations made at fortnightly intervals after all treatment has been discontinued, the last examination being preceded by chemical irritation of the vaginal walls with silver nitrate to reveal any remaining gonococci.

The Lancet.

July 17, 1915.

1. Trypanosomes Causing Disease in Man and Domestic Animals in Central Africa. Sir David Bruce.
2. Breast Feeding: Some Functional Requirements of the Gland and of the Infant. H. K. Waller.
3. The Binet-Simon Method and the Intelligence of Adult Prisoners. M. Hamblin Smith.
4. What Tests in Childhood are Best Calculated to Throw Light Upon the Capacities of Mental Defectives for Future Work? W. A. Potts.

Three Cases of Complete Rupture of the Uterus During Labor Treated by Abdominal Hysterectomy. J. F. R. Seheult.
6. Sigmoid Tortuosity of the Internal Carotid Artery and Its Relation to Tonsil and Pharynx. A. G. Fisher.

1. Trypanosomes.—Sir David Bruce in this, the fourth of the Croonian Lectures, concludes his exposition of the present knowledge concerning these microorganisms, which may now be referred to three groups and nine species. In regard to the transference of the virus from sick to healthy animals by the fly this has been made clearer and easier of comprehension by the discovery of the part which the salivary glands and hypopharynx play in the various modes of development which the trypanosomes undergo in the fly. It results that it would almost appear impossible for an infective fly to pierce even momentarily the skin of a healthy susceptible animal without causing infection. Another important feature is the proof brought forward that *Trypanosomo brucei* and *Trypanosoma rhodesiense* are the same. Finally, in regard to the prevention of these trypanosome diseases of man and domestic animals, it has been shown that the wild game in the fly country is heavily infected. It is impossible to doubt that they are the reservoir and source of many of these diseases. There can be little doubt that if the wild game were driven out of the fly country trypanosome diseases such as those caused by *Trypanosoma brucei* and *Trypanosoma pecorum* would disappear. In regard to the measures of prevention against the most important of all the trypanosome diseases—Congo sleeping sickness—it has been shown by experience that the removal of the natives from the fly area is a simple and efficacious way of stopping an epidemic. In these sparsely inhabited countries, where spare land and food are easily obtained, there is, as a rule, no difficulty in effecting this migration. If it is desired to go a step further and render the sleeping-sickness area inhabitable, then clearing and cultivation must be resorted to. By these means, in all probability, *Glossina palpalis* will be driven away, and with it the disease.

2. Breast Feeding.—H. K. Waller emphasizes the need for correlation between (1) the periodicity in the secretion of milk, (2) the size of the meals, and (3) the infant's appetite. The breast tissue fulfils the physiological law that to obtain the maximum output of work a suitable stimulus must be applied at a suitable interval. The total quantity of milk secreted in 24 hours is greater when the number of meals given is 6 rather than 9 or 10, and greater still when the 6 give place to 5 and 4. This change to the smaller numbers can be made about the sixth or eighth week. A child can take 7 ounces of food from the breasts at one meal as early as the twenty-first day. If appetite be considered as an expression of digestion, the author's observations show that large infrequent meals do not disagree with quite young infants. The cry of the overfed—*i.e.* of the too frequently fed—is commonly mistaken for the cry of hunger.

3. The Binet-Simon Method in Adult Prisoners.—M. Hamblin Smith concludes that the Binet-Simon method is an excellent means of estimating the standard of intelligence of any particular subject. The method, having been primarily devised for use with children of school age, would be rendered more useful for adults if certain modifications were made in its details. Defect of intelligence, as estimated by this method, affords strong confirmation of a diagnosis of feeble-mindedness made upon other considerations. Failure to reach any given standard of intelligence is not of itself sufficient reason for regarding a subject as feeble-minded.

4. Capacities of Mental Defectives for Future Work.—W. A. Potts states that a defective who at school is either very good at manual training or merely good at manual and also at every school subject, is certain to get work afterwards, unless he has some serious disability in addition to mental defect. First-class readers have the best prospects, but reading does not draw the line as manual work does. Arithmetic gives a better clue. Writing is also some guide—at any rate, in a negative way; it is so much easier to teach a defective to write than to read or calculate that he must be of a low grade if he does not learn at all. Finally, as regards individual tests, among the simpler ones Warner's hand-balance is useful at any rate from a negative point of view, weeding out some who will never hold their own in the world. It is a simple test, easily applied, but too unscientific for the up-to-date psychologist who will prefer something like the ataxigraph, an elaborate instrument with small bodes of various sizes in a brass plate; the subject has to hold a needle in one of the holes without touching the plate for 15 seconds. An electric battery is attached, and touching the plate makes a contact and causes a click, all contacts being recorded. Smaller holes are tried till the subject has reached the limit of his capacity and is clearly unable to keep the needle from contact with the plate. The dynamometer may afford an index of general bodily strength. Several investigators have found a correlation between strength of hand and mental ability. Other tests are provided by the form-board, the estimation of the quickness of movement by noting the rate of tapping, the measurement of reaction-time, etc. The greatest importance, however, is to be attached to the opinion of an experienced physician as to the capacity of a mental defective.

5. Complete Rupture of Uterus.—J. F. R. Seheult notes that while there is still some diversity of opinion with regard to the best method of treating cases of rupture of the uterus generally, it is now universally conceded that abdominal section, although tending to increase the shock which usually already exists, is the correct surgical procedure when the rupture is complete and extensive. The question of extirpating the uterus or merely repairing the rents in the organ depends largely on attendant circumstances. Once the abdomen is opened hysterectomy does not seem to involve a greater degree of shock than does the suturing of lacerations in the uterine wall, and the time occupied by the former operation should not exceed very much that involved by the latter procedure.

6. Sigmoid Tortuosity of Internal Carotid Artery.—A. G. T. Fisher points out that when the sigmoid tortuosity lies in the coronal plane it is liable to injury in operations involving the posterior wall of the pharynx. Before such an operation as the removal of adenoid vegetations from the nasopharynx abnormal pulsation should be felt for, as fatal hemorrhage has occurred from injury to the internal carotid artery during this operation. That the abnormal pulsation is due to a sigmoid tortuosity of the internal carotid artery and not to the ascending pharyngeal artery seems to be now definitely proved. When the sigmoid tortuosity lies in the sagittal plane, it is more likely to be met with in operations on the tonsil. Although it is usually stated that cases of fatal hemorrhage after removal of the tonsil or incising a peritonsillar abscess are not due to injury of the internal carotid artery it seems not unlikely that some of the cases are due to this cause. In the latter case no measure short of ligature of the common carotid artery is likely to be of any avail, though even this measure may fail owing to the free anastomosis between the carotids in the circle of Willis. Again, in injuries or bullet wounds involving the throat which have led to severe primary or sec-

ondary hemorrhage one must remember not to be obsessed by the rigid text-book description of the internal carotid artery.

British Medical Journal.

July 17, 1915.

1. British Health Resorts in Peace and War. R. Fortescue Fox.
2. The Diagnosis, Prognosis, and Treatment of Nerve and Muscle Injuries Resulting from Gunshot Wounds, With Especial Reference to the Use of the Lewis Jones Condenser Apparatus. F. Hernaman-Johnson.
3. Suggestions for Those Interested in War Depots at Home. J. Hossack.
4. Further Investigations Into Latent Dysentery and Intestinal Parasitism in Sarawak, Borneo. W. Ledingham Christine.
5. The "Elastic Tissue" Enigma. A Suggestion for Its Post-mortem Study, in Arteries Kept Permanently Elastic, and in the "Roosevelt Elastic Lung." W. Ewart.
6. Trypanosomes Causing Disease in Man and Domestic Animals in Central Africa. Sir David Bruce.

5. Elastic Tissue.—W. Ewart notes that the history of the elastic fiber is a standing problem which the inferior elasticity of indiarubber does not help one to solve. The elastic fiber is destroyed in the lung by overstrain in emphysema and by disuse in obesity, and it is then disposed of readily by phagocytosis. The mystery is its surprising normal "endurance." This would almost seem to be a function of its mechanical exercise, even more than of its nutrition. Facts have been recorded which demonstrate a patchy local "regeneration." But of its "alimentation" nothing is known except that the fiber can be stained. And yet, if we assume that it grows, like the length and breadth of the muscular and tendinous fibers, it should be, at any rate at that stage, receptive of nourishment. On the other hand, when full grown, its vital exchanges are of a minimal order; and its viability and function are largely dependent upon motile and hygrometric factors, while apparently independent of direct innervation. The late J. W. Roosvelet of New York devised a method of preserving the lung post-mortem in such manner that for a long time this organ may be made to expand and contract in an apparently normal manner. The vesicular murmur can be plainly heard in it, and percussion gives the same note as obtained from fresh lungs. The process is a modification of the old glycerin-carbolic method, well known and often used to preserve anatomical specimens in an elastic condition. If, as appears, the elastic fiber has in its mechanical keeping one's individual polyorganic architecture, might it not conceivably be itself the builder; and, if so, might it not then be the missing link between one's physics and vital energy?

6. Trypanosomes.—By Sir David Bruce. (See page 244.)

Berliner klinische Wochenschrift.

July 14, 1915.

Case of Acute Farcy.—Wolff relates the following case which illustrates the great difficulty in the diagnosis of this affection. The patient was a hostler who first developed headache, high temperature and stiff neck without a positive Kernig. There was marked sensitiveness over the left shoulder joint. There were cases of glanders among the horses, but the symptoms did not point in that direction. The pulse was notably slow despite the temperature of 40° C., which showed only slight morning remission. Diarrhea and a leucopenia (3,700) were present. The diazo reaction was negative. The picture suggested in part typhoid, in part epidemic meningitis. Standing out, however, was the peculiar joint lesion, which suggested a pseudo-rheumatism. This proved to be periarticular and was the only symptom which actually suggested farcy. The hypersensitiveness was extreme, mere contact with the biceps tendon at the joint capsule causing the patient to cry out. One week after the earlier symptoms the patient's general condition was wretched. He presented, however, little or nothing abnormal in the mouth, throat, and nasal passages and but little cervical adenopathy. There were no cutaneous or visceral manifestations, save a doubtful enlargement of the spleen. The fever curve was not characteristic of any affection and rather suggested sepsis than the other continued fevers. Nearly a week passed without change in the picture, which now suggested a typhoid bacteriemia or sepsis. The mental state showed some implication. A day or two later, however, the elbow joint showed the same implication as the shoulder, and soon afterward a nodule appeared in the upper arm between the two affected articulations. With this the clinical picture rapidly changed to that of farcy. Infiltrations appeared in the lower extremity. A discharge of mucopus began from the nostrils. Serodiagnostic tests were positive for farcy. The patient went rapidly from bad to worse and nothing exerted any possible influence over the process. Extensive infiltrations appeared in the face and forehead, backs of hands and feet, and showed a tendency to become universal. The sheaths of tendons, subcutaneous tissues and skin were all involved, the latter exhibiting pustules and blebs. The former were at times very small, resembling an outbreak of acne. The general state was that of severest sepsis. Neosalvarsan was tested without benefit. With such a degree of sepsis the patient could not possibly have recovered. The author neglects to mention whether the *Bacillus mallei* was found, but this could hardly have been absent. According to Tochmann acute farcy may be confounded with typhoid fever, sepsis, polyarthritis, and erysipelas. An erysipelatous blush accompanied some of the infiltrations in the cases reported by Wolff. The resemblance to meningitis is not mentioned.

Diagnosis of Farcy in Man.—Gildemeister and Jahn mention the great infrequency of human farcy. In Prussia from 1907 to 1912 but sixteen cases were reported, and of this number ten proved fatal. Infection from man to man as well as from horse to man may occur. The authors have had the unusual fortune to see three cases which they give in brief. A lad of eighteen was attacked with an inflamed wrist which he attributed an an accident. Fever appeared at the same time. Within a short interval all the joints in the four extremities were involved. At the end of two weeks this condition began to wear away, but painful nodules appeared over some of the joints and on the forehead. These attained the dimensions of a walnut or plum and then underwent softening. They were incised and evacuated. Although no further activity was shown the patient was not improving, for the abscess cavities refused to heal and temperature was present off and on. The patient probably has chronic farcy with prognosis in doubt. The two other patients presented similar cases, in that periarticular troubles represented a preliminary stage and were followed by foci of suppuration. In both, however, acute glanders developed, i.e. the nasal discharge which characterizes one type of the disease. In patient No. 2 the face was studded with so-called farcy boils, and in patient No. 3 bullæ appeared over the farcy abscesses and discharged a bloody pus. Both patients succumbed to the disease, one of heart failure from toxemia, while the other showed the full picture of sepsis. The bacillus mallei was obtained in culture from the first two cases, and in all three, the authors stated, positive agglutination, complement fixation, and conglutination tests were obtained.

Münchener medizinische Wochenschrift.

June 15, 1915.

Medical Blunders in the Practice of Military Surgery and Their Avoidance.—Goebel in his capacity as adviser of hospitals—field, military and reserve—has seen many infractions of the precepts of military surgery. This is inevitable, for physicians in civil practice have been suddenly called upon to practise something in which they have had no special training. The surgeon thinks in terms of wound dressings and operating rooms and of attendants who aid in preparations for operation, in narcosis, etc. In cases in which the former civil practitioner has tried to fit up an operating room the author has noted many errors. The possibilities were not utilized, light was defective, everything was unhandy. Naturally the asepsis was faulty, the attendants incompetent. A sister with the operation already under way was sterilizing various articles and disinfecting her hands on the operator's time; finally, she drew on a pair of sterile rubber gloves! Some physicians greatly overdid the gloves, and when their hands were thus protected took hold of soiled dressings or opened doors, etc., without a thought of asepsis. Soap and sublimate were used jointly for disinfection! It was ludicrous to see careful and excessive sterilization of dishes, etc., followed by some blunder which undid all the good. Rubber gloves were often ruined because it was not known how much talcum was required to shake into them before sterilization. Wet dressings and the circular bandage were used when contraindicated. Tampons were employed when light gauze dressings would have been proper. Dressings were so applied that healthy joints were immobilized, a capital error. Where need of fixation was imperative, the fastening was sometimes only "symbolical." Plaster dressings were not fenestrated. With some extension splints there was no counter extension, and weights were too light. There seems to have been a general lack of understanding as to how to apply fixed dressings for ultimate functional results. If the rule was known—as semiflexion in extension—the exceptions were unknown. Passive motion after joint immobilization was neglected. The rule for narcosis in certain cases when extensive dressings have to be changed was ignored, as in fractures of the spine and thigh. Finally, and perhaps in the long run worse than any other error, says Goebel, is the neglect to make autopsies.

More German Substitutes for Foreign Proprietaries.—Winckel gives the German equivalent for much advertised French, English, and American proprietaries of the type used by very many practitioners in all countries. A syrup of hypophosphites is prepared as a sweetened solution of several of these salts. A sedative very widely known is reproduced under the name of "solution of bromated chloral." A certain pioneer emulsion of cod liver oil is reproduced as "compound emulsion" of the same. These represent the best known of a large number. At the same time Germany is going ahead with new proprietaries, most of which have only a restricted sphere of action. One is a synthetic, the 2-phenylcinchonate of strontium, which is recommended for gout. A nutrient substance which is purin free may be mentioned in the same connection. An aromatized acetylsalicylic acid tablet is said to possess slight radioactive properties and is presumably intended for use in true rheumatism. A celebrated firm places on the market a partially caramelized sugar—literally a mixture of several polymerized products of sugar. It can be used as sugar in mild and medium diabetes to the extent of 100 gm. daily. The remainder present little of novelty or interest.

Deutsche medizinische Wochenschrift.

June 10, 1915

Symptomatology, Diagnosis, and Treatment of Typhoid Fever.—Schultze states that hardly anything actually new can be said of typhoid and that one can only call attention to certain aspects of it, for example, a febrile typhoid. A small number of well authenticated cases of the latter are upon record. These represent a mild type of infection. Diagnosis is made by the usual methods. Cases of almost afebrile typhoid are also recorded, in which the temperature rise is slight and only occasionally present. Strange to relate, such cases may begin with a pronounced chill. The initial chill is the exception in typical typhoid and does not occur at all in the elderly. Severe chills are sometimes seen in the course of typhoid, even during the stage of decrease of fever. But relapses are seldom ushered in with chill. Intercurrent chills seldom stand in relation to complications. They sometimes precede a fatal termination, and may be part of a collapse picture. The headache of typhoid may or may not be associated with increased tension of the cerebrospinal fluid. Another causal factor may be the action of the typhoid toxin on the meningeal nerves. Herpes labialis is of small percentage incidence in typhoid. In regard to Brand's method as tested on a series of medium and severe cases in the author's clinic the usual mortality was improved but 1 per cent., although by manipulation of figures this improvement could be computed as 4 per cent. (10 per cent. as against 14 per cent.). The author in a particular epidemic lost but 6.6 per cent., a figure which Brand's method cannot improve on. Like most clinicians the author makes free use of cold water therapy, but in a less severe form and with some selection of cases. He likes small doses of pyramidon because they relieve headache, the latter interfering markedly with the patient's nutrition by depressing the appetite. In regard to diet the author has never pushed solid food because in recent years his patients have done well without it. High calory feeding does not seem adapted to patients with enteritis, diarrhea, and meteorism. In convalescence even the first solid food may send up the temperature. The author adheres to milk and eggs, prepared albumins, cereal decoctions, and gelatine jellies with zwieback, toast, finely minced meat, and vegetables. He mentions two cases of failure of immunization to protect soldiers, and advocates it under urgent circumstances only, as when soldiers are hurriedly mobilized. He regards the method, however, as entirely safe, for while local and general reactions may occur in exceptional cases, they are always transitory and insignificant.

Bullet Wounds of the Stomach and Intestines.—In one of the field hospitals 72 cases of bullet wounds of the abdominal cavity have been treated. The results in stomach injuries have been more favorable than those in intestinal wounds. Of these 72 cases 10 had no proper records. The total mortality was 45 or 63 per cent. Of fifty patients shot through the intestines, forty-two died or 84 per cent. Of thirteen patients shot through the stomach but two died, a mortality of but 15.3 per cent. This remarkable showing aside from the fact that in both fatalities large blood-vessels were severed—seems to have been due to the empty state of the organ at the time of the injury. Again the higher the wound the better the prognosis. The treatment of these stomach wounds should be conservative and intervention is indicated only in hemorrhage. The high mortality of intestinal wounds demands the creation of special field hospitals, the writer of the report states, because these cases cannot be transported for at least two weeks.

Insurance Medicine.

The Surgical Kidney with Reference to Life Expectation.—Dr. J. Allen Patton, Associate Medical Director, Prudential Insurance Company of America, Newark, N. J., states that this subject has been called to his attention a number of times during the past two years by the necessity of deciding upon a number of applicants who had had one kidney removed, besides many other cases where surgical treatment had directly involved the kidneys. With reference to the test used to determine the capacity of the kindneys, he quotes Crockett's claim that the phenolsulphonephthalein test gives the best results, as the dye is excreted from the kidneys in the same percentage whether the urine is free or scanty, and the rate is unaffected by diuretics, blood-pressure, or anemia, and it will foretell uremic conditions even in the absence of clinical, chemical, or microscopical signs. A decreased phthalein output indicates increased urea in the blood unless the patient is edematous or is being flushed with diuretics. Bariglit's scheme shows that albumin and casts lose their pre-eminence as diagnostic signs, for they both may be present in every type of renal disorder, hence are of no value in differential diagnosis. The phthalein test is of more value in prognosis than in diagnosis, for it determines the severity more than the type of the renal lesion.

Renal decapsulation is indicated in all varieties of chronic nephritis in the absence of conditions absolutely contraindicating any surgical procedure, and the earlier in the course of the disease the operation is performed, the better will be the chances of a perfect cure. Decapsulation only starts the cure of chronic nephritis and from months to two or three years are necessary to produce full results. The general consensus of opinion is that surgical procedure for movable kidney should only be employed after all medical treatment has failed, or where there are severe attacks, frequent Dietl's crisis, due to kinking or torsion of the renal vessels or ureters, hydronephrosis, or extreme mobility preventing the patient from following his usual duties.

W. W. Keen has stated that overweights are more subject to kidney diseases, having a lessened resistance, and renal colic combined with overweight has a bad showing. According to P. A. Muller, stone in the kidney demands operation and free secretion of urine to prevent stone recurrence.

Anuria may be divided into: (1) Obstructive; (2) reflex or paralytic; (3) non-obstructive or nephritic. Obstructive anuria demands a nephrotomy not later than forty-eight hours after the onset of the symptoms. Reflex anuria may also require a nephrotomy, and here one must decide upon which side to operate.

Pilcher agrees with Rovsing, Israel, etc., that there is no record of a cured case of renal tuberculosis having been demonstrated at autopsy, and Harpester states that one-half of all essential hematuria cases are due to tuberculosis of the kidneys, and that blood associated with dysuria or pyuria is very indicative of tuberculosis. It is generally accepted that the tubercle bacilli reach the kidney by way of the blood stream and that primarily the infection is unilateral. The course of the disease is progressive and only operative measures can effect a cure.

Kümmel summarized the after history of 386 of his nephrectomy cases and showed permanent cure in 80 per cent. of the tuberculous, 40 per cent. of the malignant tumors, 90 per cent. of pyonephrosis, and 98 per cent. hydronephrosis cases. He gave an excellent prognosis in unilateral injuries, but poor in cases of nephritis. He placed the limit for permanent recovery at two years in tuberculosis and four years in malignant tumors, this being the limit upon which he based permission for the women to marry, for then they would pass through pregnancy, as a rule, without disturbance of the renal functions. He reported seventeen cases of such pregnancy with only one premature birth and one nephritis. Nephrectomy does not seem to affect the course of subsequent pregnancies. Pinard believes marriage is permissible for girls, even after nephrectomy for tuberculous kidney, if the urine is free from bacteria. Homans stated in 1901 that a person with a diseased kidney removed might live to be very old, as the sound kidney could be fully equal to the work required; but, if a person recovers after a kidney removal and is well and strong, he has had enough good fortune and ought to be content without life insurance.

Patton considers that most of the medical directors of the present day seem to agree with the sentiments expressed by Dr. Homans twelve years ago. Fifty-two out of sixty-four medical directors were interviewed as to the practice of their departments with reference to applicants giving a history of nephropexy, nephrotomy, and nephrectomy. The answers were varied and rather vague. Four failed to answer; five had had no experience; eight declined; four would treat each case separately, one stating that they must trust to luck. Simple cases, where the statement showed recovery, were accepted after varied lengths of time; some in six months; others in six years. The inference is drawn from the replies that complicated cases would not be given consideration by any of the companies. Nephrotomy cases would be declined by sixteen companies and nephrectomy cases by thirty-four companies without any consideration, and all were united upon the rejection of cases of tuberculous or malignant disease in which there had been either a nephrotomy or a nephrectomy. The cases would be considered on their merits or individually by eight in nephrotomy, and four in nephrectomy. Five companies declined nephrotomy cases outright because of abscess. One took cured cases after one year; two after two years, but one of these on substandard forms only; one after three years, depending upon the case; three after five years.

Requests were sent to 100 surgeons with reference to nephrotomy and nephrectomy cases. Replies were received from thirty-eight, but of these only eight contained any information of value, while most of the others stated that they had not been able to keep in touch with their operated cases, or their data had not been kept up in a manner that would enable them readily to answer the questions. The above results would indicate that the average surgeon would probably be able to tell a prospective patient his chances of surviving the operation itself, but that very few surgeons could give a definite statement, based upon their own work, concerning the ultimate success of their kidney operations with reference to the comfort and duration of life of their patients.—*The Urologic and Cutaneous Review.*

Book Reviews.

A Text-book of Diseases of the Nose and Throat. By D. Braden Kyle, A.M., M.D., Professor of Laryngology and Rhinology, Jefferson Medical College; Consulting Laryngologist, Rhinologist, and Otologist, St. Agnes' Hospital; Fellow of the American Laryngological Association, etc. With 272 illustrations, 27 of them in colors. Fifth Edition, Thoroughly Revised and Enlarged. Price, $4.50 net. Philadelphia and London: W. B. Saunders Company, 1914.

Five editions of this work have appeared during a period of fourteen years and during this time it has maintained a high standard among the textbooks of its class. The present edition represents a thorough revision, with the addition of the following new articles: Vaccine therapy, lactic bacteriotherapy in atrophic rhinitis; salvarsan in the treatment of syphilis of the upper respiratory tract; sphenopalatine ganglia neuralgia; negative air presence in accessory sinus disease; chronic hypoplastic ethmoiditis; congenital insufficiency of the palate; lactic bacteriotherapy in pharyngeal affections; and an article describing the removal of a plate of artificial teeth from the esophagus. A large number of alterations and additions have been made to various chapters. As in the previous editions, the various diseases are discussed in relation to systemic conditions; etiology and pathology are dealt with quite fully, and diagnosis and treatment are given in satisfying detail. The volume is profusely and handsomely illustrated.

Seuchenentstehung und Seuchenbekämpfung. Kurzer Leitfaden für praktische Ärzte und Studierende. Von Prof. Dr. F. Neufeld, Abteilungs Vorsteher am Institut für Infektionskrankheiten "Rob. Koch," Berlin. Mit 24 Abbildungen. Price, 4 M., 50 pf. Berlin und Wien: Urban & Schwarzenberg, 1914.

This small flexible manual of 204 pages is designed to present the main facts regarding the spread of the most important infectious diseases, and the measures to be taken in combatting them. There is an introductory chapter on the general aspects of the prevention of epidemics, and then follow chapters on typhoid fever, paratyphoid fever, and meat poisoning, botalism, dysentery, cholera, bubonic plague, diphtheria, tuberculosis, smallpox, epidemic meningitis, poliomyelitis, Malta fever, malaria, relapsing fever, and typhus. One of the important features of this volume are the statistical tables and graphic curves which show at a glance the essential facts regarding the incidence and mortality from the above diseases.

A Practical Textbook of Infection, Immunity, and Specific Therapy, with Special Reference to Immunologic Technique. By John A. Kolmer, M.D., Ph.D., Instructor of Experimental Pathology, University of Pennsylvania; Pathologist to the Philadelphia Hospital for Contagious Diseases, etc. With an Introduction by Allen J. Smith, M.D., Sc.D., LL.D., Professor of Pathology, University of Pennsylvania. Price, $6.00 net. Philadelphia and London: W. B. Saunders Company, 1915.

The subject of immunity has become such a tremendous thing that we have here a work of nine hundred pages which is really a manual of immunological technique, accompanied by sufficient discussion and explanation of the theory to make the technique intelligible. The book is very complete. All of the immunity reactions are described clearly and in detail, together with their possibilities of error and their value and application. There is ample consideration of the general principles of immunity without a confusing consideration of controversal points. The book also contains an outline for a laboratory course in experimental infection and immunity. It is a valuable work and one that no immunologist can afford to be without.

A Laboratory Manual and Textbook of Embryology. By Charles William Prentiss, A.M., Ph.D., Professor of Microscopic Anatomy in the Northwestern University Medical School, Chicago. With 368 illustrations, many of them in colors. Price, $3.75. Philadelphia and London: W. B. Saunders Company, 1915.

This book is especially adapted for the use of the medical student. It combines brief descriptions of the vertebrate embryos which are studied in the laboratory with an account of human embryology. The methods and the results of the dissection of pig embryos form an important part of this work. Following an introduction, there are chapters on The Germ Cells; Segmentation and Formation of the Germ Layers; The Study of Chicken Embryos; The Fetal Membranes and Early Human Embryos; The Study of Pig Embryos; Methods of Dissecting Pig Embryos; Development of the Face, Palate, Tongue, Teeth, and Salivary Glands; Entodermal Canal and Its Derivatives; Urogenital System; Vascular System; Histogenesis; Morphogenesis of the Central Nervous System, and The Peripheral Nervous System. One of the excellent features of this work consists in its illustrations which, indispensable in every book on embryology, are in this instance particularly ample and clear. There are also a number of colored plates. One can have no hesitation in recommending this book to the student and practitioner.

A Textbook of Medical Chemistry and Toxicology. By James W. Holland, A.M., M.D., Sc.D., Emeritus Professor of Medical Chemistry and Toxicology, and Dean, Jefferson Medical College, Philadelphia. Fully illustrated. Fourth edition, thoroughly revised. Price, $3.00. Philadelphia and London: W. B. Saunders Company, 1915.

The fourth edition of this well known work on medical chemistry has been greatly increased in value by the inclusion of many of the newer chemical tests. Some of these are important, but others, such as, for instance, Saloman-Saxl's test and Abderhalden's test for pregnancy, have hardly been sufficiently verified to warrant their being taught to the student as in any way useful. No important errors have been detected, but certain expressions should be changed in the next edition. The statement (page 29) that "The kinetic theory is based upon the observation that 1 c.c. of a gas has 21 trillions of molecules" is dangerous for the beginning medical student. He might think that these molecules had really been seen. Under carbon monoxide (page 101) it should be stated that the spectroscopic method is so insensitive that it is rare that the presence of carbon monoxide hemoglobin can be demonstrated by this procedure, and other of the more sensitive chemical tests should be given in this paragraph. Still another paragraph which might be improved is that (page 250) stating that "If a sealed tube containing radium be immersed for a day in normal salt solution and then removed, the solution contains the emanation." Despite a few such errors, however, the volume is of great value and contains a large amount of very practical information for the student of medicine.

Medical Electricity, Röntgen Rays, and Radium. With a Practical Chapter on Phototherapy. By Sinclair Tousey, A.M., M.D. Consulting Surgeon to St. Bartholomew's Clinic, New York City. Second edition, thoroughly revised and greatly enlarged. Containing 798 practical illustrations, 16 in colors. Price, $7.50 net. Philadelphia and London: W. B. Saunders Company, 1915.

This is a work of considerable size. There are 1219 pages, of which 52 comprise the index; the size of the latter gives one an idea of the extensive scope of the subject matter covered by this volume. About one-half of the text is devoted to the subject of electricity which is dealt with under the following headings: Static Electricity; Dynamic Electricity; Electricity Occurring in Plants and Animals; Physiological Effects of Electricity; Electropathology; Electrodes, Electrodiagnosis, Ionic Medication by Electrolysis; Examples of Galvanic, Faradic, and Sinusoidal Electrotherapy; Physiological and Therapeutic Effects of Electromagnets; High-frequency Currents, and Phenomena Accompanying the Transmission of Electricity through Gases. There then follows a chapter on phototherapy. The greater part of the second half of this work is devoted to the *x*-rays, including a detailed description of the technique of the use of this agent, and of fluoroscopy and radiography of special parts of the body. A wide sphere of usefulness of the *x*-rays is discussed in connection with the treatment of various diseases such as trachoma, goiter, pernicious anemia, carcinoma, sarcoma, etc. Radium and its therapeutic uses are discussed in the concluding 40 pages of this volume. The present edition shows evidence of considerable revisions and enlargement, chiefly with the addition of new matter on Diathermy, Sinusoidal Currents, Radiography with Intensifying Screens, Röntgenotherapy, Radium Therapy, etc. There are also included several of Machado's tabular classifications of electric methods, effects, and uses. The volume is profusely illustrated. It presents a complete and authoritative exposition of the subjects enumerated above.

Society Reports.

SEVENTH PAN-AMERICAN MEDICAL CONGRESS.

Held in San Francisco, Cal., June 17, 18, 19, 20, and 21, 1915.

THE PRESIDENT, DR. C. A. L. REED, OF CINCINNATI, OHIO, IN THE CHAIR.

Addresses of Welcome.—Dr. C. A. L. REED of Cincinnati opened the Seventh Pan-American Congress by a brief address, in which he expressed his pleasure in presiding over the Congress because he had participated in the original Pan-American Congress twenty-two years ago and had watched with pride its growth and the part played by its members in the solution of the health problems of the American Republics. Its influence now extended from the North Sea to Cape Horn and the literature emanating from it found many eager readers throughout the Western Hemisphere.

SURGEON GENERAL RUPERT BLUE of the United States Public Health Service welcomed the guests of the Congress in behalf of the United States Government, taking as his theme the significance of such a meeting of representative medical men from so many American republics at the present time when international relations all over the world were so complicated. It gave proof of their devotion to the high ideals to which they were committed and showed that we of the Western Hemisphere were in accord.

Mr. CHESTER H. ROWELL, representing Governor Johnson, welcomed the guests in behalf of the State of California. He spoke of the part played by the Pan-American Medical Congress in welding together the temperate and tropical zones of the Americas and congratulated the medical profession as being the only body of men in the world who recognized no frontiers save the frontiers of knowledge, who recognized no social, no political, no partisan lines and no lines in war. His was the only service of love left in war. In closing he stated that he and the people of California were especially interested in the medical profession because it was through its members that they hoped to keep the plague in the Orient.

Dr. HENRY O. MARCY of Boston made an address of welcome in behalf of the American Medical Association in which he spoke of the part played by that organization in advancing the frontiers of medicine.

Addresses were also made by the official representatives of the South American republics, among them being Dr. Enrique B. Demaria for Argentine, Consul General P. de Obarrio for Costa Rica and Panama, Dr. Enrique Barnet for Cuba, Consul General Juan Chavez for Ecuador, Dr. Juan Padella for Guatemala, Dr. Luis De Bayle for Nicaragua, Dr. Carlos Morales for Peru, Dr. Carlos Leiva for Central America, Dr. Francesco A. Resquez for Venezuela, Dr. Alvaro Ramos for Brazil, Dr. Lorca P. Arturo, Consul for Chili.

Military Surgery.—Dr. HENRY O. MARCY of Boston read this paper before the Section on Surgery. He reviewed the history of the surgery of the battlefields of the prehistoric races of which he had made a study in the collection of Professor Putman in the Peabody Archæological Museum at Harvard, which showed the nature of injuries sustained by the Mound Builders, and also of a collection of bones found along the mountains of Peru. Among the latter were 4,800 crania which must have belonged to a period twelve to sixteen hundred years ago. He showed that Homer was not unmindful of the skill and ability of the surgeon in the Trojan war, that Egyptian surgery foreshadowed our modern antiseptic treatment of wounds, that the military surgeon in the Roman army held a position of respect and honor. He showed that the Napoleonic campaigns had added to our knowledge of military surgery, and of these advances not the least was the putting in practice of sanitary precautions, among which was vaccination against smallpox. The regeneration of France was largely due to the medical history of the Napoleonic campaigns and the men who served in them. After the Napoleonic wars France became the center of medical science. Then later the German universities took the central place in the development of the medical sciences and this rivalry of attainments was one of the sources of national jealousy and a potent factor in the present European war. Much had also been learned from the Crimean War. Dr. Marcy gave a very graphic description of his call to service in the United States in 1860, at which time he was associated with Surgeon General George A. Otis, author of "Surgery of the Rebellion." He stated that during the Civil War there were 6,000 surgeons and assistant surgeons appointed. The deaths in the Federal Army numbered 304,369, less than one-third of which were the result of the casualties of battle. In the Confederate Army there were 200,000 deaths, three-fourths of which were due to disease. The record of the injury due to alcohol in the Civil War was beyond estimate. The deleterious influence of alcohol was being recognized in the present war and efforts were being made to restrict its consumption. It had been shown that alcohol slowed the power to see a signal, confused prompt judgment, spoiled accurate shooting, hastened fatigue, and lessened resistance to disease. A comparison of the gunshot wounds of fifty years ago with those of the present day showed the former to be much more lacerated and almost necessarily infected, while those of the present caused surprisingly little damage to most of the structures. It seemed evident that wars quickened the desire for surgical and medical knowledge and hence medical departments of the army should be given more power and in certain matters supreme power. By no possible means could war be humanized. It was therefore the part of surgical science to mitigate its untold story of suffering as far as possible. In peace the medical department of the army was devoted to the advancement of science and the uplift of mankind. Our present knowledge, if mandatory, would divide the suffering, double the production, and increase by a third the longevity of the race.

Problems Associated with Compound Comminuted Fractures.—Dr. ROBERT T. LEGGE of Berkeley, Cal., presented this paper in which he stated that formerly most fractures of this kind resulted in amputation. As the result of modern industrial conditions compound comminuted fractures were more frequent than formerly. This fact was recognized and first aid packets were provided by many big corporations. Efficient first aid minimized the serious results in injuries. However the treatment of many injuries of this nature taxed to the utmost the ingenuity of the surgeon in devising appropriate methods. The essayist described the proper cleansing of these wounds with gauze swabs dipped in antiseptic solution, such as carbolized water. He emphasized that care must be exercised not to remove pieces of bone indiscriminately, since small pieces might be cleansed and replaced so long as they were attached to the periosteum. Large fragments also should be left even if detached, or even in suppurative cases these pieces sometimes united. Bleeding vessels were to be secured by fine catgut and tags of tissue that were badly damaged should be cut away. Collections of blood should be removed and blebs, swelling and tension should be relieved by stabbing and the application of antiseptic dressings. It was his practice to enlarge open wounds for further inspection and for the relief of interposed soft parts. In no instance should plates, screws, or metals be used in open fractures since all of these open wounds must be treated as though they were infected. He suturd the tissues with silkworm gut, watched circulation, employed gauze drains and changed the compresses daily. The difficulties of reduction were referred to and the importance of taking an *x*-ray before applying a plaster cast was emphasized. A three-board splint properly padded was recommended for leg injuries requiring the recumbent posture and the proper means of securing extension were considered. Fractures of the humerus might be splinted with one short encircling wire mesh. Fractures in joints when the result of gunshot wounds should be treated as comminuted fractures and the reduction of these was imperative or ankylosis would result. The necessity for amputation was determined by the degree of injury to soft parts. When it was evident that amputation must be done it should be done at once or as soon as the condition of the patient permitted. If gas bacillus infection developed amputation must be done immediately.

Some Phases of the Pathology of Appendicitis; Their Clinical Significance and Treatment.—Dr. HUGO O. PANTZER of Indianapolis read this paper in which he stated that he had made it a practice to look for anatomical evidence of chronic appendicitis both in the appendix and in the associated organs. From his ex-

perience it might be said that an acute appendicitis which at operation did not show gross evidence of chronic periappendiceal involvement having clinical significance was relatively rare. Even in cases in which appendectomy was performed as a prophylactic measure it was surprising how often evidence was found of inflammatory changes in the appendix, mesoappendix, or cecum and proximal ileum. This observation was not generally heeded. Peritoneal adhesions, bands, and membranes due to infection, the toxins of stasis, or congenital bands played an important part in the causation of stasis and resulted in pathological changes in their structure. Just as the pharyngeal lymphoid structures stood as the portal of the digestive tract, so a rich lymphoid structure of the iliocecum maintained an identical function in its location; at operation there was found a thickened and indurated wall of cecum and proximal ileum and a complement of enlarged and clustered glands. This condition was not much known or described and to this omission was due a large number of the failures to afford relief by removal of the appendix. The essayist emphasized the importance of searching for these periappendiceal and pericecal membranes, bands, and adhesions. Relief usually followed division of such bands and membranes, and they were also shown to regress after division. Such division furthermore made the appendix easily accessible. Appendectomy should be followed and supplemented by medical treatment both before and after operation. If chronic intestinal autointoxication was present it should be treated as should also insufficiency kidney, skin, or liver functions.

Extensive Resection en Bloc for Carcinoma of Breast with Lantern Demonstrations.—Dr. CARL BECK of Chicago presented this communication. He stated that this operation made it possible to eradicate a cancer of the breast reaching even into the region of the neck. The technique was comparatively simple if one was accustomed to extensive resections. He prepared a large flap for a cover for the wound from the upper part of the arm and shoulder. The arm with the shoulder girdle was removed just as in an ordinary shoulder resection, the flap left being somewhat larger. He removed the manubrium portion of the clavicle, either by exarticulation or section and pulled the clavicle from the body, exposing the whole region of the neck. He left only what he wished to leave behind and what he considered healthy. He sometimes found the nerves, blood vessels, and the subclavian artery wrapped in the cancer. Care must be taken in cutting the nerves. He had performed this operation nine times in eight years with the result that four patients were still alive, one five years after the operation. Every one of these cases had been declared absolutely inoperable.

Surgery of the Heart.—Dr. D. C. STRONG reported a case of stab wound of the heart and emphasized the fact that aseptic measures which were sufficient for successful peritoneal surgery were not sufficient for heart surgery. In heart surgery asepsis must be even more strict than in bone surgery. One should be satisfied with nothing less than Sir Arbuthnot Lane's technique. In order to prepare the surgical field properly four or five minutes longer than was customary might be taken with safety. Nothing but the gloved finger and the needle carrying the suture should be permitted to enter the wound. Sponging and traumatism should be avoided. One should plan his procedure before beginning to work. It must be emphasized that the method of conducting the average operating room was incapable of caring for these cases. In a case in which there was reason to suspect a heart wound exploratory incision was warranted. The edges of the wound should be approximated as perfectly as possible and the suture applied simultaneously with the heart beat. A very small opening in the pericardium should be left for the escape of fluid.

The Relation of Bovine Infection in the Child to Clinical Tuberculosis in the Adult.—Dr. F. M. POTTINGER of Monrovia, Cal., read this paper, in which he stated that it had been fairly determined that bovine tuberculosis could be transmitted to human beings; that it was accountable for about 10 per cent of tuberculosis, but that human infection was accountable for most of the disease in the human race, and that bovine infection was common in children but was rarely found in adults. The essayist quoted German and English statistics showing the relative infrequency of bovine infection. It seemed from these figures that bovine infection was particularly common in those types of tuberculosis found in children in which it might be supposed that infection had taken place through ingestion. It seemed that they must either believe that bovine infection for the most part became non-virulent or healed, confining its activity to the child, or that the bovine bacillus changed its type by residing in the body of man. It produced quite a large percentage of the clinical tuberculosis of childhood and as far as could be judged seemed to be well able to adapt itself to the soil and to thrive. That it thrived equally well with the human did not seem probable. The probability that seemed most worthy of acceptance was that these different bacilli, after living in the human tissues for a time, adapted themselves to the new conditions and gradually became the bacilli which would naturally be produced on human soil. This view was opposed by certain experiments, but there might be a sufficient difference between a rapid repeated passage through animals and a prolonged sojourn in the human body. Bearing on this theory was the fact that bovine bacilli were taken into the body through the same mucous membrane of the gastrointestinal tract as the human bacilli were. They took the same course thereafter, causing local infection in the lymph glands or in nonlymphatic tissue with secondary involvement of the lymph glands. Thus far there seemed to be no difference, although the assumption was probably correct that bovine bacilli did not infect the human organism as readily as did the human bacilli. At this point all changed. The bovine baccillus either produced metastases at once or went on to active tuberculosis or were never heard of again as bovine bacilli. The human bacilli might either produce metastases now or at any future time and were still human tubercle bacilli. If bovine infections became inactive to break down later in life, the same as the human infection did, it certainly did not show as a bovine infection when it again became active. The most rational explanation of the facts observed required the acceptance of the idea of transmutation.

A Plea for More Accurate Study of the Functional Efficiency of the Stomach.—Dr. ROBERT POLLOCK discussed more particularly what he termed the "slowly elaborating stomach," by which he meant the stomach having the greatest secretory efficiency at a time later than one hour following test meals. Many of these stomachs proved quite efficient when one understood them aright and treated them accordingly. Cases were cited which showed that this was not a rare condition, that it was not the accompaniment of any one pathological condition, and that it might occur in many normal persons. This condition admitted of many variations. Each individual type could be clearly outlined by the application of the fractional method of study. A close scrutiny of the data thus obtained would suggest lines of treatment for the relief of the patient's symptoms. While the outlay of time spent in the working out of these problems was considerable the time was well spent.

Precancerous Dermatoses.—Dr. HAZEN of Washington, D. C., presented this paper, in which he advanced two contentions: (1) That practically all the malignant growths of the skin developed from preexisting abnormalities, and (2) that the medical man in the course of his physical examinations should recognize these abnormalities and warn his patients of the dangers associated with them. Pigmented moles, non-hairy moles, congenital naevi, seborrheic keratoses, senile warts, cutaneous horns, and subepidermal nodules were apt to end in malignancy. The ulcers of syphilis and tuberculosis were also apt to become malignant. Wens, eczema, psoriasis, and acne rarely ended in malignancy. Extensive scar tissue and unhealed tissues sometimes developed malignancy.

The Cause of Carcinoma.—Dr. A. E. ROCKEY of Portland, Ore., read this paper. He stated that his thesis proposed that cancer was caused by a defensive process of the tissue cells to a great variety of irritations and that there was no specific external cause for cancer. In cancer there was a displacement of active cells of epithelial origin into the mesoblastic tissues. The cells were not a mature epithelial type, but were embryonal in character and irregular in development. By reason of their displacement they could not attain the normal anatomical perfection and physiological activity of mature cells. Their entire energy was therefore expended in karyokinesis. This karyokinetic energy developed in the cell was a defensive reaction to an irrita-

tion which to produce cancer must also destroy the basement membrane and produce a similar defensive reaction in the connective tissues. The writer then compared well known types of cancer, external and internal, and showed that there was no specific external cause for cancer, and that the defensive process above described was the only one common to all varieties of cancer.

The Tropical Diseases of Venezuela.—Dr. Z. A. Risguez of Venezuela read this paper, in which he stated that malaria was the principal endemic disease of his country. It had been impossible up to the present time to employ prophylactic measures for its prevention. In hemoglobinuria the great question was which was the morbid agent that by combining with malaria produced the hemoglobinuric attack. It was stated that this condition occurred only in subjects that had previously suffered from kidney disease. In Venezuela malaria was not treated by quinine, but with acids, chloride of calcium, and a mineral serum. Leprosy and tetanus prevaled to an alarming extent. Tetanus was found mainly among infants, who died in incredible numbers from it. They had made great efforts to prevent the spread of leprosy by forbidding marriage among the infected and by isolating patients, but it spread to an appalling degree. They now had five leprosy hospitals.

The Serum Diagnosis of Tuberculosis in Relation to Immunization and Prophylaxis.—Dr. Enrico Castelli, delegate from the Faculty of Medicine of the University of Genoa, Italy, presented this communication, to which an entire session of the Section on General Medicine was devoted. He described a method of serum diagnosis of tuberculosis which he and his colleagues of the University of Genoa had recently perfected after twenty-five years' work. By this method it was possible to determine by actual measurement the amount of tuberculosis infection, the degree of immunity against the disease, how much tuberculosis serum must be introduced into the body to obtain complete immunity and how long the immunity would last. By this method it was possible to immunize milk, eggs, and meat. The steps by which the writer proposed to immunize the human being of the future were: (1) By vaccination of the mother during pregnancy. (2) Vaccination of the child between the ages of one and six months. (3) Vaccination of milk-giving cows in order that babies might drink immunized milk. It had been proved that immunization was still active four and one-half years after inoculation, but to make immunity continuous revaccination would have to be performed at certain intervals. The immunity might last longer than four and one-half years, but of that they were as yet uncertain. Dr. Castelli said that before the outbreak of the war an extensive campaign had been mapped out for Italy in accordance with the following program: (1) An extensive and regular use of the serum diagnosis in hospitals, dispensaries, and private practice to secure earlier recognition of tuberculosis. (2) Compulsory vaccination of all babies under six months of age. The vaccination had been proved absolutely harmless. (3) Recommendation of the vaccination of pregnant women. (4) The establishment of farms and dairies supplying immunized milk for the exclusive use of children or adults showing evidences of tuberculosis. (5) Vaccination of pregnant cows to secure immunized products of conception. (6) The administration to tuberculosis patients of the whole blood of immunized animals, including serum and corpuscles. It had been shown that not only the serum but the other elements of the blood contained antibodies. They had perfected a technique by which the blood was rendered less disagreeable and more appetizing than in its natural form.

Fibroid Degeneration of the Appendix.—Dr. Robert T. Morris of New York read this paper in which he stated that fibroid degeneration of the appendix was an irritative lesion rather than an infective lesion. It might appear at any time during the life of an individual but was most frequent in middle life. It apparently belonged to an involution process which was normal in a way. The local symptoms consisted in an occasional twinge of pain in the region of the appendix, sometimes pain lasting for three or four days, but rarely a continuous pain. Pain was a symptom rather than tenderness. Two other definite signs associated with these were hypersensitiveness of the right group of lumbar ganglia, and, less noteworthy, distention of the ascending colon and cecum with gas. It was his assumption that hypersensitiveness of the right group of lumbar ganglia, associated with fibroid degeneration of the appendix, meant that the efferent impulse from a certain segment of the spinal cord related to the nerves of the appendix made greatest demonstration in the lumbar ganglia. When derangement of function was concerned they might assume that the efferent impulse disturbed the semi-lunar ganglia of the solar plexus and perhaps also the intimate ganglia of the bowel wall. At any rate derangement of the digestive apparatus occurred as a result of focal irritation at the appendix. The question of operation was a question of expediency. Many of these patients presented other stigmata of decline, and the gastrointestinal disturbances were relieved in part only by removal of the fibroid appendix. Other patients were relieved from gastrointestinal disturbances as soon as the fibroid appendix had been removed. It was his plan to give the patient a full explanation of the nature of the case and allow him to decide himself in regard to operation. Fibroid degeneration of the appendix was first described by Senn and by Ribbert, but these authors confined themselves to the anatomical features without describing the clinical significance of the condition. An irritative lesion of the appendix which brought a patient to the doctor's office more often than he was disturbed by an infective lesion of the appendix called for rather more attention than was commonly given the subject.

Radium in Gynecological Practice.—Dr. Walter B. Chase of Brooklyn read this paper in which he expressed the opinion held by many other operators, that surgical procedure had apparently reached the limit of palliative and curative power, and while holding to the principle that large operable growths belonged to the domain of surgery he also believed that surgery and radium were not incompatible, but rather reciprocal and supplemental. An inoperable cancer might be made operable within three to four weeks by the use of three or four thousand milligram-hours of radium. Radium therapy was based on prophylactic preoperative and post operative application. To insure the highest degree of efficiency its early use was imperative. The most favorable time for application was immediately subsequent to operation. Crossfire with radium greatly enhanced its power. Not infrequently burying the radium in malignant structures or placing it in the vagina was of the greatest importance. In uterine cancer the writer stated that he had used it continuously for ninety-six hours. Not only in malignancy had radium a field in gynecological practice, but its power to control uterine hemorrhage was worthy of trial and consideration. The author quoted from the annual report of the Radium Institute of London, in which, during the year 1914, 841 patients were treated showing the many favorable results that had occured in cancer from the use of radium and he also reported a number of cases from his own experience showing the palliative and curative effects of this agent.

The Application of Anociassociation to Obstetrics.—Dr. Carl Leslie Hoag read this paper in which he described Crile's method of administering nitrous-oxide oxygen together with a local anesthetic which had been used in surgery with success for the past three years. This method he had applied in obstetrics and found that it shortened the first stage of labor and rendered delivery practically painless. This method was so simple that it could be employed by the general practitioner and was free from the dangers that had been attributed to the "twilight sleep."

AMERICAN NEUROLOGICAL ASSOCIATION.

Forty-first Annual Meeting, Held in New York, May 6, 7, 8, 1915.

President, Dr. George W. Jacoby of New York.

(*Concluded from page 172.*)

Friday, May 7—Second Day.

The Study of Temporary Abnormal Mental States Conforming to Recognized Types of Psychoses.—Dr. Sidney I. Schwab of St. Louis read this paper, in which he said there were to be found running through the lives of most individuals who were characterized as normal, periods of mental reaction which presented to the inquirer many of the characteristics which were commonly met with in definitely outlined psychoses. These periods showed with great exactness all the symptomatological evidences upon which the diagnosis of clinical insanity might aptly be based. There were in addition maladjustments which in essence presented the common form of permanent psychosis. Many in-

stances commonly labeled neuroses were found after diligent study by one method or another to be something else. The class of individuals sketched seemed to fall very naturally into groups as follows: dementia præcox, depressive group, manic depressive group, the paranoid group, pseudo self-accusatory group, delusional group and the group termed inadequacy. The necessary conclusions, if this view was at all suggestive, was that an intimate study of this class of individuals would lead to an understanding of the maturer types of psychoses, give an opportunity for direct prophylaxis and the study of the physical factors concerned.

Dr. D. J. McCarthy of Philadelphia thought this paper of Dr. Schwab's was not only very suggestive but one of extreme practical value. The general tendency of the mind of the individual from childhood up, as he thought, was too often neglected. If the doctor happened to know the development and history of the child from infancy up much information would be given to him upon which he might form a prognosis.

Dr. E. E. Southard of Boston said this communication was very important. The subject had certainly been neglected by neurologists on account of being busy with other things and by alienists because they had no cases.

Dr. Joseph Collins of New York said that in the eleven thousand patients which had come into the Out-Patient Department of the Neurological Institute since its existence in the last five and a half years there had been about twenty-five hundred under the category to which Dr. Schwab had referred.

The Development and Operation of the Laws for Hospital Observation of Cases of Allied Mental Disease or Defect in Massachusetts.—Dr. Henry R. Stedman of Brookline, Mass., read this paper, stating that the advantages of hospital observation in criminal cases over the practice of occasional examination at the prison must be apparent to all. It was common to find no evidence of insanity until repeated and prolonged examinations had been made. To require by law a period of hospital examination in cases where insanity was pled as a defense tended to lessen the number of such pleas. Concealed delusions and feigning could be detected only with difficulty unless opportunity was given for careful trained observation. Although Maine and New Hampshire had had a law requiring hospital examination of criminals, in Massachusetts, since 1905, the law had applied to non-criminals as well. During the past five years 370 non-criminal persons had been sent by the courts for varying periods, usually 30, 60 or 90 days, for observation. Of these over 50 per cent. were pronounced insane and committed to State Hospitals. With the exception of those still under observation and eight who died, the remainder were discharged to their homes. The superintendent generally found the law very satisfactory. The judges also regarded the law favorably. Such laws should be widely adopted throughout the country.

Dr. E. E. Southard of Boston said that at the Psychiatric Hospital in Boston they had a large number of these cases and he had taken a personal interest in them. He thought there was no opposition to the law by any one in the State. Germane to this was the allied fact that the State Industrial Board had sent to the Psychiatric Institute all suspected traumatic psychoses. Dr. Southard thought it was the first time in the world where a fair, unprejudiced, unbiased study of these cases was made.

Dr. Walter Channing of Brookline, Mass., said it seemed to him it would be of the utmost value if we could have in this country some sort of national reorganization of all our laws relating to the admission of the insane to the hospitals. If, for instance, those laws that were good in Massachusetts could be adopted in other States. Nothing could do more for the prevention of insanity. Until something of the sort was done we should go on with our practice of admitting large numbers of persons who could be treated outside.

Saturday, May 8—Third Day.

A Case of Wilson's Disease—Progressive Lenticular Degeneration, with Pathological Findings.—Dr. Frederick Tilney of Brooklyn read this paper, which was prepared in collaboration with Dr. G. M. MacKenzie, Brooklyn, reporting a case presenting a typical syndrome of progressive lenticular degeneration, as described by Wilson. It ran a moderately acute course, terminating in death in fifteen months. The oustanding clinical features were the marked hypertonicity of the somatic musculature and the evidence of extreme toxicity. A preliminary report of the pathological findings in the brain was given and with this the histological findings of the spinal cord, liver, spleen, kidney, thymic remains, thyroid, heart, lungs and suprarenal bodies.

Dr. H. H. Hoppe of Cincinnati said that he had a case in a woman of 45 which presented quite a number of the features of Wilson's disease. There was hypertonicity associated with constant athetoid movements. The legs were constantly in a state of motion and the feet were inverted. There were no pathological changes in the reflexes, excepting that they were increased. The woman's mental state was practically normal, except that she was constantly in a state of rather pleasant frame of mind.

Dr. Alfred Reginald Allen of Philadelphia said that Wilson had so limited his disease, so exactly described what it is pathologically as well as clinically, that it would be very difficult to make a hard and fast diagnosis of uncomplicated Wilson's disease outside of the autopsy room.

Histopathological Findings in a Case of Landry's Paralysis; Demonstrated by Lantern Slides and Microphotographs.—Dr. E. D. Fisher of New York read this paper, reporting a case of a boy fifteen years of age who became suddenly ill, complaining of weakness in the lower extremities. After admission to St. Vincent's Hospital his condition became progressively worse until a complete paraplegia of the lower extremities developed. This was of the flaccid type. Within seven days the upper extremities became involved in the same manner. The muscles of all limbs became atrophied. Reaction of degeneration was present in the lower and marked quantitative and qualitative electrical changes in the upper extremities and shoulder muscles. There was also a partial dissociation of touch, pain and temperature sense in those extremities. Subjective sensory disturbances were a constant accompaniment. Toward the end of his illness most of the cranial nerves became involved. The bacteriological examination of the blood and spinal fluid was negative. The cytological examination of the spinal fluid was also negative. A slight rise in temperature marked the entire course of the disease. The patient died of asphyxiation after an illness of six weeks. The autopsy was performed by Dr. John H. Larkin and specimens of the cord and brain stem and sciatic nerve were prepared by him for examination. The histological examination reveals changes throughout these tissues. The spinal nerve roots and the sciatic show marked parenchymatous and interstitial changes with an infiltration in the perivascular and perineural lymph spaces of leucocytes, plasma cells and some gitter cells. The cells of the posterior horns at all levels of the cord show a central chromatolysis, especially marked in the cells of Clarke's column. Such type of cell degeneration is also evident throughout the bulb and pons. The cells of the motor neurons show in addition two other types of degeneration, namely: a swelling and coalescence of the Nissl bodies, a tygrosis with eccentric nuclei and staining very deeply and in some places an extensive cell vacuolization. Around these there are to be seen satellite cells which at times dip into the cell body. Their prolongations are visible and are retaining to some extent meshes of chromophilic bodies. The vessels and capillaries are engorged throughout and at times are seen to burst, producing hemorrhage into the neighboring tissues. Frequently we meet with capilary aneurisms and thrombi. Hemorrhages, rather minute and to all appearance recent, are present at all levels of the cord and brain stem, both in the gray and white matter. A marked glia proliferation is a feature throughout. At some levels of the cord an ependymitis of the central canal is present. In a word, we are dealing here with neuritic as well as a cellular involvement, the former being more pronounced. The cell changes of the central chromatolysis type are of a reactionary character due to remote influences in their neuraxone, while those of the tygriosis type speak for a primary cell involvement as a result of an inflammatory condition around and in the cells. The clinical aspect and the pathological changes that we find in cases of an acute ascending paralysis of the type of Landry point to an infectious process. Our case would show that both the infectious agent and its toxin are responsible for these changes. Which of the two are predominating is an

open question. The predominating type of pathological changes in Landry's paralysis is that characterized by inflammatory myelitic changes with very slight, if any, nerve changes. For this reason recent investigators are inclined to regard this disease as poliomyelitis. But in this affection we deal with a distinct etiological factor and are able to reproduce the characteristic pathological picture. In Landry's paralysis divers kinds of cocci and bacilli were found and the pathological picture was not uniform. We may, therefore, conclude that: 1. The clinical picture is the criterion of Landry's paralysis. 2. That pathologically there may be a purely cellular, or neuritic only, or a neuro-cellular involvement, and 3. That the time element is no criterion of the disease, since it may last from eight days to eight weeks.

Dr. Carl D. Camp of Ann Arbor stated that some time ago he reported a case of acute unilateral ascending paralysis which came to necropsy and in which were found in the peripheral nerves very much the same degenerative changes that were described here. At that time he also noted the abnormality of the anterior horn cells and regarded it as a phenomenon secondary to the changes in the nerve.

Dr. Israel Strauss of New York said that all know of cases of Landry's paralysis in which no pathological lesion could be discovered. At first when this disease was described we did not have at our disposal the technic described to-day. Since those cases were described other cases had been described and present distinct clinical features which render it possible that there could be acute ascending paralysis without very much in the way of microscopical lesion.

Observations on Hereditary Syphilis Affecting the Nervous System.—Dr. Carl D. Camp of Ann Arbor read this paper, in which he stated that syphilis is the most frequent cause of mental defectives. The diagnosis may sometimes be made by the peculiar clinical type which generally adheres to the type of Finkler under the title of infantile pseudo general paralysis. A certain proportion of cases of epilepsy were due to syphilis.

Dr. William W. Graves of St. Louis said that in an individual who did not present heretofore generally recognized signs of syphilis, such as Hutchinson's teeth, etc., the case at once has little or no suggestion of the possibility of being one of syphilis. In regard to the relation of epilepsy and congenital syphilis in his experience it was not a great factor. Neither was it a very great factor in those cases we call feeble-minded. One characteristic of the congenital syphilitic is early precocity. A thing Dr. Graves thought that was not made use of as much as it should be in our study of congenital syphilis was our failure to make family studies. The one characteristic of syphilitic infection was deviation from the type. If we used parents for standards in our studies of syphilis we would be impressed with the deviating characteristics of the entire individual. One needs to study the progeny of paretic and tabetic parents, and Dr. Graves was sure that anyone who would do this would not fail to be impressed with the deviating characteristics of the children of paretics and tabetics.

Circumscribed Purulent Meningitis Limited to Frontal Lobe; Due to Sinusitis.—Dr. Samuel Leopold of Philadelphia read this paper, reporting two cases of frontal sinus meningitis with necropsy. The first case, a boy of 14, gave a history of repeated colds in the head. Finally he developed a persistent frontal headache and swollen right eyelid. Operation revealed disease of the frontal sinus. Several days later he developed stupor with rigidity of the left lower limb, with some hemiparesis. Necropsy showed a purulent exudate beneath the dura and chiefly limited to right frontal lobe. The left frontal was diseased. The second case gave a history of influenza followed by meningitis. The chief symptoms were stupor alternating with delirium, slight rigidity of the neck and Kernig's sign. There were no localizing symptoms. Death occurred in 5 days. Necropsy revealed a similar limitation of the exudate as described in Case 1, over the upper surface of the one frontal lobe. Early operation was advised where this condition is suspected.

Dr. E. E. Southard of Boston said that some years ago he was doing work with experimental meningitis and tried to produce results like those seen in human cases, but he was never able to do so. A culture from one part would be sterile, in another part the true organism, and in another part many organisms. Various parts of the meninges had different resistance to infection. There was a tendency to healing in meningitis.

Meningitis Sympathica.—Dr. Israel Strauss of New York read this paper, stating that meningitis sympathica was the name given to those changes which occurred in the cerebrospinal fluid when an inflammation was present in the neighborhood of the meninges. The pressure of the fluid was greatly increased and might reach as high as 400 mm. There was an increase in the cellular elements, the cells generally being polynuclear leucocytes. The fluid was sterile. There might be no symptoms of meningitis, but very often there was considerable neck rigidity and Kernig's symptom was present in varying intensity. One of the most frequent causes of the condition was brain abscess, especially where there had been a previous otitis. It might also be present in patients where there was an inflammation of the accessory sinuses of the cranium or of the structures adjacent to it. We frequently met with intracranial inflammatory conditions where there was no evidence of meningeal irritation, but when meningitis sympathica was present it aided us both in the diagnosis and treatment.

A Case of Central and Peripheral Neuro-Fibromatosis (von Recklinghausen's Disease). — Drs. Peter Bassoe and Frank Nuzum of Chicago presented this paper, narrating the case of a boy of 15 years at death. From the age of 4 years he had had attacks once a year, lasting two weeks to three months, of pain in the back near the right scapula. Dragging of the left foot was noted after the first attack. At 10 years he had eight eye muscle operations. A lump on the left side of the neck was noted three years before his death, a pelvic tumor three months before death. The findings on examination suggested basal brain tumor and cord tumor. Several subcutaneous nodules led to a correct clinical diagnosis. Necropsy showed large fibromata in both cerebello-pontile angles. Large tumor of cauda equina. Numerous small tumors on various cranial and spinal nerves, also tumors on nerve roots in places invading the cord and a large tumor outside of the rectum.

Mental Disturbances in the Feeble-Minded.—Dr. William N. Bullard of Boston contributed this paper in which he said that the character of the attacks of mental disturbance in the feeble-minded was quite distinctive. In persons who showed only the ordinary conditions of feeble-mindedness or idiocy there occurred without any exciting cause sufficient under ordinary conditions to produce such an effect, a sudden outburst of violence or temper. They scream, strike, kick, bite, destroy clothing and furniture and often require forcible restraint; they are obscene and profane. The attack lasts only one or a few days. There are usually prodromal symptoms such as listlessness, indifference and unusual actions.

Officers.—The following officers were chosen for 1915-1916: *President*, Dr. L. F. Barker, Baltimore; *First Vice-President*, Dr. H. H. Hoppe, Cincinnati; *Second Vice-President*, Dr. J. J. Thomas, Boston; *Secretary-Treasurer*, Dr. Alfred Reginald Allen, Philadelphia.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON PEDIATRICS.

Stated Meeting, Held January 14, 1915.

Dr. Walter Lester Carr in the Chair.

Report of Four Cases of Hemorrhagic Disease in the New-Born Treated by Horse Serum. — Dr. Abraham Hymanson reported these cases which occurred at the Jewish Maternity Hospital. These infants all gave a negative family history and showed the symptoms usually presented by hemorrhagic disease in the new-born, namely, blood in the stools, vomiting of blood, and purpuric spots. In all of these cases the children were in a serious state of collapse when the treatment was instituted. This consisted of the subcutaneous injection of 12 c.c. of horse serum, followed by a second dose of the same quanitity at the end of twelve hours, and a third dose if it was indicated. In one of the cases a dose of 15 c.c. of the horse serum was administered. In three out of the four cases the bleeding ceased in a short time after the treatment was instituted, while in the fourth instance there was a fatal outcome, though the injection of human blood, that of the mother, was resorted to when the horse serum failed to produce the desired effect. The horse serum had been furnished by the Department of Health. Dr. Hymanson concluded as follows: (1) From an observation of the cases

it seemed that the coagulation time of the blood was somewhat delayed in the condition under discussion. (2.) As there was always a difficulty in obtaining human blood or fresh blood serum, fresh horse or rabbit serum would serve the purpose just as well. (3.) In the newly born infant, where the bleeding was not spurious, the horse serum should be administered early and repeatedly until the bleeding ceased. (4.) The injurious effect that was caused by foreign serum had been greatly exaggerated. Serum sickness was, as a rule, a very mild affection, lasting only a few days. Serum death was a rare occurrence. Dr. Probasco had claimed that there was only one death in 25,000 injections of diphtheria antitoxin. It had been shown that nearly all deaths from antitoxin occurred in patients during adolescence or in asthmatic adults.

Dr. Henry Dwight Chapin said that in two cases of hemorrhagic disease in the newborn that had come under his observation the horse serum had been tried, but had not been effective, and that they had been compelled to fall back on human blood serum. Dr. Chapin asked Dr. Hymanson if he had considered giving the diphtheria antitoxin as a means of administering the horse serum, and if he had used the human blood serum, and, if so, with what success.

Dr. L. E. La Fetra said that it was well known that the use of human blood would check most hemorrhages of the class under discussion, but the use of whole blood as proposed by Dr. Schloss was much simpler. By Dr. Lindeman's method it was a very simple matter to withdraw ten, fifteen, or twenty c.c. of blood from the mother or father and inject it into the back of the baby. By this method one did not have to wait as was necessary when blood serum was used. Using whole blood he had been successful in about three-fourths of the cases. The success of the procedure was dependent upon the etiology of the hemorrhage; hemorrhage due to general sepsis was not so amenable to treatment as when due to some other causes. In his opinion this method of Dr. Schloss was the best and quickest one available for this purpose at the present time.

Dr. Fenton B. Turck said he would like to say something on the experimental side of this subject which had a very marked bearing on what the essayist had presented. He had been making comparative tests of the intestinal bacteria on homologous sera and had found that in young children bacterial migration occurred in the same manner as had been observed in experiments on young animals. The bacteria passed from the intestines very readily into the submucous tissue of the intestinal wall along the entire alimentary tract. The bacteria passed between the cells at the base of the villi, crossing the muscularis mucosa into the submucous areolar tissue, the "zona transformans," and were here destroyed. The antiferment in the serum was found to be reduced by this process. Previously they had found that the administration of chloroform reduced the antiferments in the blood, which was the same phenomena which they now found occurred when the intestinal bacteria entered the submucous tissue and came into contact with the sera. It was found that when intestinal bacteria (*B. coli*) were fed to pregnant animals the bacteria would pass into the fetus and cause reduction of the antiferments, resulting in premature births, with hemorrhages and death of the newborn. The study of these experiments gave some suggestion as to treatment. When there was a reduction of the antiferments in the blood it was unnecessary to theorize about the absorption of toxins, for it was not shown that toxins were formed. The rapidly destructive power was the result of the reduction of the antiferments permitting destruction by autolysis to take place. This phenomena could be demonstrated *in vitro* as *in viro*. The experiments undertaken in the production of hemorrhagic diseases were important and seemed to prove the value of supplying the deficiency of the antiferment in the sera by the addition of fresh blood. To the specialists in children's diseases there was an exceptional opportunity of making observations in these cases that were even better than animal experiments and some of the points had been well shown to-night.

Dr. Abraham Hymanson, in closing the discussion, said that in reply to Dr. Chapin's questions with reference to the use of diphtheria antitoxin in these hemorrhagic conditions, theoretically it would amount to the same thing whether they used the diphtheria antitoxin or normal horse serum, provided it were fresh. The diphtheria antitoxin also contained the antibodies in addition to the other active elements of the serum and these ought not to hurt the baby. He quite agreed with Dr. Le Fetra in what he had said of the advantages of giving fresh human blood, but the trouble was that one could not always get a suitable donor in a short space of time. He cited an instance showing that the father was not always willing in such emergencies to give his blood. He had used the Board of Health serum and it had worked marvelously well, though the number of cases that he had treated thus far was not very great. Dr. Hymanson said he was not prepared to speak of the experimental side of the work as Dr. Turck had done, but he was glad to learn that it furnished some justification for the clinical results that had been obtained. As to the matter of the placental serum, that could be used with ease in the maternity hospitals by allowing the blood from the cord to run into sterile flasks, centrifuging, and sealing with a few drops of chloroform. (The chloroform was used as a protecting layer for the serum.) Dr. Franz of Graz claimed that this could be kept as long as four months, but here one must have the Wassermann test to exclude syphilis.

A Study of Certain Aspects of Epilepsy Compared with the Emotional Life and Impulsive Movements of the Infant.—Dr. L. Pierce Clark presented this communication, in which he first recalled that in previous studies of the epileptic constitution and in a psychological study of the meaning of the fit in epilepsy, it had been shown that the fit was a libidinous outlet for the infantile unconscious. The loss of consciousness was thus shown to be due to the insistent demands for expression of the unconscious, transferring the older conception from a negative postulate to a positive dynamic one. In its simplest and crudest form the nucleus of the unconscious striving was a desire on the part of the individual epileptic, not only to return to a state of infancy with the parent, but it really contained a motive for the epileptic to gain the life before birth as symbolized in the idea of life within the mother. In a measure this hypothesis supported by clinical observations seemed to be a sufficient psychological explanation of the fit so far as the loss of consciousness was concerned, which was, after all, the real nucleus of the epileptic attack. There were other questions, however, which arose for solution. One of these was the interpretation of the convulsive movements of the seizure. The physical correlates of the convulsive spasms of the fit showed a very close parallel of movements in intrauterine life and in infancy, and under certain states of excitation produced acts which were point to point identical to those seen in *grand mal* epilepsy. Probably the convulsive movements in all the varied types of epileptic fits from the most purposeful or voluntary to those of the severe grades were drawn from the different developmental levels of child activities. Dr. Clark then discussed the significance of the epileptic cry which he said most observers were agreed was more than a mere mechanical expulsion of expiratory air from the thorax as a sequence of tonic spasm. This cry of the epileptic could be compared with the pleasure-displeasure cry of infants which was associated with tonic-clonic movements of the arms and legs. There was also an analogy in certain movements in the epileptic with displeasure movements in the infant, such as deflection of the head to one side, a turning away movement; drawing of the mouth at one side, then upward and backward, and the quadrangular or squarely opened mouth, which Darwin dwelt upon as an extreme expression of childish rage. It was interesting to observe the *tedium vitae* in the infant and the epileptic alike; the lack-luster eye, indolent movements, cessation of spontaneous interest, a falling of the countenance, and a paler complexion—all had long been considered as heralds of a *grand mal* attack. The great importance of a large amount of sleep in the epileptic was comparable with that required by the infant, while interruptions of sleep in both infant and epileptics were alike disastrous to well being or good temper. Impulsive and incoordinate movements of infancy during sleep and during fetal life had a parallel in the adult in whom such bizarre movements were sometimes seen during sleep and particularly in the epileptic. A study of the infantile poses and postures assumed by epileptics during sleep should be studied more carefully as they threw an interesting side light upon the somatic and psychic infantilism of epilepsy. Some of the depressors of these impulsive movements were deep, quiet, sleep, satiation by food, while duplication of the intrauterine state by the warm bath acted as an accelerator. It was striking that both infants

and epileptics were little fatigued by the most intense and persistent impulsions, which spoke strongly for the unconscious motivation in the activities of both. In conclusion Dr. Clark submitted that they were justified in considering that the essential nucleus of the epileptic fit was a libidinous one; that it consisted in an infantile unconscious striving of pleasure-displeasure pursuit ending in the final goal of an intrauterine life, attended by a loss of consciousness and convulsions; that the convulsion was expressed through the lower spinal centers in inducing crude and impulsive movements; that a study of the degree of development of unconscious infantile striving in the psychosexual sphere of the libido, the desire for the fetal uterine state of *allmacht*, was paralleled by the kind and character of impulsive movements found in this infantile period of neuromuscular development. Therefore, the two main settings in the epileptic fit, unconsciousness and convulsions, were psychically and physically correlated, and lastly that epilepsy was in its essential pathogenesis an error or arrest of this fundamental elaboration or development of the psychosexual libido. The essential pathogenesis of the disorder was still to be attacked, but the author believed that such studies as the one presented here and as were elsewhere reported narrowed the gap between such supposed causes of epilepsy as inherited psychic traits and somatic structural anomalies which did not permit of proper psychosexual development into the normal adult. It also pointed the way by which therapeutics might advance along the broadest biological lines of educational and moral treatment.

Dr. JOHN T. MACCURDY said that the underlying wish in the epileptic to return to a state of rest equivalent to that which the individual enjoyed in fetal life might seem a bizarre conception, but from his experience and that of others with the insane it had to be regarded as a frequent type of unconscious wish that came often to open expression in psychoses. From that standpoint therefore he felt fully in accord with Dr. Clark. He then spoke of the importance of the comparison which Dr. Clark had made between the suckling and the epileptic in reference to convulsive movements. On the basis of this identity he outlined a possible physiological theory for the origin of the convulsive movements, on the supposition that the mere loss of conscious control might set all the voluntary muscles into incoordinate motion.

Dr. J. VICTOR HABERMAN said that it seemed to him that the logic of Dr. Clark's paper was also unconscious. If the initial cry of the epileptic could be sufficiently explained by the sudden contraction of the thorax forcibly expelling the air through the larynx, why should one not accept this explanation instead of a far less logical one? He had noticed that in all their writings, the Freudians gave no proof of their theories; they assumed certain things, left it at that, and then asked others to accept their opinion. Dr. Haberman asked whether the epileptic voice, which Dr. Clark had described some years ago, was also a cry of the libido; also whether the convulsions in renal disease and in brain tumors were the expression of the libido? How did Dr. Clark explain the fact that in many cases of epilepsy one found an actual pathological condition? Some believed, and it had even been expressed by Freudists, that all idiopathic epilepsy was due to pathological (organic) conditions of the brain. How did Dr. Clark correlate these facts?

Dr. ISRAEL STRAUSS said that he rarely spoke or discussed a paper that dealt with a subject treated from the Freudian standpoint because it was impossible to influence anyone who had taken that position. He had much sympathy with Freud's theories, but he had always thought that the psychanalysis of Freud applied to neuroses, and epilepsy was not a neurosis. A study of the brains of epileptics had shown many lesions, and Dr. Clark himself had described changes in the ganglion cells in epilepsy and so it seemed that to look upon this disease as a neurosis one would have to revise his conception of the pathology relating to it.

Dr. L. PIERCE CLARK said he regretted the facetious element in the discussion. It was quite true that the logic and the line of reasoning in determining a psychological basis for unconsciousness must entirely concern the unconscious and if the logic and the motive of the mechanism were in accord, so much the better. The fact that the epileptic cry was not satisfactorily explained by any simple mechanical principle, and was so stated in any number of textbooks on epilepsy, urged them toward finding some other elements as well as the psychical to account for it and thus make clearer this one phenomena which was so peculiarly unique to the epileptic state. It could not be reproduced by imitation, nor was it present in any other phase of disease. They now had a very good explanation of the voice sign. The essential defect in epilepsy was one of the primary instincts. That being the case, they would expect the condition to show in later life as an affective emotional defect in the epileptic mentality, which was the case. If this were granted, they would quite expect that there would be an essential incompleteness of emotional expression in epilepsy. Therefore, they found that as a class epileptics were neither good musicians nor had beautiful voices. Of course, it was absurd to push the epileptic mechanism to explain all convulsions occurring in other disorders purely as symptoms, such as those occurring in renal disease or brain tumor. The equal presence and absence of any histological lesion in the epileptic brain would make one, on the face of that statement, throw aside any lesion as being essentially a causative factor. They must look upon such brain lesions when present as a result of the disorder and not its cause. While many had observed a fairly close relation between certain diseases of the motor cortex and the epileptic convulsion, no one had been so bold as to push the law of psychophysical parallelism to the point of making such lesions in the cortex the cause of loss of consciousness as seen in the epileptic attack. Inasmuch as the latter symptom was the one essential factor in epilepsy it was necessary for them to bring into play a defect in some fundamental principle in life which should be as broadly significant in motive as that which underlay life itself. This was what the speaker had attempted to do. In point of fact, one might say that all the organic lesions in the epileptic brain were but precipitating factors in lowering mental tension or continuing the same, thus permitting certain morbid phenomena in the instinctive life to have their play as shown in the fit. While the formulation of the principles which he had brought forward might undergo more or less modification, it was his belief that he had outlined a rational and fundamental plan for understanding both the loss of consciousness and the convulsions of epilepsy. What might be the precipitating causes of the underlying defect of the epileptic constitution which permitted individuals to have seizures was still a question demanding solution.

The Present Conception of Chorea. — Dr. ISRAEL STRAUSS read this paper, which he prefaced by referring to the many different hypotheses that had been advanced to account for chorea. He stated that it had been attributed to a hereditary tendency to neuropathic taint, fright, and excitement. The more probable theory was that these were but predisposing causes, the disease itself being of infectious origin. The purpose of this paper was simply to weigh and discuss these different views. The relation of rheumatism to chorea had been noted and the suggestion had been advanced that they might be due to the same agent, or that the one stood in a causative relation to the other. Possibly chorea was a metarheumatic condition, just as tabes and paresis were parasyphilitic affections. Authorities were by no means in accord with regard to the embolic theory. One authority stated that 56 out of every 63 cases of chorea gave a history of rheumatism and Thayer stated that 21.6 per cent. of choreics had had rheumatism. To settle this question satisfactorily, the etiology would have to be discovered in both conditions. There was evidence of the presence of the streptococcus in most cases of polyarthritis. Diplococci and staphylococcus pyogenes aureus had been found in choreics and much biological work had been done by the different methods, complement fixation, ærobic, and anærobic methods, and the results differed widely. Chorea had been known to follow typhoid fever, malnutrition, syphilis, the abuse of alcohol, etc. It was a disease of early life and occurred most frequently between the ages of six and fifteen years. It was more apt to occur in wet cold seasons. It was frequently febrile in the early stages and gave evidence of endocarditis. The fatal cases showed the rugæ of endocarditis. What influence the cortex exerted was unknown. In fatal cases the brain lesions were those of acute encephalitis and this brought up the question to what extent such lesions were present in the ordinary cases that went on to recovery. The probability was that this would never be known until some case of moderate chorea died suddenly and an autopsy was obtained. In the present state of their knowledge the

only conclusion that was justifiable was that chorea was probably of infectious origin, but the data at present was altogether insufficient to decide the nature of the infection.

Dr. L. E. La Fetra said he had come expecting a very different expression of opinion on the subject of chorea and was prepared to disagree, but, on the contrary, he quite agreed with what he had heard. It seemed that chorea must be considered as closely related to polyarthritis and must be considered as due to some kind of bacterial infection in the vast majority of cases. There were two points to which he wished to call attention: First, in Bellevue Hospital they had made a number of studies of the blood in chorea, and in two of these the streptococcus viridans was found in the blood. Complement deviation tests by Dr. Hoobler were found positive in two other cases. In the second place, it had been observed that children who had just recovered from polyarthritis or acute endocarditis frequently developed chorea while still in bed. When the influences that were generally given as exciting causes of chorea were absent, when there was no fright, no malnutrition, no exictement, nothing in the way of nervous shock to account for the development of the chorea, one might feel quite positive that in the majority of cases chorea was an infectious disease. On the other hand, there were some cases that followed so quickly upon fright and nervous shock that it would seem probable that there were cases that had a basis other than that of infection.

Dr. J. Victor Haberman said that no mention had been made of psychic chorea. He recalled a striking case that came to Dr. Starr's clinic some years ago. This patient had a chorea so apparently typical that Dr. Starr was about to show her to the students. For the relief of a headache of which she complained she was taken aside and treated by hypnosis. On awakening, not only had the headache disappeared but the entire chorea. After this Dr. Haberman treated a large number of choreics coming to the clinic psychically and found that in some the chorea disappeared at once; in others after a few treatments. In these cases the disease could not have been rheumatic chorea. In studying a still larger series he had come to the conclusion that psychic chorea was not uncommon, and that many, if not most, of the cases lasting over three months were of this nature; also, that many of the recurring attacks in neurotic and hysterical children who might have had a real chorea in the beginning were psychogenic. The child was on the watch for a new attack and so got it. These cases were all strongly amenable to psychic therapy. There was no way of differentiating the rheumatic from the psychogenic save by the result of treatment. Another series of cases was due to congenital syphilis. Millian in France and Nonne in Germany had called attention to these cases; the former believed that he had found lues so frequently in the heredity of choreic cases that he thought chorea itself must be a manifestation of congenital lues. Few, however, had accepted his view. Nevertheless, there were cases certainly due to this factor. Dr. Haberman cited the case of a child whom he had recently treated who had had chorea for three years and been treated by a number of physicians, none of whom thought of associating the chorea with congenital lues, though the mother gave a positive Wassermann reaction. Antiluetic treatment speedily cured the chorea.

Dr. Henry Dwight Chapin said that Dr. Roger, the French clinician, had studied the relationship of rheumatism, endocarditis, and chorea many years ago, and had come to the conclusion that they presented the same underlying pathological condition, and it really seemed that up to the present time they had not gotten much beyond his view. It seemed undoubtedly that they were all of infectious origin. Where one of the three conditions was found one was liable to meet the others.

Dr. Henry Koplik called attention to the importance of seeing these cases of chorea through years, for it might be said of chorea "once a choreic always a choreic." Seeing the heart gradually becoming worse and worse led to but one conclusion, and that was that the poison causing the chorea was producing the endocarditis. The way in which the term rheumatism was used to-day was most unfortunate; it was much like the former use of the term "malaria." It was probable that the poison causing polyarthritis was closely allied to the one that produced endocarditis and chorea. The question was whether the habit movements were the result of or a continuance of a condition produced by infection. The cases which Dr. Haberman had spoken of as controlled by hypnotism could not, of course, be due to the same etiology as that associated with cases supposed to be due to infection. In many cases in which the blood cultures of cases of chorea had been examined the technique might have been faulty; in others a mixed infection might have been found. In several cases of chorea which he had had examined in this way nothing had been found in the blood. It was quite possible that the streptococcus might accompany the true organism, just as it might be found associated with the Klebs Löffler bacillus.

Dr. Elias H. Bartley of Brooklyn stated that they had made cultures at the Long Island College Hospital of three or four cases of well defined chorea and in none had they found any organism. This was not a large number of cases and it did not lead to the conclusion that there was no infection, but it did mean that the particular organism which had been mentioned had not been found; if this organism was the cause of the disease it must be constantly found in the disease, and as it was not found to be constant it could not be regarded as the cause of chorea.

Dr. Strauss, in closing the discussion, said he quite agreed with Dr. Koplik that it was unfortunate to use the term rheumatism as was done, since no two or three men agreed as to its meaning. With regard to polyarthritis and chorea, they could not say that the streptococcus viridans was the agent producing these affections. Dr. Libman's work at Mount Sinai Hospital was such that they could not say that he was incompetent to isolate this organism if it was in the blood, yet they had not succeeded in isolating it from the blood in chorea though they had made cultures ærobically and anærobically. Personally he did not believe that if the streptococcus viridans was there it would have escaped notice. Another point in regard to the relationship of rheumatism and chorea—in chorea one did not get good results from the use of the salicylates; the results were not those obtained in polyarthritis. On the other hand they had tried neosalvarsan in chorea and sometimes with surprisingly good results. This suggested that a protozoon might be involved. They had no right to say that because rheumatism occurred and was followed by chorea that the latter was due to the same cause as the former, neither could they say that because endocarditis had been found in 21 per cent. of the cases of chorea that the endocarditis and the chorea were due to the same cause. When one had a severe case of chorea insaniens, he could not, as a rule, save it no matter what was done, and one might find an acute parenchymatous nephritis, endocarditis, or even acute encephalitis, and he could not say that these cases were due to infection always. Therefore, though they might say that chorea appeared in association with and followed other diseases which were due to infection, they were not justified at present in any more definite statement of its etiology.

Acrocephalosyndactylia. — M. Bertolotti and G. B. Trotti report a case of this condition which was first described by Apert in 1896. It is a congenital malformation characterized by a pointed shape of the top of the cranium associated with a symmetrical syndactylia of the four extremities.—*Riforma Medica.*

Congenital Cerebellar Ataxia.—J. M. de Villaverde describes this condition as one in which the ataxic symptoms are perceived as soon as the infant begins to creep or walk, and diminish gradually in their intensity to disappear eventually entirely or to a great extent. The condition must be differentiated from the ataxias of Friedreich and of Marie.—*Revista Clínica de Madrid.*

Intestinal Motility and Tonicity as Affected by Intestinal Contents.—G. Ollino has studied the effects of certain substances found in the intestinal contents upon the tonicity and motility of the intestine under normal and pathological conditions. She found that starch diminishes motility following a period of spastic immobility. Peptone excites motility, and urea in addition excites tonicity. Creatinine diminishes motility, while guanine excites both tonicity and motility. Xanthine increases tonicity but diminishes motility. Sulphureted hydrogen in small doses increases the amplitude but diminishes the frequency of the intestinal movements. Indol diminishes motility and produces intercurrent spasms, while scatol and mercaptan diminish motility. Tryptophan diminishes tonicity, the fecal fats excite motility, and the soaps and putrescin produce a spastic hypertonia.—*Riforma Medica.*

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Original Articles.

THE BONE GRAFT WEDGE IN THE TREATMENT OF HABITUAL DISLOCATION OF THE PATELLA.

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THE usual direction of congenital or habitual dislocation of the patella is outward, and the external condyle is often found to be on a horizontal plane much below that of the internal condyle, thus giving the appearance of rotation of the lower end of the femur, so that the external condyle is relatively further back and the internal condyle farther forward than is normal.

When the leg is extended, the patella usually takes its normal position between the condyles, but upon flexion is found to be displaced outward and even to lay over the external condyle or somewhat external to it.

Various methods have been devised to correct this displacement, but of the procedures which have been practised by the author, those where correction was attempted by using the soft tissues have been far less successful in securing permanent control than those where the control was attempted by furnishing bony obstruction to redislocation.

Krogius[1] reported two cases (one double) in which it was evident that the patella was drawn outward by the tense outer portion of the capsule against which the relaxed and stretched inner portion offered but weak resistance. He devised the following operation for controlling the displacement:

The first step is the approach to the knee by Kocher's incision. Second, an incision is made, extending from slightly above the patella down a few inches in front of its outer edge to the insertion of the ligamentum patellæ through the iliotibial band, tendinous expansion of the vastus externus, and fibrous capsular wall. Third, the formation of a bridge-shaped flap on the inner side of the patella, connecting below with the tendinous expansion of the vastus internus and fibrous capsule, and above with muscle and fascia. Fourth, the transplantation of the flap, left attached at both sides, across the patella into the gap at its outer edge.

In the first case, after 6 months, the patella again began to slip outward, although complete dislocation did not occur. In the second case, the result was perfect after three months.

Outward dislocation of the patella may be the result of direct violence applied to the inner edge of the patella, but quite as often follows sudden muscular action. Knockknee, undue laxity of the ligaments, especially of the capsular and more particularly a deficiency of the external lateral ridge of the external condyle, all predispose not only to the occurrence but to the recurrence of the disability. A sudden muscular contraction with the leg extended or in midflexion, especially if the knee is inverted and the foot and leg are everted, is sufficient cause to produce displacement. Eversion of the leg brings the insertion of the ligament further out and affords a straighter pull for the extensor muscles. Reduction is generally easy.

The advice of the textbooks is to extend the knee, fully flex the thigh to relax the rectus, manipulate the kneecap by pushing it medialwards, at the same time correcting any rotation. The quadriceps with the knee extended may be pulled down to aid relaxation. If these manipulations fail, they may often be successful with the joint in slight flexion instead of extension.

Recurrence may happen only occasionally, usually unexpectedly, in the course of flexion, or it may occur very frequently, the patient learning to replace it himself. It means, in time, a relaxed, weakened, and uncertain joint. The recurrence may be relieved by a knee cap or by a bandage. As a rule, the annoyance is so great that something more radical must be done.

One operative procedure consists in reefing the medial side of the capsule, with or without opening the joint. Another consists in transplanting the insertion of the patellar ligament medialwards. These operations have sometimes been performed with good results, according to Whitlock, but he offers as a third method that of reinforcing the patellar ligament by grafting the tendon of the gracilis into it (Tenney[2]).

Dumferline describes a technique which he has used successfully. He takes a semilunar flap of skin and fascia from the medial and posterior surfaces of the knee, far enough back to enable him to reach the tendons of the semi-tendinosus muscle; the base of the flap crosses the line of the patella and the patellar ligament. The semitendinosus muscle is dissected as low as possible. The patellar ligament is split, a portion being turned up to be sutured to the cut end of the tendon of the semitendinosus. The medial portion of the capsule and the fascia are then plicated with several sutures, chromic catgut being used for both tendon and capsule.

Whitlock's method consists of turning forward a long horseshoe shaped flap of skin and fascia, with its base in front and its apex reaching backward to the line of the medial hamstrings, the base corresponding with the line of the medial margins of the patella and the patellar ligament. The ligamentum patellæ is exposed in its course for about three-fourths of an inch by dividing the thin capsular fascia overlapping its anterior surface, and

a thin Kocher fenestrated blunt dissector is thrust through the ligament from behind forward so as to separate the fibers as near its middle as possible, making a space of half an inch vertically. This is done without entering the general synovial

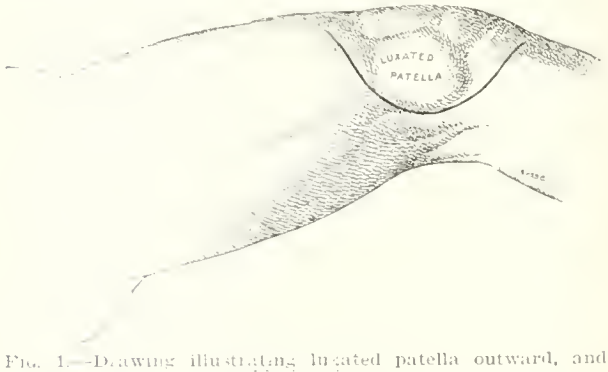

Fig. 1.—Drawing illustrating luxated patella outward, and skin incision.

cavity of the joint. The ligament is then split for a space of half an inch or more and prepared to receive the end of the gracilis tendon. This tendon is found by taking the sartorius muscle as a guide; the fascial attachment of the sartorius is divided above and posteriorly so that its edge may be thrown forward. The slim tendon of the gracilis is then seen lying proximal to that of the semitendinosus, and parallel with it are some vessels and a nerve which should be avoided. The gracilis tendon is isolated and divided as near its tibial attachment as possible. It is brought forward and threaded through the fenestrated director and passed through the patellar ligament, and is sutured with chromic catgut. Whitlock states that the gracilis was chosen partly because of its superficial position and its very long and supple tendon, but mainly because it is primarily an adductor in its action and innervation, being supplied by the obturator nerve. It is a less important flexor of the knee than the semitendinosus. The altered position of the transplanted tendon acts as a tie, fixing the ligamentum patellæ and preventing the passage of the patella outwards during full extension of the knee, while it tends also to rotate the joint medialwards. In cases in which there is a large amount of flaccidity of the capsule of the tendon, transplantation is fortified by reefing the capsule. Goldthwait[4] reports eleven cases operated upon for dislocation of the patella. Through a 5-inch incision, beginning at the tubercle of the tibia, the patellar tendon was exposed and split into halves. The outer half was freed from its attachment to the tubercle and drawn inward under the

Fig. 2.—A, indicates the normal size and anterior prominence of the external femoral condyle. B, indicates the flattened external condyle with a consequent luxation of the patella outward. C, indicates anterior lifting of the condyle to block the recurrence of the luxation of the patella with the wedge graft (dark area) in position.

remaining half, and sutured securely to the periosteum, together with the expansion of the tendon of the sartorius muscle at the inner side of the anterior surface of the tibia. A number of these cases recurred after the operation.

Murphy[5] reports his method of dealing with congenital luxation of the patella, which consists of exposing the joint freely through two longitudinal incisions, one on each side of the patella, and turning the patella with its attached ligamentum pa-

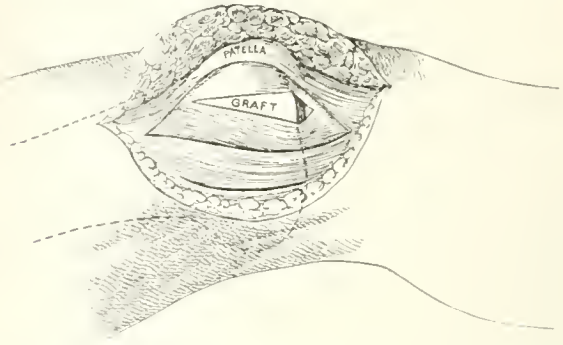

Fig. 3.—Operation for outward dislocation of the patella, showing shape of graft in position, lifting anterior portion of external condyle to block the recurrence of the dislocation.

tellæ to one side. With a broad gauge to correspond to the under surface of the patella, a segment of bone lying between the condyles is removed to deepen this intercondylar groove. A flap of fascia and fat is then turned in from above and sutured over this denuded bone area to prevent ankylosis of the patella to the femur. The patella is placed in position, resting on this fascia flap, and the inner portion of the fibrous capsule is drawn over the patella and sutured to its fibrous covering.

The extent of trauma to the joint surfaces would indicate possibility of adhesions and limitation of joint motion, and the absorption of the fascia fat flap covering in the incised bone area would also tend to cause adhesions and limitation of joint function.

Graser[6] presents his method, and reports several cases in which the outer condyle of the femur stood considerably further backward than the inner condyle when the leg was rotated outward. He effected a cure of the dislocation by performing a supracondyloid osteotomy of the femur and twisting the condyles so as to bring the outer portion forward and the inner condyle farther backward. This procedure carries forward the insertion of the ligamentum patellæ or upper end of the tibia with the outer condyle of the femur, and thus loses much of

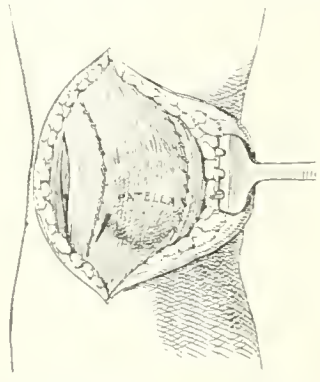

Fig. 4.—Patella fixed in position by wedge graft under external condyle and plicating sutures.

its potency. He recommends the procedure only when the posterior position of the outer condyle is marked.

The Author's Operation for Habitual or Congenital Dislocation of the Patella.—From the mul-

tiplicity of methods devised for the correction of this deformity, particularly those procedures having to do with the soft parts as a means for correction of dislocated patellæ, also from the case reports following such operations, it can be safely concluded that no method has proved universally satisfactory. Many of the patellæ have become redisplaced after varying periods of time following soft tissue operations for this fixation, as might reasonably be expected. Grafted soft tissue, whether it be ligament, fascia, or periosteum, will withstand but little constant strain and will gradually pull out if any great amount of traction is placed upon it. The most secure anchorage for tendons, fascia, or ligaments is through bone structure, and even then unless great care is exercised and the ligament itself be made to unite with the bone to which it is secured, independently of the suturing material, one cannot be assured that the new anchorage will remain secure. Any foreign material sutured into bone, where sufficient strain is placed upon it, will gradually pull through by its own destructive action.

On account of the failures reported by the various operators using different methods the author has devised a method which, from his experience with its use, appeals very strongly as a most rational and trustworthy means of permanently restoring the displaced patella without interfering with joint function, or offering any appreciable chance for failure. Instead of attempting to rectify the deformity by a complicated procedure or subjecting the joint to damage, a simple change of the architecture of the outer condyle of the femur suffices.

A semilunar skin incision is made to the outer side of the patella sufficiently long to reach below the tibial tubercle and to above the external condyle. Without unduly disturbing the underlying joint structures, the external condyle is incised with a broad thin osteotome on its external surface, making a bone incision of from 1½ to 2 inches in length, and about ½ to ¾ inch below its anterior articulating surface, and nearly in line with the long axis of the femur. This bone incision allows the anterior surface of the external condyle to be raised to a plane above the internal condyle, by producing a greenstick fracture near the intercondylar groove, the object being to place a permanent and rigid obstacle in the way of the outward displacement of the patella.

When the anterior segment of the external condyle has been pried forward sufficiently to demonstrate its obstructing effect, the width of the bone gap thus formed is measured with calipers and a section of bone sufficiently large to fill this cuneiform gap is removed from the crest of the tibia through the lower portion of the same skin wound extended below the tubercle. This bone-graft wedge can be very easily and quickly procured by the use of the motor saw. Before the graft is removed, it is drilled obliquely in one or two places by the motor drill, so that it may be pinned to the under portion of the external condyle when put into its place. Dowel pins, made from an additional portion of the bone removed from the crest of the tibia at the time the graft is obtained, are rounded by the author's motor lathe to fit the drill holes in the graft.

The cancellous structure of the condyle receives the pins easily when they are driven into place; or the motor drill can again be inserted into the holes already made in the graft and continue them into the external condyle. The ligaments and tendinous expansions are sutured over the graft, thus holding the lifted portion of the condyle securely by kangaroo-tendon. The skin wound is closed by a continuous mattrass suture of catgut, without drainage, and the leg up to the groin is placed in a plaster of Paris splint for three weeks. Passive motion and massage are begun.

The advantages of this procedure are that, with no sacrifice of joint cartilage, a minimum of joint injury is produced at the time of operation, thereby greatly lessening the chances of limitation of motion, the formation of adhesions or future joint changes (osteoarthritis, etc.), and that the permanent blocking of any further tendency to displacement of the patella is effected by the actual elevation of the external condyle. The soft parts are not interfered with, and the only further suggestion in the case of extremely lax and stretched internal capsular ligaments is their plication with kangaroo tendon; but usually this is unnecessary, for if the external condyle is propped well forward it in itself fulfills all requirements.

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THE LYING-IN OF GARGAMELLE.

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Rabelais as a Realist.—Prof. Abel Lefranc of the Collège de France, one of the most thoughtful critics of Rabelais, says that the author of Pantagruel never invents anything in its totality; a memory, a fact, a precise circumstance always forms the foundation of his most fantastical conceptions, and frequently even of most of the details of which the foundation is composed. This law of Rabelais' intellect may, he says, be constantly verified.

The lying-in of Gargamelle forms a striking example of this habit of authorship, and in many ways it forms one of the most interesting descriptions of an obstetrical case ever published. It is really a village scene, a bit of folk life, precious because composed when historians considered it beneath them to regard the life of the people, and physicians did not occupy themselves with parturition.

Although in the sixteenth century physicians took little interest in obstetrics, and its literature was scanty, yet Rabelais probably read the section on this branch in Celsus, and may have talked over the details with his friend, Dr. Rondelet, who would likely know just the points required for the story.* This does not diminish the merit of Rabelais' achievement, but rather heightens it. A genius may gather gold from any quarter, but the finished coin always bears the author's stamp.

The Marriage of Grangousier to Gargamelle.—Grangousier was a jolly bachelor and a merry companion who had arrived at the age when men take

*The Doctor Rondibilis of Rabelais' story was really Dr. Rondelet, a friend, who practised medicine in Montpellier.—La Vie de Rabelais, par Paul Stapfer, 1906, p. 50.

their drinks neat, and when, furthermore, they often feel under the necessity of eating salty, highly seasoned dainties in order to accentuate their appetite for a glass. He had got together a goodly store of worldly possessions, of which Rabelais takes the trouble to give us an enumeration of those that lend themselves to sociability. While he was still a solid citizen he bethought him of a wife. Here the form of the author's sentence, "En son eage virile" together with the above-mentioned facts, would indicate that Grangousier would be about forty or forty-five, this being admittedly the age of the plenitude of force and virility in the male. Just at this time he undertook a daring adventure, quite characteristic of those virile men who are successful in life and yet defer the date of marriage. He married a young, pretty girl. In spite of disparity in years, however, there is nothing in the story of Grangousier and Gargamelle to indicate that they did not love one another dearly; in fact quite the reverse is the case. In due course Gargamelle became pregnant.

When a man, well along in years, who has acquired much more than a competency, suddenly finds himself in the expectancy of having an heir to his possessions, he commonly indulges in some mad caper, and the most usual form it takes is a feast with abundance of wine and unstinted hilarity. And certainly the feast that Rabelais there describes is without parallel. Possibly there never has been given a better description of the disconnected remarks and the inconsequentiality produced by alcohol.

The pretext for holding the feast was a large quantity of the tenderest most succulent tripe obtained from the slaughter of a great number of the fattest, sleekest cattle, pastured on the richest grass of the wonderfully fertile land of Touraine. The tripe was so tender and rich that Grangousier felt anxious lest it should spoil, and curiously enough this anxiety culminated at the term of Gargamelle's pregnancy.

Just before the confinement, Grangousier indulged in another temerity, quite in accord with his old bachelor ideas. He advised his wife to be sparing in her eating of the delicious tripe. This is a touch such as a medical man, turned author, would give. How often has a mature physician to advise irresponsible young girls as to their food! We all know how futile such admonitions are unless backed by a statement as to the detrimental effects of bad eating on their good looks. Gargamelle, however, did not abstain; on the contrary she proceeded to eat abundantly of that tripe. These pretty featured young girls have the self-indulgence, truculence, and lack of restraint of children, combined with the adult's feeling of immunity from corporal punishment. A lineal descendent of Gargamelle, a large, pulpy, good-natured woman, once sought my advice. In answer to a question regarding her diet, she said, "Everything that looks good I eat." It is well known also that pregnant women are often whimsical in their appetite, and will conceive a violent desire for some particular kind of food, and very especially so if forbidden.

Grangousier's motive in advising moderation was kindly in act and medically sound in principle. There is an old Latin proverb to the effect that, "The best things undergo the worst corruption." This holds good for the Church, the State, and for food. As regards food the reason for it is clear. The component parts of these good things, as of this fat tripe, are so fluid and soluble that they quickly come in contact with the taste corpuscles, and we are told that the savor of this particular dish of tripe was so delightful that you would lick your fingers after partaking of it. This very fluidity, solubility, and ease of dissociation, however, render such food readily fermentable, and therefore liable to cause intestinal intoxication. It was this very fluidity, ease of dissociation, and aptness to putridity that induced Grangousier to warn Gargamelle against eating it, especially when she was on the point of lying-in. Rabelais does not state that constipation, which is such a frequent accompaniment of gravidity, would add immeasurably to this risk of putrefaction, but he does state that the tripe caused a wonderful deal of gas in Gargamelle's bowels, and there is no doubt he connects it with the prolapse of the rectum that the fair patient suffered during her subsequent confinement. All these matters in their practical application were undoubtedly folk lore in Rabelais' native country.

The actual lying-in is distinguished by the absence of male attendance. The Queen was confined by midwives, and by mature experienced ones, and by a very considerable number of them, and the one who took the lead was a dirty old trot, who owed her preeminence to experience acquired outside the laws of morality. She was esteemed a great she-doctor. If a medical man had been suggested for such an occasion probably Rabelais would have been the first to raise his eyebrows in astonishment.

The husband, however, was present and the lightsome yet tender and thoughtful way in which he comforted his wife in her trouble is one of the truest, most touching scenes in literature. Her answers to him, scoldingly affectionate, are just as true both as to circumstance and to human nature.

After comforting his wife for a space, Grangousier hastened off to his companions to have another glass and to enjoy himself, for all the neighbors were gloriously drunk at the feast on the before mentioned succulent tripe.

Before leaving his wife to join these merry companions Grangousier assured her he would be on the alert, and that if she needed him she had only to put her hands to her month and shout and he would be right on the spot.

Husbands have acted in this way since the beginning of the world. The distress and the waiting are a weariness to them, and they hurry to their work or to the club, and yet they wish to be within easy call so that they may arrive plump at the joyful moment.

And imagine Gargamelle, while in a labor pain, shouting! One suspects that this is one of Rabelais' jokes. She would hold her breath and groan.

My offices are across the hall from an extracting specialist; one who pulls teeth to gain enough to entertain the needs of the flesh, until such time as he shall finally give up the ghost. From time to time there are heard varied tones of expletive eloquence wrung from his patients through torment of the fifth nerve. These free, wild, high pitched notes are quite different from the low groans with retention of breath that emanate from a lying-in hospital.

The course of the labor was obstructed, and instead of the infant being born *per vias naturales*, it took a course through the cotyledons of the uterus, and from there into the inferior vena cava, the superior vena cava, the jugular vein, and out through the ear. This looks in its entirety as a joke, but

like many a thing in Rabelais' works it may be something more. It may readily be that the ears were supposed to have a direct connection with the veins. A striking example of this is in the poisoning of Hamlet's father. The ghost tells Hamlet that while asleep in his garden his brother stole in upon him and poured poison into his ear. This poison immediately attained the blood, which it curdled like eager droppings into milk. In Rabelais' time and down to Shakespeare's day it was commonly supposed that the veins alone conveyed the blood, and that the arteries carried air. The large venous sinuses in the temporal bone and in its neighborhood may have lent themselves to the idea that there was a direct connection between them and the ear and so on to the outer air, and both the birth of Gargantua and the poisoning of Hamlet's father may be expressions arising from this common idea.

As regards the other end of the venous channel through which the fetus took its way, there is good reason for believing that Rabelais thought the veins of the uterus ended in real cotyledons or cuplike suckers, and that these being sympathetically relaxed, owing to a strong contraction of the tissues of the vaginal and anal orifices, brought about by the topical application of a most powerful astringent, opened the way for the fetus to enter the inferior vena cava. The very word itself, cotyla, a half pint measure, would appeal to a literary man and a Greek scholar like Rabelais as good evidence of the above view. Rabelais was not a scientist, he was a most accomplished and learned story teller. Furthermore, Rabelais in this instance, as in so many others, was probably quite in accord with contemporary opinion. In 1632 T. Johnson wrote, in translating Parey's (Paré's?) Chirurgie: "The cotyledons (of the uterus) . . . . are nothing else than the orifices and mouths of the veins ending in that place."[1] Here it will be noticed that Johnson speaks of the cotyledons of the uterus, as does Rabelais, as orifices in the uterine wall. In the Oxford Dictionary the cotyledons are defined as the lobes or divisions of the placenta, or the corresponding areas of the internal surface of the uterus to which they are attached, making the term apply both to the uterus and to the placenta, an evident partial harking back to the old views. I think, however, that almost every medical man in this country, if he uses the term at all, restricts its employment to the lobes or divisions of the placenta alone, and if he reflects on the literal meaning of the term, considers that the placenta may be regarded as having a fancied resemblance to a fruit-bearing pod, of which the cord is the stem and the cotyledons the compartments. This represents a totally different state of affairs from that imagined by Rabelais. I have no doubt, therefore, that Rabelais, in his burlesquing way, imagined the fetus entering a real cuplike opening in the uterine wall in commencing its celebrated venous excursion. I, of course, do not mean to indicate that Rabelais considered that these openings, communicating with the venous system, were large. That they popularly were supposed to exist would, however, furnish the necessary basis for a joking allusion to them.

A lack of the knowledge of the circulation of the blood lead to many a queer idea in medieval medicine. For instance it was at one time thought that the beautiful blue, violet, and azure colors of the venules, in the foot in those who suffer from varicose veins, were due to the bile escaping from the liver by the hepatic vein, and settling down through the inferior vena cava, iliac, and femoral veins to the lower extremities. The modern habit of visualizing the circulation, that is now involuntary with every well trained medical man, was then impossible.

Although Rabelais was not an accoucheur, and probably never attended a woman in that capacity, yet there is no doubt from this description that he took a wonderfully human interest in the whole procedure.

We have still another of his writings showing how interested he was in pregnancy, and how it appealed to his imagination. This is his letter to Erasmus, written in the fall of 1532, and contemporaneously with the appearance of the second book of his works. The following is a translation:

"My father, have I said? I would say my mother, if by your indulgence you may permit me. For what we see daily occur to women who nourish the fruit of their womb without even having seen it, and protect it against the rudeness of the air, that you have done also, you, who knowing neither my face nor my name, have raised and nourished me at the chaste breasts of your divine knowledge. Yes, all that I am, all that I am worth, I owe to you, and if I do not proclaim it, I am the most ungrateful of men either now or in the time to come. Greetings and double greetings dear father, father and honor to your country, tutelary genius of letters, and invincible champion of truth."[2]

Furthermore, in the renaissance, writers seem to have been quite intent on pregnancy and labor as a symbol. The reason for this will be touched upon later. Servetus, for instance, compares the whole Law of the Old Testament to a pregnant woman, who is about to give birth to a Divine Son.[4]

After having created the character of Gargamelle, and after having conducted her through a most eventful childbirth, Rabelais says that he later learned she died of joy after a feast given in celebration of the return of Gargantua, her son, from the wars. He denies all personal knowledge of this, however, and says that he is interested neither in her nor in any other woman.[5] Stapfer cites this as an example of Rabelais' contempt for women.[1]

The touch is truly Rabelaisian in yet another sense. He constructed the character of Gargamelle as a motherly wifely woman, and such a piece of work is not done offhand. It must have cost him many a painstaking moment; and yet neither Nature herself nor Shakespeare could have thrown away a beautiful piece of work more carelessly. There is yet another explanation of his contemptuous dismissal of the subject of Gargamelle. It may be truly said that whenever one wishes to know the train of thought in the Middle Ages, first consult Rabelais. This apparent contempt for women may simply be a reflection of one of the prevailing doctrines of the times, that the soul of the progeny was from the father, and that the body, and the body alone, was entirely elaborated by the mother.*

Had Rabelais, in writing the lying-in of Gargamelle, any further object than to do a good piece of realistic work in describing such an occurrence in the rural part of France, in which he was born? It is the custom to attribute a hidden meaning to everything that the great Tourangian has written, but we must take his own warning, not to put on those magic spectacles by which letters that do not exist

*Servetus speaks of this theory. See Michael Servetus, by C. T. Odhner.[3] In the Middle Ages theories were often accepted as facts.

are read. Nevertheless a little speculation may be indulged in, provided one announces before hand that it is speculation.

Long before the period this story was written the story of the Nativity was lovingly idealized into the most beautiful forms, and those idealizations reached their height in the Renaissance. Every great spiritual exaltation finds its expression in art, and Raphael was the towering genius of a vast movement engaged in depicting the wonder and mystery attaching to impregnation, parturition, maternal love and the blessing of children. Raphael's representations of motherhood have never been surpassed. The enthusiasm for this form of art was all-pervading and irresistible. Cardinals, with immense incomes, lived in the most simple way in order to have money to devote to it. The cult of the virgin mother reached dimensions, and an exquisite refinement, of which we, living in an age in which mechanical, chemical, and social efficiency are the objects of interest, can form only a dim conception. The best things, however, as has before been mentioned, undergo the worst corruption, and these enthusiasts were willing to go to any length in order to satisfy their love of the beautiful. The madness of mysticism culminated in the Thirty Years War, just as the mania of mechanical, chemical, and social efficiency culminated in the great European War of 1914. The one group of enthusiasts wished to impose their mysticism on Europe in its entirety, the other party wished to organize Europe in its entirety according to their social ideas.

There is no doubt that the lying-in of Gargamelle forms a wonderfully well elaborated antithesis to the mystic cult of Christianity. Grangousier was a great healthy man, a good provider, who loved his family and his neighbors in a perfectly material way, and with whom ministry to the flesh was no toil; it was a joy. In this Commonwealth of California he would be elected to any political office he might wish to contest. His wife was pretty, and enjoyed the good things of this world, even as he did, thoroughly. The baby, of which we have not yet spoken, was the perfect product of these two. It was a great, healthy baby, that grew into a great rollicking boy. The description of the baby and the boy are masterpieces. There is no doubt that the Nativity of Gargantua is as absolutely devoid of mysticism as can be imagined.

As a story also the lying-in of Gargamelle is perfect. It begins by showing the station and way of life of the hero and heroine. Then comes the catastrophe, due to the peculiar mode of birth of the infant, on which follows a happy ending.

The highest form of humor must necessarily have a most serious basis, and if we take into consideration the carefully realistic way this story was worked up, its perfect form, and its striking materialism, and then imagine a people imbued with mysticism until many of them were heartily tired of it, we can get a faint inkling of the roars of laughter that greeted this new departure in literature.

The world moves, and it moves in a circle, and we shall see many things before we die.

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SEVEN CLUES TO BALDPATE.

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Woman's crowning glory is her hair; one of her greatest griefs, to see it go. So keenly does she feel its slow deletion that she will save and wind and hoard each falling strand to weave, in that much dreaded day when baldness yawns, the cunning false presentment of a crown. So conscious is she of the need of this that she will even buy the hair of other heads and heap it in profusion on her own. To her the preservation of her hair is something vital and innate. Her consort, while bedecked by nature with a less luxuriant growth, is nevertheless concerned about its permanence, especially as the years forbode a tonsure. He notes with marked anxiety the thinning at the top, and ingeniously manipulates the more resistant filaments to hide the shining scalp. This artifice is usually futile. No eye is deceived by it except his own. This aversion to yielding to the ravages of time is not always prompted by discreditable vanity. Bald heads and gray hair are regarded as the evidences of the degenerative changes coming with advancing age and associated with a "slowing up" of bodily activity. Viewed in this light they are a detriment to the seeker for employment. Oftentimes their significance is utterly misconstrued. The baldness or the grayness may not be due to age, but disease or idiosyncrasy. Again they may be compatible in very many cases with unimpaired vitality, sobered and enhanced by the wisdom of experience. But in general terms it is admitted that the possession of a bald or whitening head is in most of the paths of industry a very undesirable asset. Thus the preservation of the hair from premature decadence is a matter of very serious moment and well worth our earnest consideration. The accomplishment of this very meritorious object depends on several factors, which we will develop seriatim.

Let us admit at the beginning that the distinctive effects of age cannot be stayed. We can no more forestall the withered wisps of the lean and slippered pantaloon than we can his shrunken shank and childish treble and doddering imbecility. But senility accelerated by disease, by vice, by poverty and hardship, may, if these conditions can be met and changed, be markedly retarded in its march. Worry will whiten a man at thirty, will bend his back at forty, and make a hopeless wreck of him at fifty. Dissipation, disease, and continual exposure to exhausting conditions with insufficient nutriment will accomplish the same result. There are means, economic, moral, and medicinal, which may obviate these precipitants. Here and there we may be able to lift the burden of the worrier, to reduce the rake to reason, to upbuild the victim of privation, to stiffen a tottering constitution, but in the present construction of society it is conceded that such instances stand forth in significant isolation. Idiosyncrasies there are, inherited and ineradicable, which blanch or thin the hair of youthful heads. How often have we seen the vivid eye and ruddy cheek of youth in startling contrast with the thin retreating locks of hoary age! Obviously we can offer no remedy for this. Realizing that the nurture of the hair is dependent on the vascularization and innervation of the follicle, it is indubitable that in many conditions of lowered vitality of a temporary

and remediable nature its growth will sustain a perceptible setback. Note the defluvium capillorum of acute infectious fevers; note the diminution due to anemia. Tonics, alimentary, medicinal, and climatic, will work a marked improvement here. But all the general measures looking to the health of the individual will be utterly disappointing if the local causes of the failing follicles are overlooked. These are alopecia areata, seborrhea (sicca and oleosa), folliculitis decalvans, favus, lupus, erythematosus, morphea, and dermatitis exfoliativa. Alopecia areata may deplete the scalp in circles large and small, in great irregular areas, or *in toto*. Its appearance is sudden as a rule and preceded by no admonitory symptoms. The hair just falls away like the bristles of a brush that gets the heat. To-night a man retires in happy unconsciousness of impending trouble, and in the morning his massy locks are shot with denudations. Alopecia areata totalis sweeps every vestige of a hair from off the scalp, and even off the face and body. This extreme defection is unusual and hopeless. The partial losses are many times restored by the inexplicable suspension of the inexplicable cause. This occurs in response to certain vaunted methods of treatment in some undeniable instances. That it also occurs spontaneously in the absence of any treatment whatsoever is a matter of common information. As we have nothing but surmise regarding the etiology, as to whether it is parasitic, reflex from the eye, intestinal tract, or some other undetermined source, the frequent spontaneity of the cure lends a merited suspicion to our successful (?) therapeutics. Ninety-five per cent carbolic acid is credited with stimulating the follicles in a most astonishing way; the correction of errors of refraction instantly releases the nervous inhibition that has paralyzed their function; the removal of intestinal putrefaction by a rational diet and appropriate medication has several times appealed to me as etiologically significant; yet all of these measures lose in importance when it is recalled that many cases fail in spite of them, and many others are cured without any regard to them. The coincidental removal of the operating cause is the only logical deduction from these observations. It is comforting to realize that most cases of moderate severity have a natural tendency to recovery.

Pityriasis rubra and its less destructive counterfeit, dermatitis exfoliativa, both attack the scalp and may leave it a grotesque waste of struggling tufts. If the hair returns it is apt to be thin and white. Fortunately, these diseases are rather rare. Lupus erythematosus is widely known and readily recognized as the "butterfly" disease when it appears in its classical situation upon the nose and adjacent cheeks. The sharply defined redness, the scanty and adherent scales, the gaping follicles beneath, the spots of atrophy marking the involution of the process, combine to form a clinical picture of an unequivocal character. But it is a disease of a roving disposition and does not confine itself to the classical location. It invades the ears, inside and out, occasionally it travels very far afield, and attacks the fingers. Frequently it appears upon the scalp. The lesions may be small or extensive. There may be a single lesion no bigger than a dime, or several of them; there may be an involvement of the entire scalp above the level of the ears. All gradations between these extremes have been noted. The termination of the process being by atrophic scarring, the hair follicles are wiped out and the baldness is permanent. The smaller foci naturally leave but little surface to conceal, and the hair may be drawn across them. The extensive foci are so disfiguring that the embarrassed victim is forced from consideration of sheer self-respect to resort to a wig. Very little difficulty is experienced in making the diagnosis if the characteristic features of the disease are kept in mind. Error will proceed only from precipitancy. Diffuse symmetrical scleroderma, or circumscribed scleroderma, otherwise known as morphea, may be found upon the head where the hair follicles will be obliterated in the infiltration or atrophy of the skin. The vitreous density of the affected area, with its ivory white or faintly yellow tinge encircled by a narrow lilac band, is so distinctive of this mysterious malady that there is little likelihood of mistaking it. It is hardly necessary to observe that, in order to uncover all these characters of the sclerodermatous patch, we may be forced to shave the hair for a narrow margin around it. The origin of this disease is absolutely unknown, and its treatment useless. Many cases recover spontaneously, as we glibly phrase it, that is, by the operation of forces, of the nature and source of which we have not the least idea. The destruction accomplished by the condensation of the tissues is apt to be permanent, and the hair follicles may not functionate again.

Folliculitis decalvans is a suppurative inflammation of the follicles of the scalp, resulting in baldness. It is a sort of barber's itch of the scalp. There is little doubt that the cause is parasitic, but the organism has not been defined. Each little pustule is pierced by a hair, which promptly falls, never to return. The area traversed varies. It has included the entire top of the head. Freaky exemption of individual follicles has been noted right in the track of its massed advance. An account is given by a noted dermatologist, whose veracity is above suspicion, of a case of folliculitis decalvans where the calvarium was entirely denuded of hair save for a single sprig in the midst of the desert, to which was desperately clinging—a solitary nit! Treatment is disappointing. That is euphony for useless.

Favus, as is generally understood, lays waste the ground that it has attacked. This is such a rebellious disease to treat that it may be conceded that it is practically incurable save by the lapse of time and the slow devitalization of the parasite. It is recognized by its yellow crusts made up of little cups, its mousy odor, and its always being an importation. The crusts look like sulphur paste. The cups are little petal-like formations of the activating fungus. On detachment a little reddish depression is disclosed, which eventually becomes one of the glistening pinkish scars that tell the tale in after years. As in ringworm, the invasion is of the hair follicles, and the fungus forms around the protruding hair like a tiny collarette. The invasion of the follicles is apparently somewhat capricious, as the resulting alopecia is apt to be of a very irregular and zigzag character. We have said that favus is practically incurable. That statement holds. Persistence in the antiseptic measures recommended should eventually bring it under control, just as in ringworm. The *x*-ray offers the same relief to both. But "practically" the treatment yields only disappointment, because the patients are of a class who will not persist long enough in any line of effort to effect a result.

It is only when tinea tonsurans forms a kerion

that incurable baldness results, so we will defer its consideration for a moment or two. All the causes of baldness hitherto recited, except alopecia areata, are irremediable, meaning that when the disease has struck, the affected area is permanently denuded. We have seen that alopecia areata may yield completely and leave no trace, "more," as the pithy Irish phrase it, "by good luck than good management." Fortunately the irremediable is also rare. The commonest cause of alopecia is quite amenable to proper management. If prophylaxis of the scalp were as regularly practised as prophylaxis of the teeth in the adolescent, wilted hair and premature defluvium would be the rarest of complaints. But the sober truth is that with few exceptions attention to the scalp is confined to periodic or episodic washings, with a tendency to aggravate the incipient disease. The practice of brushing the scalp briskly with a good stiff implement will, by removing the deciduous epithelium and stimulating the blood and nerve supply, prevent the development of the rebellious condition known as seborrhea sicca. This is one of the phases of seborrheic dermatitis, which is the disease responsible for most of the overt baldness of men and covert baldness of women. It is a disease of the sebaceous glands, just as acne is, but instead of the orifice being occluded and forming a papule or pustule, the gland exudes a freer secretion, which may be distinctly greasy, as it should be, or altered by the inflammatory element to such a consistency that it dries into flakes, just like the paste around the neck of a tube of mucilage. The orifices of the sebaceous glands open into the hair follicles, and that is why the hair is lost. It is choked by the inflammatory exudate. Both in seborrhea oleosa and seborrhea sicca, this loss is observed, because they are variants of the one pathological process. The dried secretion, if rubbed between the fingers, will, after a certain amount of friction, impart an unctuous feel, demonstrating the fatty basis of its composition. When the inflammatory element predominates, a condition resembling eczema is produced, lacking, however, the vesiculation always attending the latter. The term "seborrhoic eczema" is therefore a misnomer. Both Sabouraud and Unna attribute the disease to an organism. This has not been demonstrated to the satisfaction of every one. It has much to commend it, however, such as follicular invasion, circinate outline, and auto- and probably hetero-inoculability.

The diagnosis of seborrheic dermatitis of the scalp is usually a matter of little difficulty. It is the commonest disease of that region. There is either an abnormally greasy head or one covered with powdery scales. There is sooner or later noticeable hair loss. It may be confounded with psoriasis when the latter is limited to the scalp. Typical patches on the body would clear up the case at once. For one thing, psoriasis *does not cause the hair to fall.* Again, psoriasis creeps beyond the hair line down on the forehead. Seborrheic dermatitis is less likely to do this, although it is prone to appear on the forehead as a separate manifestation. The psoriasis scales are not greasy; they are pearly and remain dry under friction.

The prognosis of established seborrhoic dermatitis is problematical. It is a very hard thing to cure. Note the word "cure." Temporary alleviation may be effected, but relapse is the rule. Several factors are responsible for this. One is the unassailability of the process deep in the sebaceous gland. Another is the presence of the hair, rendering effective applications difficult. Another is the well-known disinclination of patients to pursue a course of treatment that is tedious and for a long time apparently unavailing. Given a perfect combination of favorable circumstances, however, and progress will still be exasperatingly slow and uncertain. The means to be employed are resorcin, sulphur, ammoniated mercury, and bichloride of mercury. Ammoniated mercury is applied in ointments; sulphur in the same way, or in a lotion, as the hyposulphite; resorcin and bichloride alone or combined are used in liquid form. Where the scalp is excessively greasy, alcohol may be added with advantage to the lotion. Some authorities favor the use of salicylic acid in conjunction with sulphur. Water should be employed as sparingly as possible. Even for the removal of accumulated débris it is of doubtful utility, because of its propensity to aggravate the dermatitis. It is better to combine it with alchool for the purpose of a shampoo when this is deemed indispensable. But it will be found that the salves and lotions recommended for the disease will keep the scalp reasonably clean. It is self-evident that if the hair is kept short, applications can be more effectively made. This is out of the question in women. It is perfectly practicable in men. It should be borne in mind that the object of attack is the *skin* of the head, not the *hair*. So it is not necessary to besmear the *hair* with any greasy or sticky remedies, which disgust and discourage the patient.

The scalp is the field of many other disorders, some of them peculiar thereunto, and others more or less widely distributed over the integument. Psoriasis has already been referred to. The scalp is one of the commonest sites of this remarkable neurosis. Its resemblance to seborrheic dermatitis is striking, as we have observed. The distinctions were drawn in discussing the latter. The neurotic hypothesis, usually decried, has received unlooked for and grudging support from the advocates of an autoserum in the treatment of this extremely rebellious and persistently relapsing dermatosis. They claim, and I think fairly, some convincing results. They concede their inability to account for them. There is some cloudy discourse about aroused antagonism and altered metabolism, but of logical explanation there is none. But if we postulate psoriasis as a trophoneurosis, or rather as a *dystrophoneurosis*, we get a rational hold of the situation. The reinjecting of the patient's defibrinated serum can not conceivably add anything nutritional to the blood or cells, as it simply replaces part of what had been extracted. But we are sustained in our belief that the process of withdrawal and replacement, the alternations in the patient's blood pressure, and the psychical effect inseparable from the whole proceeding, produce such a reaction upon the nervous mechanism as to inhibit the faulty impulses or arouse eutrophic ones. I have published a record of certain cases where exhilarating intelligence, a change of scene, an ocean voyage, a vacation in the hills, achieved a complete disappearance of the eruption. The fact that chrysarobin in weak proportions has to be used in conjunction with the autoserum in order to clear the skin, is added evidence of nervous intermediation, because if the lesions were autotoxic or metabolic no external sitmulus would be needed. Failing an autoserum, ammoniated mercury is the best application to psoriasis of the scalp.

Tinea tonsurans causes areas of temporary baldness in children. The outlines are circular, unless

they coalesce, when they are apt to become irregular. Sometimes the scalp is almost entirely covered with small scaly denuded foci that would suggest the comparison of a stubble field of a very stony character. A case of this sort is apt to be mistaken for a seborrheic dermatitis, unless it is recalled that ringworm is confined to children, that it deletes in patches instead of thinning the hair, and that the scaly surface will show some broken shafts. Of course, the microscope can be called upon in case of indecision. Unless a kerion forms, the growth will be re-established on that happy but usually long-deferred occasion when the parasite succumbs. A kerion is a suppurating ringworm. The patch swells up and oozes pus from the mouths of many follicles. This complication quickly jugulates the disease, but it also destroys the hair, for the site of kerion is forever bald. The treatment of ringworm of the scalp is a veritable labor of Sisyphus. The most loyal adherence to the most intelligent management will be rewarded with continual disappointment. Patients grumble and pass on, only to experience the same dissatisfaction in other hands. The remedies comprise practically the whole range of antiseptics. The difficulty does not lie in a dearth of effective remedies, as witness the ready cure of ringworm of the body; it lies in the almost impossible task of forcing the strait of the follicle, with its stump of a broken hair. Mechanical epilation is not successful because the hairs break off so easily. Whatever remedy is selected, it should be rubbed in vigorously with a toothbrush or a stencil brush cut short. Iodine in glycerin is as reliable as any. Red oxide of mercury ointment alone or in combination with sulphur with a zinc oxide base has much to recommend it. A depilatory of barium sulphide is advised by Stelwagon as the preliminary means of attack, as it rids the patch of stumps and opens the follicles to the assaults of the selected parasiticide. Bulkley favors the use of a combination of mercury and iodine ointment, equal parts, making nascent iodide of mercury. All applications should be rubbed in *until they hurt*. The finger should never be employed for this purpose, as ringworm attacks the nails and sets up a most obstinate disfiguring and disabling condition, styled onychomycosis. If the patches are clearly outlined the hair should be shaved for an inch around it, just as woodmen cut a circle around a burning copse to prevent the advance of the flames. There is no question of the efficacy of the *x*-ray in the treatment of tinea tonsurans. Neither is there any question of its inducing permanent baldness if it is unskillfully handled. Furthermore, it is not always available for people of limited means. Puberty definitely disposes of any lingering tinea tonsurans defying medication. How or why it does so we do not understand.

At first glance it would appear to be a clear waste of valuable time to bring to the physician's attention such a widely diffused, readily suspected and easily recognized condition as pediculosis capitis. Every mother can diagnose it without the doctor's aid. Just so. But as a matter of fact pediculosis capitis turns up under circumstances that befog the eye of judgment, and obviate detection. In a dirty, frowsy, unkempt child, itching of the scalp would arouse our prompt suspicion. In a careless, slovenly, "clotty" woman this would make us equally alert. But now suppose a cleanly, tidy, well-groomed child presents, the product of incomparably better conditions, is it likely that we shall give this loathsome, filth-engendered thing a moment's consideration? Is it likely that a routine inspection of the head will reveal the truth where soap and water have been used in such profusion? Is it not a fact that the diagnosis will range over seborrhea, eczema, urticaria, and that miserable evasion of all responsibility—pruritus? The evidences may be difficult to locate—a few resistant nits clinging to some deeply buried strands, but nothing in the social status of the patient should preclude investigation. Witness the invasion by these parasitic sansculottes of a fashionable boarding school for young ladies in the experience of Dr. Bulkley. The superiors and pupils were horrified and outraged by the preposterous diagnosis. The thing was unthinkable! Its occurrence impossible! Incontrovertible evidence in the shape of nits demonstrated by the microscope finally brought home to them the humiliating conviction that they were as susceptible as their poorer sisters to this nauseating infliction under a proper conjunction of circumstances! It is rarer in men owing to the less inviting recesses for the seclusion of the parasite. But do not exclude it on that account. Be wary always. An eczema at the nape of the neck, enlargement of the postcervical glands without other evidences of "struma," a pustular dermatitis of the scalp, no matter how limited in extent, should suggest at once the possibility of pediculosis, and it should not be dismissed until it is absolutely, definitely and decisively disposed of. The treatment is within the grasp of every physician. To complete the record it may not be amiss, however, to recall it. Kerosene at night, with a towel wrapped about the head. In the morning a combing with a fine-toothed comb that has lain in vinegar over night. After this the application of ammoniated mercury ointment in full strength. If a single nit eludes elimination the regeneration of the obscene breed will quickly supervene. Pediculosis excluded, pustular lesions of the scalp come under the catagory of impetigo contagiosa, impetigo of Bockhart, impetiginous eczema, post-varicellam infections, acne varioliformis, and syphilis.

Impetigo contagiosa displays the same characteristics in the scalp as elsewhere. It is seldom limited to that region. It is superficial, honey-colored and gives the impression of being pasted on the skin. These features may be difficult to discern in the hairy scalp, but one spot elsewhere will bring the light. The impetigo of Bockhart consists of follicular abscesses; it is caused by the staphylococcus instead of the streptococcus which causes the ordinary form of impetigo. Scarring will follow, owing to the location of the suppurative process about the hair. If agminated, it bears some resemblance to kerion. The remedy for both of these varieties of impetigo is ammoniated mercury.

The infection of varicella lesions will result in ecthymatous sloughing and crusting. In the cachectic this is apt to be grave. On the scalp such manifestations take a more rebellious form because of the luxuriance of all infections in that fertile locality. The local treatment is identical with that for impetigo, with additional internal remedies for the depressed vitality which nearly always accompanies such untoward developments. A peculiar rupial crusting is sometimes seen in varicellous lesions, which would be decidedly misleading if it were not for the accompaniment of typical pitting elsewhere.

Lupus vulgaris, a true tuberculosis of the skin, never affects the scalp. We have seen that lupus

erythematosus does. The latter is a tuberculide. A tuberculide is a disease produced by the toxins of the bacilli, not directly by the bacilli themselves. It is not innoculable; its genealogy is inferential. It is presumed to have its origin in the tuberculous diathesis, but it is so frequently found in robust individuals that its title is a bit involved. However, certain skin disorders are denominated tuberculides, and among them one yclept acne varioliformis. This affects well-defined areas on the face, and also runs up into the hair. Small pustular lesions form, with evolution into a flat papule with a depressed center, terminating in a small depressed scar. It is mistakable for nothing but a punctate syphiloderm, which would display a tendency to grouping and unilateralism not found in the tuberculide. The treatment is that for ordinary acne, thus casting a heavier shadow on its tuberculous pretensions.

At the nape of the neck occurs a neoplasm with a portentous title, following a pustular folliculitis. It is called Dermatitis papillaris capillitii; it is a keloid, a little more sanely denominated by the French acne keloid. As the follicular infection is multiple, so is this mysterious consequence. The origin of keliod is absolutely unknown. The remedy is the *x*-ray.

Impetiginous eczema is frequent on the scalp. It is an infelicitous title, as it would seem to indicate a peculiar and distinctive variety of eczema, whereas the actual fact is that it is a pus infection on an eczematous base. The ordinary features of eczema —infiltration, oozing, and itching, precede the pustulation. Scratching by dirty finger nails, rubbing with dirty hands, covering with dirty hoods and shawls, and access to the pestilential fly, are the occasions of this disgusting complication. Before any impression can be made upon the underlying condition the suppuration must be overcome. Weak ointments of ammoniated mercury, ointments of ichthyol, and oily preparations of salicylic acid are available for this purpose. I should like to digress for a moment to call attention to a peculiar property of one of the remedies frequently mentioned in this paper as a parasiticide. Ammoniated mercury is highly efficient in that regard. It is indicated in the attack on parasitic and purulent outbreaks. But curiously enough, if suppuration has not occurred, as in eczema marginatum or tinea circinata, or seborrhea, it is very likely to excite it. Yet against actually existing suppuration it is a most reliable agent. Always be on the lookout for this, or there may be embarrassing explanations to make. It has been impressed already that no impetiginous eczema of the scalp should be considered thoroughly overhauled without an exhaustive hunt for pediculosis and tinea tonsurans. *A priori,* if impetiginous eczema is found on the scalp, eczema vulgaris must occur there. This corresponds with experience. It has the make-up of eczema everywhere. It is infiltrated, vesicular, scaly, ill-defined in outline, and itchy. From seborrhea it is distinguished by its vesiculation, its thinner scales, and the stability of the hair. From psoriasis it is distinguished by its vesiculation, its thinner scales, and its insistent itching.

It is to be supposed that a disease so unstinted and impartial in its attentions to the different tissues and organs of the economy as pantomorphic lues, would not fail to make its impression on the scalp. This supposition is supported by the facts. Lues visits the head, inside and out, with a great deal of assiduity. It is a matter of general knowledge that where there is a succession of external explosions there will be comparative freedom from the graver internal manifestations. The repulsive gumma on the scalp is in this point of view a positive blessing as assurance against a similar growth within the cranium. This lesion may be of almost any size and almost any shape. It may be round, oval, crescentic, fluted, or any bizarre formation of broken interlacing circles. It may make a hole no bigger than a pencil-end, or it may involve an area many inches across. It may be confined to the skin and subcutaneous tissue, or it may delve into the bone. Besides its suggestive outline, it will display the characteristic perpendicular walls, meager inflammatory zone, and malodorous mephitic secretion. Lues, prolific of expedients, may attack under another guise, namely, that of the ulcerating tubercular syphiloderm. Here the term tubercular has no reference to the etiology, but only to the form of the lesion, a tubercle being an overgrown, plethoric papule. An outbreak of this sort is in the form of a group of these tubercles, three, four, or a dozen, always tending to a curvilinear outline, and each of them surmounted by a crust hiding a superficial excavation. If few, they may form the segment of a circle; if many, a complete one; if very numerous, they may take on the sinuous outline of a snapping whiplash. These manifestations are one-sided. A Liliputian representative of this large and varied family is found in the little papules with the minute central depressions which so closely resemble acne varioliformis, and from which they are distinguished by their unilateral grouping. In its earlier stages lues confines its depredations to the hair, thinning it evenly, removing it entirely, or munching out in tufts that leave a moth-eaten appearance. This last phenomenon is very significant. If you observe it and can get no confirmation of your suspicion from a self-deceived or mendacious patient, make a Wassermann test. It is unnecessary to speak of treatment in this day of intense concentration on that very subject. Luckily the medication, old and new, is potent to remove these symptoms. The ulcerating lesions leave scars. Epithelioma is seen upon the scalp, but not often; chancre also. A wart or scurfy spot may be the occasion of the one; the attentions of an infected barber the occasion of the other. Verruca vulgaris, molluscum contagiosum, cornu cutaneum, cysts, lipomata, fibromata, neurofibromata, angiomata, and keloid, are encountered often enough to keep us alive to the possibility. Leucoderma will reveal itself on the scalp in white patches of hair. The multiple benign sarcoid of Boeck is apt to be profuse upon the head. True sarcoma cutis may develop like epithelioma from a wart or mole. The small gritty papules of Darier's disease, with their horny plugs, are detected amid the hair. Ichthyosis, being a dry, harsh, scaling condition of the general surface, would naturally find expression in the scalp. The hair is dusty and lusterless, suggesting sage brush. Mycosis fungoides in the involvement of the general surface does not omit the scalp. The tumors destroy the hair.

Herpes zoster will be discovered on the top of the head, and a mysterious neuralgia in that location will be explained by the outcropping of the vesicles.

Epidermolysis bullosa, that extremely curious manifestation of highly sensitized sympathetic impulses, wherein the reaction to usually inappreciable friction is as violent as that ordinarily caused by steam, is as liable to raise its blisters on the scalp

as anywhere. All that is needed is the pressure of a hat band, the passing of a comb, the scratching of an itching spot. These evidences will be more prominent on other parts as being more liable to the insignificant violence that produces them.

Angioneurotic edema will raise enormous swellings in the scalp in accordance with its erratic visitation of the cutaneous surface. Dermatitis medicamontosa from bromides and iodides, and dermatitis venenata from the use of dyes and contact with such irritants as rhus toxicodendron are very much more distressing when the scalp is attacked. We know what a pretty mess is made by erysipelas when it gets into the same locality.

There are a few curious conditions which have a purely academic interest but which must be included to complete the record.

Fragilitas crinium reveals a feeble filamentary constitution, just as does fragilitas unguium. Monilethrix or beaded hair is characterized by fusiform enlargements, alternating with constrictions of the shaft. Trichorrhexis nodosa, consists of nodes scattered along the hair with a marked tendency to split at those points.

It will be admitted, I think, that the scalp is a region of considerable importance, not only to the dermatologist, but to the general clinician. There is a good deal to be learned from a study of it. Its management has much to do with the self-esteem and even the prosperity of many individuals. It would be decidedly to our advantage to devote ourselves to a systematic and thorough investigation of its pathology, to forestall, where that is possible, embarrassing disfigurements, and by correct prognosis to guard our reputations against venomous detraction.

323 West Fourteenth Street.

THE THERMO-COUPLE THERMOMETER.

AN INSTRUMENT FOR THE EXACT MEASUREMENT OF TEMPERATURE IN LIVING TISSUES FOR USE IN COAGULATION SURGICAL PROCEDURES.

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It has been shown by Haaland,[1] Clowes,[2] Lambert,[3] and Widal,[4] that cancer and sarcoma cells are killed by a temperature of 50°-55° C. (122°-131° F.) maintained for twenty minutes, whereas normal cells will not be killed until a temperature of 55°-60°C. (131°-140°F.) has been reached. These observations have been confirmed by the operative experiences of Doyen[5] and Percy.[6]

Taking advantage of this fact in the treatment of malignant tumors, Percy has devised his "cold cautery iron"; Doyen has used what he calls "electro-coagulation"; Nagelschmidt calls his method "diathermy"; Clark calls his method "desiccation"; Beer calls his "fulguration," etc. Many different surgeons working independently of one another in different parts of the world have reported new methods of treating malignant tumors by the coagulation of tissues without carbonization.

While these coagulation methods are probably the most important recent improvements in the surgery of malignant tumors, the weak point in the technique of the coagulation operations has been that one cannot apply the principles of selective heat temperatures. To overcome this difficulty and secure the benefits of selective heat treatment, I have employed a well known principle of heat measurement, so successfully used by physiologists in calorimetry and by metallurgists in the heat treatment of metals: namely the thermo-couple.

A thermo-couple is a fused junction between a constantin element and a copper element (Fig. 1). When the temperature of such a junction is heated or cooled, it generates a weak galvanic current which can be accurately shown on a calibrated reflecting galvanometer scale so as to register the temperature in the thermo-couple. The thermo-couple thermometer has the following parts: (1) A thermo-couple consisting of a wire of copper and a wire of constantin with their ends fused together. (2) A standard galvanic cell. (3) Two ordinary dry batteries in series with a standard set of resistances. (4) A reflecting galvanometer with its bar of reflected light falling on a special metric scale. (5) Switch boxes.

The standard cells and resistances are connected in series with the galvanometer to one side of the switch box; the dry batteries with the resistances are connected in series with the same galvanometer to the other side of the switch box so that the currents from these two galvanic sources are flowing through the galvanometer in opposite directions. By means of resistance introduced into the current derived from the ordinary dry batteries, these two currents can be made to equalize each other and the beam of light on the galvanometer scale comes to rest at 113°F. The thermo-couple thermometer is now "set". For each degree of temperature change occurring in the tissues surrounding the thermo-couple, this bar of light travels six mm. on the scale. If there is a fall of temperature in the tissues, the bar of light travels to the left; if there is a rise in temperature, the bar of light travels to the right (Fig. 2).

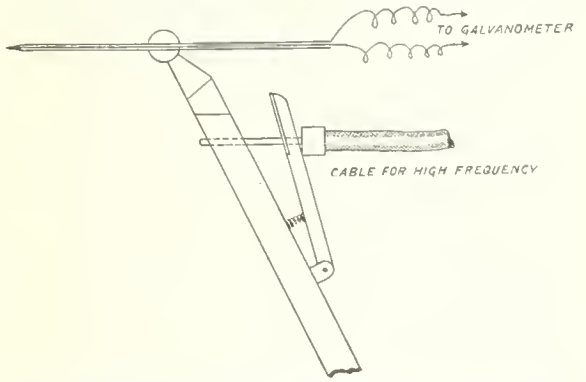


Fig. 1.—Diagram of cross-section of dessication or coagulation point electrode with thermo-couple incorporated; this is used both as an operating electrode and as a temperature recording instrument.

To illustrate the reading of the thermo-couple thermometer after the instrument is "set", suppose we hold the thermo-couple in the air; the beam of light travels rapidly to the left. Now suppose we grasp the thermo-couple between two fingers, instantly the beam of light travels backward to the right, stopping at 93°F. Suppose we insert the thermo-couple into the rectum, the beam of light travels to the right resting at 99°F. Again suppose we dip the thermo-couple into a hot oil bath, the bar of light will swing still further to the right coming to rest at a point on the scale indicating the exact temperature of the water.

The thermo-couple registration is not interfered with by the electric circuit traveling in the Percy cautery iron, nor by the high frequency currents used in coagulation operations so that the thermo-couple can be incorporated in the side of the tonsillectome or snare. One pole of a D'Arsonval current is connected to the tonsillectome or snare and the ends of the blood vessels can be effectually sealed off by keeping the snare at a coagulating temperature.

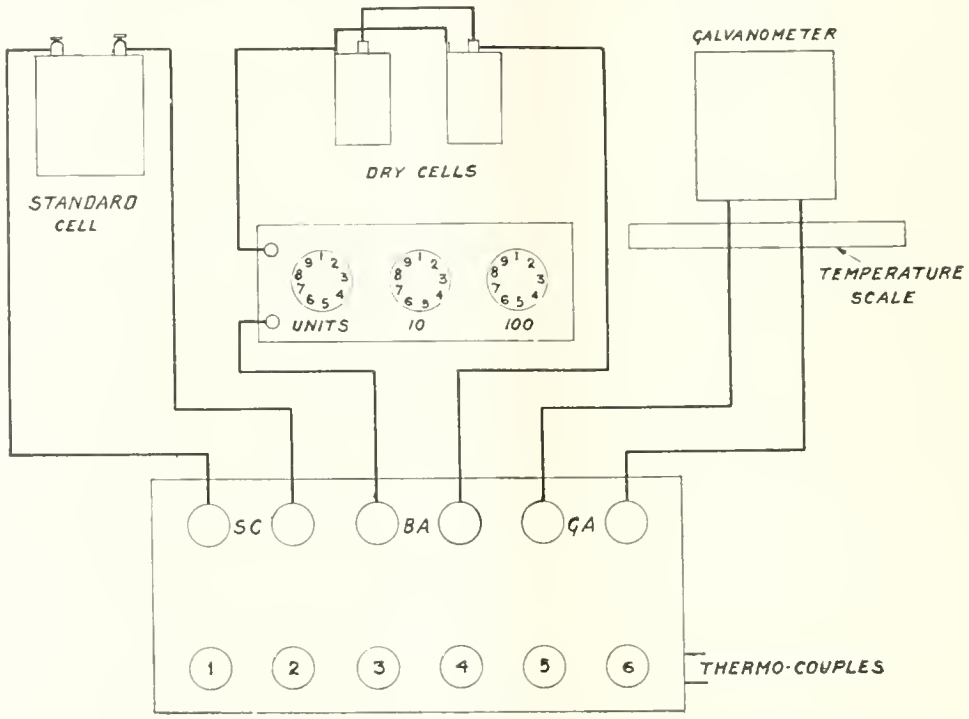


FIG. 2.—Switchbox for selective thermo-couple temperature readings.

Percy iron or in the active electrode used in applying electro-coagulation.

The response to changes of temperature is so quick that a series of thermo-couples can be used on the same galvanometer, and by a selective switch one can read on the same scale, the temperature at any point within the tumor or at a distance providing he can insert a thermo-couple needle into the desired locus. For instance, in the coagulation operation on the uterus (Fig. 3), I would suggest a series of six thermo-couples connected to a selective switch box having six numbered buttons: T. C. (thermo-couple) No. 1 is incorporated in the intrauterine electrode. T. C. No. 2 is inserted into the right broad ligament between the cervix and the uterine artery and ureter. T. C. No. 3 in the left broad ligament between the cervix and the uterine artery and ureter. T. C. No. 4 is inserted into the bladder. T. C. No. 5 is inserted into the rectum. T. C. No. 6 is left free for exploratory purposes in determining the temperature at any desired point during the operation.

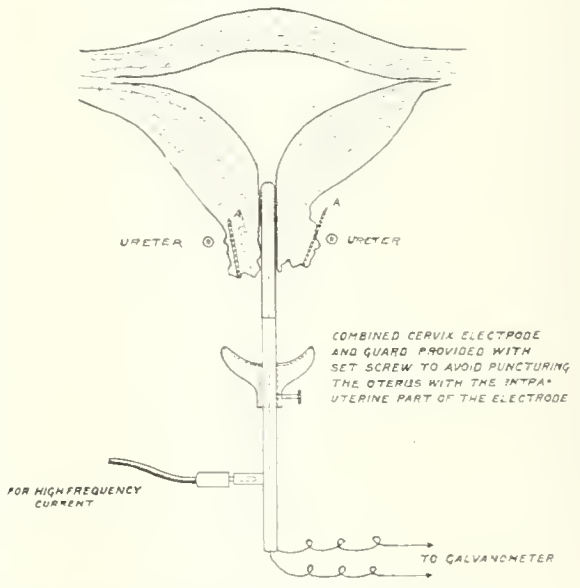
By pressing button No. 1, one can read the intrauterine temperature; by pressing button No. 2 or No. 3, the operator can tell how near he is to damaging important extrauterine structures by the heat, etc., so that the thermo-couple acts as a safeguard against heat destruction of important organs.

There is no danger of over-heating the thermo-couple, as it is used commercially in the melting pot of steel mills to regulate the "heat treatment" of fused metals.

In operating on pedunculated growths, especially in cases of hemophilia, leukemia, arteriosclerosis, etc., the thermo-couple should be of invaluable assistance as it can be incorporated in an insulated

A similar procedure can be followed in the bloodless removal of hemorrhoids, and there will doubtless be numerous other uses to which the thermo-couple thermometer can be put in the field of surgery and medicine.

The method of selective heat treatment of malignant tumors will probably be found to be a valuable synergist to radiotherapy.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COMBINED CERVIX ELECTRODE AND GUARD PROVIDED WITH SET SCREW TO AVOID PUNCTURING THE UTERUS WITH THE INTRA-UTERINE PART OF THE ELECTRODE
FOR HIGH FREQUENCY CURRENT
TO GALVANOMETER

FIG. 3.—Diagram showing uterine and cervix coagulation electrode with thermo-couple thermometer incorporated; positions of safety thermo-couples indicated in the broad ligaments, A, A.

A study of the accompanying table of coagulation methods will show that Clark and Beer produce their effects with the least amount of current. The difficulty with the other forms of coagulation

has been inability to control and measure the destructive processes. Percy's iron has answered his purposes in the treatment of uterine carcinoma very well and he deserves great credit for having devised, championed, and popularized this method.

Agents which Cause Coagulation of Cells

Methods	Advocates	Nature of Coagulator	Comparative Strength of Currents
Electro-coagulation	Doyen	D'Arsonval high frequency current	1000-3000 milliamperes (Bipolar)
Electro-thermic coagulation	Pfahler	D'Arsonval high frequency current	1000-3000 milliamperes (Bipolar)
Diathermy	Nagelschmidt	D'Arsonval high frequency current	1000-3000 milliamperes (Bipolar)
Desiccation	Clark	Oudin high frequency current	1 milliampere or less (mono-polar)
Heat coagulation	Percy	Cautery iron heated by the ordinary illuminating electric currents	No current directly enters the body; current strength used in cautery 3-10 amperes
Ionic surgery	Massey	Galvanic current	500-1000 milliamperes
Oudin spark (wrongly called fulguration)	Beer	Oudin high frequency current	1 milliampere or less (mono-polar)
Caustics (massive)	Strocbel	Chemical	
Acetone coagulation	Gelhorn	Chemical	

The instrument employed is too large to be used generally throughout the body; its insertion is accompanied by unnecessary traumatism. The D'Arsonval high frequency currents avoid these two objections. The coagulation by Percy's method (heat *radiating out* from cautery iron) and desiccation as employed by Clark have been more under control than the coagulation by the D'Arsonval high frequency currents, which are conducted *through* the tissues and with which the point of maximum temperature has been, not *at* the electrode, but at an indefinite point within the tissues themselves. There has been no accurate method of estimating the heat or effects of either of these processes.

It is to meet these very important conditions and make selective heat treatment in medicine scientific, accurate, and therefore safe, that the principle of measuring heat by the employment of thermo-couples should be employed. The accompanying illustrations show such an apparatus arranged with a scale of measurement suitable for use with any of the operations where coagulation is produced by heat.

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THE ADVANTAGE OF KELLY'S METHOD OF CYSTOSCOPY IN WOMEN.*

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In view of the marked recent improvements in electrical prism cystoscopes, direct or indirect, the question arises whether Kelly's method has any further field in cystoscopy. It will be the contention of the writer that it has and that, for the gynecologist in particular, it still possesses many advantages over any other method.

In the first place, so many gynecological patients suffer more or less from dysuria and frequent micturition that the gynecologist for the most part must be prepared to examine these patients' bladders himself. Very few gynecologists have the means or the time to become experts in the use of the prism cystoscope, and unless the gynecologist is expert in the method and has gained a large experience in it, he will frequently be misled by trying to interpret what he sees with the prism cystoscope. With the prism cystoscope, as with the microscope, accuracy in observation and correctness in interpretation call for sole devotion to that line of work, in other words for specialism. This is not so, at least, not nearly to the same degree with the Kelly method, for as soon as one has acquired the art of using the instrument, and this does not take long, the observations are made with the naked eyes, without the medium of any agent but the atmosphere. Thus errors in observation are eliminated, and no special art or experience is required to distinguish the slightest changes in any part of the bladder interior.

The simplicity of the method and the absence of any features which may lead to misinterpretation have often been the means of leading the writer to a correct diagnosis, when other men with larger experience in genitourinary diseases have been in error. In the second place, it occasionally occurs that a condition of the bladder is present that makes it impossible to examine the interior of the bladder with a prism cystoscope, requiring, as it does, a certain amount of clear liquid medium. Take, for instance, a very irritable bladder with extensive tuberculous ulcerations, in which the smallest quantity of fluid is immediately ejected with great tenesmus, even with free cocainization of the bladder. In illustration, one case in the writer's experience will suffice:

A highly neurotic girl of eighteen, with a very irritable bladder due to secondary tuberculous cystitis, was sent to me for diagnosis. It had been assumed that the bladder affection was secondary to renal tuberculosis, but it had not been possible to determine which kidney was affected or whether both organs were, as the patient was entirely free from pain in either kidney region and palpation could not detect any enlargement or tenderness in either side. An unsuccessful attempt had been made on three different occasions, in one of which more than an hour and a half were consumed, by one of the best-known genitourinary surgeons in New York City, to obtain a view of the bladder interior or to catheterize the ureters. By cocainizing the bladder and placing the patient in the knee-chest position I could readily with a small Kelly cystoscope catheterize both ureters. The collected urine from each ureter showed that the right kidney was the one involved, and on its removal it was found to be riddled with tubercular ulcers.

Thirdly, the great majority of bladder disturbances in women are due to a localized cystitis frequently limited to the trigonal area. These cases will usually resist the ordinary method of treatment and will yield only to a direct application of

*Read at a joint session of the American Gynecological Society and the American Association of Genito-Urinary Surgeons at White Sulphur Springs, W. Va., May 19, 1915.

solutions of nitrate of silver of varying strength. These applications can effectually be applied only through a hollow tube such as Kelly's cystoscope with the patient in the knee-chest posture. In any other posture it is well-nigh impossible to have the field entirely free from urine, and we know how futile it is to apply solutions of nitrate of silver to an ulcer or hyperemic area bathed in urine.

Thus, in Kelly's method we have at once a ready means of diagnosis and a most effectual way of curing the patient. Time and time again patients have presented themselves at the writer's office, who for several months had been treated with all kinds of drugs internally and all kinds of bladder irrigations without any appreciable relief. At their first visit a cystocopy with the Kelly tube in the knee-chest posture would be made and catarrhal ulcers or trigonitis would be found. An application with a 10 per cent solution of nitrate of silver would be made then and there. A week later these patients would return, saying they were markedly improved, and a few more similar applications, made weekly, would effect a complete cure.

Fourthly, the removal of foreign bodies and small growths can be more easily accomplished through the Kelly tube and with simpler instruments than through any other form of cystoscope.

To sum up, Kelly's method of cystoscopy is so easily learned, and is so free from errors in interpretation that it forms the method *par excellence*, for the gynecologist who has neither the time nor the vast experience necessary to become an adept in the use of the prism cystoscope. Further, in addition to being an easy method of diagnosis, it forms at the same time a ready means of making topical applications directly to the diseased areas and for the removal of foreign bodies and small growths.

751 Madison Avenue.

THE DEPENDENCE OF TUBERCULOSIS UPON RESPIRATORY INSUFFICIENCY OF THE UPPER AIR TRACT.

By W. SOHIER BRYANT, A.M., M.D., F.A.C.S.,

NEW YORK.

For a great many years physicians all over the world have been interested in discussing the point of entry, as well as the method of infection of the bacillus of tuberculosis. Naturally, nose and throat specialists are more particularly interested in this subject and they agree without a dissenting voice, that the bacilli must enter somewhere in the upper air tract. Having once effected an entrance, they pass on to the neighboring lymph gland and then work their way to their final destination, wherever that may be. These specialists also agree that an abnormal mucous membrane is less resistant to these insidious infections than the normal membrane.

One of the most important requirements for the prevention of tuberculosis as well as for its treatment, is an abundant and continuous supply of fresh, pure air. Another requirement, every bit as necessary as the fresh air supply, is a healthy mucous membrane.

Any rhinopharyngeal obstruction removes the possibility of the presence of either of these requirements for immunity to tuberculosis. It cuts off the supply of fresh air to such a degree that it is impossible for the individual to get a sufficient amount, much less the abundant supply that is essential to combat effectively the bacilli of tuberculosis. The obstructions inhibit free breathing and lung expansion, favoring imperfect expansion and giving the obvious result of under-oxidation. The obstruction also develops an abnormal mucous membrane, making it more susceptible to infection through these bacilli by providing just the conditions most favorable to their growth and development.

The author has noted in the cases of tuberculosis observed, especially at the time of the primary infection, an abnormal mucous membrane as well as obstructions of the rhinopharyngeal passages. Later in the course of the infection, these abnormal conditions may not be so strongly marked, and therefore are not as often associated with the infection in the minds of general practitioners and lung specialists.

Therefore, as the most successful means of prophylaxis, I advocate, not out-of-door life; not an abundance of fresh pure air; not avoidance of overcrowding; not forced feeding; not the absence of tuberculosis bacilli, either human or bovine, from the food; not the segregation of infected individuals; although all these are useful measures, but I do advocate the providing of free rhinopharyngeal passages, which prevent an abnormal susceptibility of the mucous membrane and allow a free ingress of a sufficiently abundant supply of fresh, pure, stimulating air to the lungs.

19 West Fifty-fourth Street.

MULTI-POLLEN VACCINES IN THE TREATMENT OF HAY FEVER.

By HENRI ISKOWITZ, M.D.,

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History.—A connection between a form of periodically recurrent rhinitis and the flowering seasons of certain plants was noted by a number of writers as early at the seventeenth century. Bostock[1] in 1819 established the clinical entity of hay fever, and analyzed twenty-eight cases which he had collected. Subsequently La Forgue[2] and Le Chambre[3] elaborated on Bostock's observations. In 1873 appeared Blackley's[4] classical monograph, in which he detailed exahustively a series of observations made for the purpose of determining the immediate cause of the disease. He proved that the impact of the pollens of various flowering plants on the mucous membranes of the upper respiratory tract caused the characteristic symptoms of hay fever. Wyman's[5] monograph, in 1876, corroborated Blackley's results.

In 1884 Sir Morell McKenzie[6] recognized the importance of a local diseased condition of the mucous membrane as a predisposing factor. Dunbar[7] began his exhaustive scientific study of the pollens as a causative factor in hay fever in 1895. His monograph, published in 1903, described his first experiments with pollen serum in the treatment of the disease. This was followed, in 1907 and 1911, by papers in which he details the results of his serum treatment during the intervening years.

Dunbar's investigations prompted Wolf-Eisner[8] to a thorough clinical study of hay fever. The results of his observations were published in 1906. Wolf-Eisner rejected Dunbar's antitoxin theories, and suggested that this disease is a condition of anaphylaxis. Weichardt[9] proved the soundness of this theory.

Etiology.—In connection with the pollens as the exciting cause, we find certain other contributing

causes in hay fever. The etiology embraces actually three conditions:

(1) Predisposing constitutional causes.

(2) Pathological conditions of the nose.

(3) The pollens.

1.—We frequently find members of the same family suffering from this condition. In a large percentage of the cases indeed a family history evidencing neurotic tendencies has been found. The opinion is, in fact, very widespread that a disposition to hay fever is always an expression of a neuropathic tendency. It is claimed also that faulty metabolism may play a certain part as a causative factor. What essential pathological condition exists in neurosis is, however, problematical.

2.—We are largely indebted to Roe of New York and Daly of Pittsburgh for the recognition of the local causes. These include: (*a*) Hypertrophic rhinitis; (*b*) spurs and bony projections; (*c*) septal deviations; (*d*) polypi, hypertrophy of the nasopharynx; (*e*) sensitive areas.

3.—There are about thirty flowering plants which grow in this climate, the pollen of any one of which may act as the exciting cause in hay fever. Certain of these are, however, of much greater importance than others, owing to their wide distribution. The periodicity of the disease coincides with the blossoming seasons of the commonest pollen-bearing plants. From the latter part of May to the middle of July the atmosphere is heavily charged with the pollens of the *Gramineæ*. These include the grasses (timothy, redtop, June grass, etc.) and several of the cultivated cereals. As a result of these pollens we have during this period a form of hay fever commonly called rose-fever or rose-cold. From the middle of August the most widely diffused pollens are those of the golden rod, ragweed, and Indian corn.

Geographical Distribution.—Hay fever is prevalent throughout the United States, with the exception of certain districts. These are the White Mountains, the Adirondacks, the Rockies, the Lake Superior country, and certain portions of the Southern States. The immunity of these districts springs from the fact that the flora of the mountain districts differs materially from that of the valleys.

Pathology.—The structural changes of the mucous membrane consist of hyperemia, edema, and enlargement of the turbinal bodies. The hypersensitive areas are chiefly found at the terminal endings of the spheno-palatite ganglion. This is due to the irritation of the sensitive endings of the nerve fibers. Gross pathology has already been discussed.

Symptomatology.—The symptoms of the June fever and of the autumnal type are approximately the same. They are those of acute coryza, malaise, elevation of temperature, sneezing, serous discharge from the nose, obstruction to breathing, lacrymation, suffusion of the conjunctiva; the pharynx is dry; difficulty in breathing may ensue, followed by coughing and asthma. The secretion is acrid and excoriates the skin.

Treatment.—It is all-important that both the constitutional and the local causes be eliminated. In this connection diatheses and faulty metabolism should be treated.

Local hypertrophic tissue should be operated on, septal deviations corrected, and spurs and bony projections removed. Sensitive areas should be cauterized.

Serum Treatment.—The work of Clowes[9] and Koessler[10] has demonstrated the practicability and clinical value of immunizing hay fever sufferers by pollen extracts. This has stimulated extensive study of this form of immunization. The most recent publication on the subject is a paper by Oppenheim and Gottlieb.[11]

Clowes vaccinated eight patients, all of whom experienced a marked benefit. Freeman[12] reports 84 cases treated with pollen vaccines, of whom 64.6 per cent. were completely cured, 23.9 per cent. showed slight improvement, 11.5 per cent. were not benefited. Of twenty-one cases reported by Manning,[13] 66 per cent. were relieved, 33 per cent. were not relieved. Koessler has treated forty-one patients. He reports four as completely cured, 29 improved markedly, five slightly improved, three not affected. Oppenheim and Gottlieb treated eleven cases before and during the hay fever season. Five were cured, four markedly improved, two showed no improvement. In the rose-fever of recent occurrence twenty-four cases were treated with the multi-pollen vaccines; sixteen were markedly improved, eight not affected. The marked improvement consisted of a milder and shorter attack, a disappearance of nervous and constitutional symptoms, and an ability to remain in pollen-infected districts.

Immunization.—The nasal secretions contain a digestive enzyme, which has the marked property of splitting proteids. The resulting proteolysis is akin to that of the stomach and intestinal digestive processes. Thus is explained the bactericidal action of the nasal secretions.

Pollen in the nose is split into albumins, globulins, proteoses, and amino-acids. Under normal conditions there is no absorption of these products. Such absorption does, however, occur in the pathological conditions enumerated in our paragraph on etiology. The result of this absorption is an injury to the epithelial cells of the mucosa and the endothelial cells of the finer capillaries. This is followed by, first, an increased permeability of the cells; second, a specific protective ferment against the protein (sensitization). With this local reaction, an absorption and a sensitization of other parts of the body takes place. A vicious circle is thus established, in which a parenteral digestion of the proteins of the pollen in the nose acts as an excitant.

The proteins thus absorbed consist of the pseudo-globulins, euglobulins, and albumins. Only the albumins contain the toxin. The toxin is specific.

As a result of the parenteral absorption of foreign proteins a specific immune or antibody is formed. This may become attached to certain cells, or remain free. When there is a surplus of free antibody we have immunity. With little antibody, and that attached, we have the sensitized state. The reaction takes place when the protein and the fixed antibodies are united. The symptomatology is determined by this reaction.

Experiments have shown that minute doses of pollen proteins applied to the conjunctiva or to the scarified skin produce in patients who are sensitized characteristic symptoms. The strength of the dose which can thus be administered without causing any symptoms determines the level of resistance. We first establish in every patient the toxic dose, by the instillation of one drop of pollen extract in the conjunctival sac. The resulting ophthalmic reaction serves two purposes: (1) diagnostic; (2) determination of resistance.

Koessler has worked out a pollen unit. This is equal to one one-hundredth part of a millionth of a gram of pollen protein, and designated as P. U. The unit has been adopted in all subsequent experiments with pollen extracts. The resistance to the ophthalmic reaction is expressed in these units, and the immunizing doses are thus determined.

Preparation of Vaccine.—All patients subject to rose-fever react mainly to the pollens of the *Gramineæ*, and those of the autumnal type to ragweed, golden rod, etc. All are, however, multisensitive—that is, they react to several different pollens. Many, indeed, are sensitive to both groups, the spring and the autumnal.

In the preparation of the serum some twenty types of pollen are used. These include all species of both *Gramineæ* and *Compositæ* which have any marked influence on account of wide distribution.

The pollens are gathered and dried under sulphuric acid. They are then ground in an agate mortar as finely as possible and sifted through a fine silk filter. The pollen is then dissolved in an 8.5 per cent. salt solution, in the proportion of a centigramme to 10 cubic centimeters of the fluid. The solution is then placed in an incubator at 30° C. for twelve hours, and then filtered through a sand filter. To this solution is added ten times sterile distilled water plus .25 per cent. phenol and .5 per cent. glycerine. This is the standard solution, from which all injections are prepared, Koessler's pollen unit being used to determine the strength ratio.

Dosage and Administration.—The treatment consists of fifteen doses of multi-pollen vaccine, administered subcutaneously in the interscapular region, using the same precautions as with any hypodermic injection. The interval between injections is three to five days, depending upon the reaction. The duration of treatment is from four to six weeks. It is desirable to make this treatment a prophylactic one, in order to obtain immunization before the onset of an attack. Encouraging results are obtained, however, when the disease has already developed. Of the twenty-four cases treated with the multi-pollen vaccines, fifteen were treated during the attack.

Treatment should be begun some eight weeks prior to the hay fever season. Severe reactions may result after the first injection. These promptly disappear after twenty-four hours, and do not recur after subsequent injections.

Immunity.—This varies with the individual. Some patients carry their immunity over the ensuing year, others do not enjoy this extended immunization. In these cases, while active immunization may not be realized, the attacks in the following season are less severe, milder in their inception, and last a shorter time. It is important that patients be treated for several years with the vaccines in order to obtain a permanent cure.

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58 WEST FIFTY-EIGHTH STREET.

THE RELATION OF LOW TEMPERATURE FERMENTATIONS AS AFFECTING SANITARY CHARACTER IN MILK.

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Previously Practised Methods Inadequate.

THE prevention of primary infections of milk at the places of its production has unquestionably been of great importance in securing safe and edibly excellent milk in a small part of the public supply, but it is becoming evident that such preventive work is not entirely adequate in securing the very highest quality of milk. Important auxiliary action seems to indicate that regular exercise of cattle is needed to prevent the transfusion to milk of those cellular excretory accumulations in the bovine tissues which pertain to sedentary habits, and which follow deficient heart action and non-muscular expression of such waste matters from the tissues, and insufficient active elimination through the ordinary channels.

There are more or less volatile and diffusive matters transferred to milk from the tissues of the cow that have originally been formed through bacterial action in the cow's hide and that have been absorbed into the blood through the respiratory and circulatory organs, as well as certain principles absorbed from tainted, objectionable food. These matters should be more completely eliminated from milk by improved methods of aeration. There is no evidence that they are seriously harmful, although they may be nauseating, and certainly cannot be of any benefit, and being of an excretory nature, it is possible that they are somewhat damaging.

A more general recognition should obtain of the need of *proper* pasteurization of *all* milk, and its pasteurization in the final container, in order to eliminate all possibility of man's pathogenic infections, whether bovine-tuberculosis, typhoid, or other infections conveyed by infected water, insects, or human conveyors who handle the milk. An adequate protection of the entire lip of the bottle and preventing conveyance of infections through the closure seal, as well as ability to pile cracked ice on the tops of the bottles during conveyance to, and until consumption of the milk by the consumer, is highly important.

The most important auxiliary advanced treatment of milk, however, is in connection with its temperature control during the entire time between its production and its consumption. This is a matter that up to the present time has been given very little attention by investigators, and practically no attention in general trade practices. Even very considerable bacterial infections of milk, if from healthy cows, is not so important a matter as is the character of the fermentations which occur in the milk during its handling. Refrigeration has been mostly practised to prevent souring of milk. Proper pasteurization provides against danger from patho-

genic germs, but nothing practical except adequate and sufficiently deep refrigeration will prevent the accumulation in milk of excretory and decomposition substances due to bacterial activity at the ordinary temperatures at which milk is usually handled, which temperatures may prevent souring of the milk, but do not sufficiently prevent proliferative activity of such germs as may have gained access to the milk.

In discussing the subject of The Relation of Low Temperature Fermentations to Sanitary Character in Milk, in referring to "low" temperatures, I mean temperatures varying between 30° F. and 70° F. The conclusions I have arrived at have been based more on the investigations of others, than my own, including such investigators as Park, Holt, Mendel of the Shepard (Yale) Laboratory, and others, but the conclusions I have reached, and from perhaps a wider study than has been given by others, is somewhat different from those which are generally held. I think that a decided step in advance in securing safety in the milk supply will be through the practice of a very much deeper refrigeration of milk during the entire time of its handling than has been customary. It has been customary at certain times of milk handling, especially if for long shipment, to deeply refrigerate it, but not enough consideration has been given to the deteriorations that may occur during comparatively short periods of holding. The presence of even small quantities of the products of bacterial activity cannot be of any advantage or be other than unwholesome, and there seems to be no reason to doubt that their damaging effect may be proportionate to the extent of their presence. In other words, the presence in milk of fermentative products largely determines the mere wholesome or unwholesome, as well as dangerous quality of milk.

It is now generally agreed that pathogenic infections of milk are dangerous, and that all effort should be taken to prevent or remove such infections, but there is apparently great lack of recognition of the fact that the amount of excretory bacterial products or of decomposition protein products due to bacterial action, may be and probably is, individually damaging to all grades of human beings in proportion to the resisting powers of individuals. It is a known fact that large bacterial contents of milk do not very disadvantageously affect infants in cold weather, while the same infection would act seriously when the constitutional resistance is reduced by high atmospheric temperature and moisture. This does not say, however, that large bacterial contents may not be injurious even in non-fermented milk. Such large numbers may, and probably are irritating to the alimentary surfaces, but the presence of the products of bacterial action are productive of different effects, and usually of a constitutionally depressing character.

In view of the fact of the very large numbers of varieties of bacteria found in milk originating from the cow, or from sources outside of the cow, it does not seem practical to do other than to divide milk bacteria into two designated classes, namely, (1) those of the "lactic acid" type, and (2) those of the so-called "putrefactive" type, some of the latter of which at least may be malign in influence.

The malign influences are potent in proportion to the rate of activity of the malign bacterial increase, and it should be accepted as true that because that influence may be only small, there is no valid excuse for submitting dietetically to such influence. The fact that one individual, or a large number of individuals, may have resisting powers in excess of others, is no proof that such resistants are not injured in health in proportion to the influence acting on them. There is no good excuse why the public milk supply should not be relieved entirely from all suspicion as to unwholesomeness, as well as of dangerous qualities, it being merely a question of adding an increase of 1 cent a quart to the price to the consumer to secure relief.

In support of the proposition that the writer is presenting, let us consider the evidence that is available for the forming of his conclusions. Let us start by allowing that toxic milk is usually not the only or principle cause of diseased conditions in infants. Lack of intelligent care, and also the depressing effects of atmospheric heat and moisture, as well as inherited individual powers of resistance, tendency to growth, etc., must be given full prominence. We know that bacteria may render milk dangerous. We know that the more free milk is from infections when produced, the more safe and wholesome it is. We know that depreciation in it is due to the influences of heat, time of holding, and of sanitary handling. We know that bacteria proliferate more or less rapidly between the temperatures of 20° F., for some varieties, and possibly even up to 150° F. for some other varieties, every variety, of course, having its optimum favorable temperature for increase. The lactic acid optimum is between 60° F. and 80° F., while that of some of the putrefactive forms may be near 100° F. At temperatures approximating 32° F., and while milk preserves its antifermentative qualities at least, bacteria do not appear to reproduce themselves in that fluid. For several days *fresh* milk may be considered safe at that temperature, but stale milk at that temperature, if given time, grows billions of germs.

In fresh milk bacteria propagate at various temperatures to an extent somewhat as follows:

	In 24 hours.	In 48 hours.	In 96 hours.
At 39° F.	25 per cent.	2 fold	6 fold
At 42° F.	35 per cent.	6 fold	200 fold
At 46° F.	70 per cent.	10 fold	400 fold
At 50° F.	2 fold	600 fold	
At 55° F.	6 fold	1200 fold	
At 60° F.	30 fold	5000 fold	

From the above it will be inferred that a very considerable amount of excretory and decomposition matters may be produced even from small primary infections, at moderate icing temperatures, and if the primary infection is malign such production may be dangerous. What must be the result of large infections? It is evident that if the character of the infections primarily are malign, the damaging possibilities must be at least somewhat serious, and may be extremely serious. Now, the holding of market milk at temperatures above 50° F. is very much more frequent than milk held below 50° F., especially after the milk is delivered to the consumer.

From the above it will be seen that when milk is held at or below 45° F., and if fresh, and not held for more than twenty-four hours, it will not accumulate great amounts of bacterial products, but it will also be seen that if there is a large primary infection, there will be a large presence of bacterial products at temperatures even below 45° F., from a twenty-four hour holding, and with milk, a holding

of three days before its consumption, even with "modified certified," is far from uncommon.

There is no evidence that the mere presence of large numbers of bacteria in milk is dangerously harmful, as has been previously stated, but all the evidence in hand goes to show the possibility of damage due to the presence of bacterial products resulting from fermentation in the milk itself.

We know that decompositions of organic proteins may result in the formation of toxic matters, and we may assume that excretory products from bacterial activities may be harmful, inasmuch as a general proposition may be accepted to the effect that all excretory matters are more or less harmful, unless further organic and chemical reducing changes occur in them. It is presumed that in all activities of living forms there are excretory matters produced, and decompositions result from bacterial activity in the food on which the living forms subsist. As applied to cow's milk infected with micro-organisms, these products may be formed before the milk is consumed, or after it is taken into the alimentary tract. With our present knowledge, we cannot state definitely the amounts of either product that may be formed, but probably both are formed.

While it is highly important that infections of milk should be prevented as much as possible, it is a question whether it is not fully as important, if not more so, that proliferation of the infections that have occurred at the places of production of milk be prevented. If they are prevented either by treatment of the milk before consumption, or by not ingesting more of the milk at any one time than can be quickly digested, it does not seem to be a matter of supreme importance as to slight variations in the amount of primary infections, inasmuch as the damaging excretory and decomposition products are not then formed in large amounts, while most of the infecting germs pass out of the intestine with the intestinal dejections.

Those workers who have been depending solely on preventing infections should now take the further step of advocating as a precautionary measure of safety, the *entire* prevention of all fermentations in the milk. This is so simple a matter to effect through mechanical refrigeration that there seems to be no excuse whatsoever for neglecting to eliminate the possibilities of not carrying out such preventive treatment.

Quality of Milk and Its Selling Value.—The greatest obstacle to the milk reform is that most consumers think that as they have got along pretty well under old conditions, it does not seem worth while to better those conditions. It is obviously true that the greater part of consumers of market milk do not show immediate damage from the effects of deteriorated milk. The same thing may be said in connection with nicotine and alcohol, yet both of these products act as deadly poisons in large enough quantities, and when habitually consumed in moderate or small amounts, exert a more or less immediate effect in reducing general vital activity, and indirectly, in shortening life. The same reasoning may be applied to milk that has become deteriorated in quality through the accumulation in it of bacterial products. Because milk is so good a culture medium for germs, this consideration applies even more to milk than to other foods. But no form of decomposed food can be said to be positively wholesome.

There is always more or less of such products in all market milk. If in sufficiently large amounts they kill strong adults quickly. In small amounts strong individuals do not immediately show damage, but there is no question that some damage is done that would not have occurred if absolutely unchanged milk of high sanitary character had been used.

Is there any excuse for neglecting to use milk of the very highest attainable character, when it is such an important food? If defective as a food, and if fed in frequent and moderate doses to infants or other susceptible persons, it kills more or less quickly. There are multitudes of the very delicate to whom the difference between consuming perfect milk and dangerous milk is the difference between life and death. It will pay even the strong and healthy to consume only the best milk, as well as other foods. If there is need of economizing, economization should be effected in quantity, and not in accepting defective quality.

Milk and butter that are markedly dangerous to life because of the presence of disease-producing germs, should, through the action of municipal interference, not be allowed to be used.

Again, it should be emphasized that mere dependence on clean milk is not a sufficient guarantee of safety.

Apparently the same obstacle will be met in carrying out the milk reform that is being met in fighting alcohol. Ignorance assumes that because it does not detect a damage due to the poor quality of milk, such milk is safe. No one in his senses, unless grossly ignorant, who believed that a milk contained typhoid and other pathogenic germs, would consider the consumption of that milk a safe performance without heating the milk sufficiently to destroy those germs. Risks should not be taken in this matter. There are untold multitudes of consumers who consider properly pasteurized milk unhealthful, and there must be a very considerable proportion of the medical profession that does not realize that so-called putrefactive fermentations in milk result in the production of bacterial excretory and decomposition products in the milk, and that such products in the milk are damaging according to the amounts present, and the frequency of consumption of such matters.

We as yet have no definite knowledge of how to determine the presence of such matters quantitatively and qualitatively, but we do know that small or large infections of milk increase into innumerable billions of bacteria at various temperatures not very far above the freezing point. We know that there has been something in the milk in the past that has killed innumerable babies. We know that pasteurized milk especially will ferment at a wide range of temperatures. We know that butter will depreciate quickly at a temperature of 40° F., and that it requires a temperature below 20° F. to prevent its deterioration in long cold storage. The trained sense of taste can detect change of flavor in stale milk that is not due to souring of the milk.

We know that there are undetected conveyors of tuberculosis in many herds of cows. We know that one fly may carry typhoid germs and effect a wide-spread typhoid epidemic, and yet many medical men advocate the use of raw milk in the case of delicate infants and invalids, and do so in face of the fact that there is no condition known that could be produced by a properly pasteurized milk that cannot be corrected by feeding

a little fruit juice, or other modifying nutriment. Perhaps these same individuals may not believe in the accumulation in milk of possible fermentation toxins from low temperature fermentations.

One very important precautionary measure is too generally neglected, and that is the adequate refrigeration of infant's milk *after* its passing from the purveyors' hands, and this particularly applies to modified pasteurized milk. This should be attended to by the purveyor. It is a very common occurrence in milk of this character to have had some of it held for three days before it is entimely consumed by the infant, and for a part of that time held at temperatures in which fermentations occur with considerable rapidity, and especially after the milk has been modified and pasteurized. To secure the best results milk modified at the laboratory should be placed in the feeding bottles *at the laboratory,* completely sealed, and then kept completely covered with cracked ice until heated for immediate consumption. Milk of this character should be delivered in special refrigerative containers, labeled with full directions to the consumer as to adding further ice to that originally provided, so that there can be absolutely *no* fermentation occurring in the prepared milk up to the immediate time of its consumption.

So far as physicians and purveyors are concerned, they should take no risks in these matters by neglecting to eliminate the possible occurrence of depressing influences in the alimentation of individuals of all ages and degrees of resisting power. This applies particularly to milk as well as to other foods.

The Perfect Milk.—Normal milk is justly considered a perfect food, as well as the most economical of animal foods, but emphasis should be made that its life-giving, as well as its best pleasure-giving qualities, usually depend on preventing changes from occurring in it that are represented by contaminants at any time, whether from absorbed disagreeable or dangerous taints, or from physical changes due to infecting bacterial activities. In nature there is little opportunity for the occurrence of changes in milk in the time between its production and its digestion after consumption, but it should be remembered that the peculiar sociological conditions of modern life necessarily involve the receipt by milk of the influences of heat and long time holding of the milk, besides more or less of primary germ infection.

To secure a perfect milk for the consumer, or one that is relatively perfect, necessitate co-operative efforts on the part of producers, dealers, *and* consumers, in preventing changes from occurring in the milk. Teachings to that effect should be pronounced and wide-spread.

There is considerable nonsense printed in the general press regarding the milk situation. Nevertheless, it is desirable for the public to know the full facts relating to this important matter; and in particular, the medical profession and health authorities should understand it fully so that an intelligent planning can be formulated and applied in remedying the objectionable conditions of the situation.

As a matter of fact, much information is still lacking in regard to the situation on the part of those who ought to understand it thoroughly. The more progressive dealers are doing about as well in their practice as could be expected, considering the information they have in hand; but so far as my personal observations go, no commercial dealers are doing as well as is desirable. Certainly, the public should be given the privilege of purchasing absolutely safe and edibly high class milk at reasonable prices. The public has not that privilege at the present time.

So far as that part of the public supply is concerned that is pasteurized in bulk under the best methods, the worst that can be said of it is, that it is not as wholesome as it might be, that occasionally it may be pathogenically infected during its bottling and handling, and that it may become, and usually is, infected through the bottle closures in use. Such infections, however, are usually harmless, they do not become greatly increased by holding at too high a temperature for short periods, or for longer time at low temperatures. The greatest danger usually comes through the small dealers, who are ignorant and who may be unscrupulous. There seems to be no reason to question that it is the moral duty of all health boards to act as quickly as possible in preventing such dealers from pursuing a business that calls for such care and special knowledge.

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THE CAUSATION AND TREATMENT OF PELLAGRA.

By THAD SHAW, M.D.,

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After a continued study of both the clinical and pathological aspects of pellagra, I have come to the definite conclusion that pellagra is a metabolic disease. Others have called it a chronic intoxication, but I think this term is too vague and too abstract. Poverty and bad hygiene aggravate or furnish a favorable soil for this disease the same as for all diseases, but do not of themselves cause the disease, except in this respect, that the economic condition of a country determines the diet of the people. Pellagra appeared in France soon after the reign of Napoleon I, which was a period of extreme poverty in that country. France recovered from this economic depression in the latter part of the nineteenth century and pellagra decreased to such an extent that the disease is now a very rare one. Taking this one fact together with the history of the disease, the countries in which it is most prevalent, Italy and Egypt, together with the fact that it has not been described in any aborigines or primitive races, and reasoning from the known cause of beriberi and its variety of symptoms and forms, and taking into consideration furthermore the lack of definite or characteristic post-mortem lesions in pellagra, I have arrived at the conclusion that the fault lay in the metabolism of the foodstuffs. Bearing upon this same point, I have considered the strange effect of etherization upon a pellagrin; ether anesthesia more than chloroform anesthesia always aggravates and in a great many instances relights the disease, acting very much in the same way as an anesthetic does when it causes delirium tremens in an alcoholic. Whether the etherization adds toxic metabolic substances or destroys necessary products of metabolism, I have been unable to determine. As a rule all pellagrins are vegetarians in entirety or greater part. And there exist in the carbohydrate foodstuffs toxic substances or a lack of vital substances which, when the foodstuffs (themselves not necessarily spoiled) are con-

sumed over a more or less long period of time, produce injurious effects upon the organs of the body.

All physicians who have had experience in treatment of pellagra agree upon one point, and that is that the milder cases improve if kept in a hospital in bed, at rest, and upon a fairly liberal diet with plenty of fresh meat or meat juices. Ordinarily pellagrins consume a large carbohydrate diet. And in this connection it is interesting to know that only in the last few years has the difference in composition of proteins been brought out. Fischer, Abderhalden, Mendel, and Osborne have shown the great variation in composition of proteins in regard to content of various amino-acids. Certain proteins lack or are deficient in certain amino-acids necessary for growth and maintenance. All proteins derived from animal sources, with the exception of gelatins, seem to be suitable for human consumption as they contain all the necessary components in right proportion. Some of the vegetable proteins are deficient in this respect but as yet it has not been sufficiently proven which article of diet is the offending or causative agent. Funk claims that vitamines are essential for the maintenance of the health. Animal foods and vegetables contain these in varying amounts; meats are especially rich; polished rice is devoid of them. Funk argues that pellagra is a disease due to the lack of vitamine in the food, analogous to the production of beriberi through the large consumption of polished rice.

The Thompson-McFaddin Pellagra Commission has worked in Spartanburg county, S. C., where practically all pellagrins are mill hands and conditions are not comparable to other countries where the disease is just as prevalent. Yet they came to these conclusions as a causation: (1) The simulium is discredited. (2) Animal inoculation and experimental study of intestinal bacteria have not yielded conclusive results. (3) No evidence of inheritance is obtainable. (4) The immediate results of hygienic and dietetic treatment in adults have been good, but after returning to former conditions of environment and living, most of these cases have recurred. The prognosis in children is very much more favorable. (5) Occupation has no influence.

As to the infective nature of the disease the Thompson-McFaddin Commission arrived at only two conclusions which have any bearing upon this point. These are:

1. The American form is more severe, notably more so than that in the West Indies and Egypt; coinciding with the experience that a new disease or an acute infection is more prolific in a virginal soil.

2. The Commission is inclined to believe that pellagra is in some way transmitted to a non-pellagrous person from a pre-existing case and that one of the important factors in this transmission is residence in the immediate neighborhood of a pellagrin. To bear this out the Commission states further that in certain hospitals for the insane we have ascertained that pellagra is usually more prevalent and persistent in the wards housing untidy patients. Only in one case have I seen any evidence of transmissibility and that case occurred in the Austin Lunatic Asylum in a patient who had been in the institution 14 years, yet developed the disease in 6 months after living in the hospital in close contact with a rapidly fatal case of pellagra. The pellagrous patients are more frequent in the untidy wards, yet these wards house the senile dements, the aged chronics, and the more or less helpless idiots in whom gastrointestinal and other nutritional disturbances are more common than in the other class of patients in the same institution in these same wards. The bulk of diet is carbohydrate, consisting of bread, beans, peas, rice, grits, and potatoes, and the disease runs hand in hand in comparative frequency with the occurrence of beriberi. Twelve years ago the Austin Insane Asylum experienced so much beriberi that rice had to be eliminated from the diet, and during the past winter another epidemic of beriberi, though not so extensive, has brought about practically the same results. And when taken into consideration, the facts point more strongly to the carbohydrate element of the diet as the offending factor more than toward a hygienic or infective basis for the disease.

In the treatment of pellagra the most uniform results are obtained by the climatic, hygienic, and dietetic régime. Here in Texas it is best to send all pellagrins when possible to the snows of Colorado, away from the heat and sunlight, and to keep them there until the first of October, and to return them again the following year. This together with a liberal mixed diet in which the carbohydrate element is reduced to a minimum gives the best results in the average case. Whether the diet be liquid or solid, or a milk diet depends entirely upon the gastrointestinal symptoms of the patient. Advanced cases are unimproved by any available treatment and end fatally in shorter or longer period of time. The milder cases are improved by rest in bed, hospital regime and liberal diet in which fresh meat is a large constituent. Vomiting, diarrhea, the skin lesions, and other manifestations must be treated symptomatically.

First and foremost in the drug treatment of pellagra comes arsenic and its salts—Lombroso claimed arsenic in the form of Fowler's solution as a specific. For that reason sodium cacodylate, atoxyl, and salvarsan have been used. Arsenic is beneficial in many cases as a metabollic tonic. I hve used practically all of these arsenic salts without any uniform results. Furthermore I tried auto-salvarsanized serotherapy in six cases which grew progressively worse under my treatment.

The next most widely vaunted and heralded specific agent I might mention is the direct transfusion of blood. In many cases I have seen the skin lesions clear up and the gastrointestinal symptoms temporarily abate, but the mental symptoms were in no way affected. Bennett of Austin reports many recoveries under this treatment, yet I have seen at least two or three of his cases in the Austin Lunatic Asylum with marked mental and intestinal symptoms in the early fall and these showed a recurrence of all lesions in the spring. Direct transfusion of blood serves as a temporary means to add strength and recuperative power, but is not in itself a curative remedy.

Following Cole of Mobile I tried urotropin in eight cases in the Austin Lunatic Asylum. I gave as much as 150 grains per day in plenty of water with no ill effect to the patient, but with no effect upon the disease other than were obtained by hospital régime. Tucker of Richmond, Va., says: "Hexamethylenamine treatment was tried by me because of its property of forming formaldehyde in the body secretions and because of the probability of pellagra being an infectious disease. Hexa-

methylenamine was given to five patients in doses of 5-7½ grains, four times a day over a period of three weeks, all other treatment being discontinued. Two cases were so severe that it looked as if death would be the only outcome, while three other cases were of moderate severity. Such prompt and striking improvement followed the administration of hexamethylenamine that I feel it deserves a more extensive trial." So far as my own experience has gone, I have not had such favorable results in the use of drotropin.

Dr. Dyer of New Orleans claims that hydrobromate of quinine is a specific for the disease. In 1911 at a meeting of the American Medical Association, Dr. Dyer said: "In the treatment of all of my cases I have used quinine hydrobromate and even in advanced cases, with stomatitis and diarrhea, I have often given 10 grains, three times a day, and have kept it up until those symptoms have been controlled. The dose can then be reduced. In addition I have used arsenic which I believe is of distinct service. None of my patients has died and some are now entirely free from symptoms of the disease.

I believe that quinine is of great service in the treatment and cure of pellagra." At a meeting of the Texas State Medical Association, in Houston in 1914, Dr. Dyer further said that he had continued the treatment of pellagra with quinine hydrobromate since his previous report, and that out of 100 cases treated by himself alone he had had no fatal results. My own experience with this remedy has been limited, yet I could see no greater benefit from this medification than from any of the others I have thus far tried.

Dr. Wilson of Corsicana, Texas, used a 1 per cent. solution of picric acid as a local dressing to the skin when inflamed, and internally in increasing doses beginning with 2 or 3 drop doses and gradually increasing as with Fowler's solution. While connected with the University of Texas I had occasion to see this tried in the wards of the John Sealy Hospital. I could see no merit in this plan of treatment whatsoever.

Now I repeat that avoidance of sunlight together with residence in the colder climates, especially the snows of Colorado (for these are very accessible to Texans), hospital régime, tonics, and liberal diet in which fresh meats are plentiful will do more for the pellagrins than attempted specific medication can do. Fresh meat is easily digested, and contains the needed substances. As pellagra is primarily and essentially a metabolic or nutritional disease, it should be treated with this idea in view, and the errors or evils of the diet should be corrected when possible.

As yet the exact causative articles of food or constituent of foodstuffs has not been determined. As civilization has advanced and the stress and strain of living has brought about the hoarding of foodstuffs and the adulteration for commercial purposes, this disease has developed. Whether the causative agent is a toxic product developed in the carbohydrate element or whether it resides in a natural lack of the necessary life-giving and life-supporting elements normally contained within the carbohydrates employed remains to be proven at a future date. The various manifestations or lesions of the disease must be treated symptomatically while the disease itself must be treated from the metabolic viewpoint.

541 Moore Building.

Medicolegal Notes.

Fraudulent Use of Mails.—On a trial for using the mails in aid of a scheme to defraud by representing himself to be a physician and specialist in nervous diseases, inviting the submission of statements of symptoms and, irrespective of what the symptoms indicated, inducing the belief in the patients that they were the victims of serious ailments and in dire need of medical attention, there was evidence of the defendant's competency and experience as a medical practitioner. It was held, however, that evidence that the symptoms which the defendant represented to his prospective patients as alarming evidence of disease were in fact no symptoms of disease at all, but of normal health, was sufficient to sustain a conviction.—United States v. Smith, 222 Fed. 165.

Unskillful Operation — Evidence of Other Offenses Inadmissible.—In a prosecution for killing a patient by an alleged unskillful abortion, resulting in blood poisoning, there was evidence that the patient, who desired to be rid of the child, had herself made use of a syringe, and it was just as probable that she might have introduced the poison as that it was introduced by means of an instrument improperly sterilized in the hands of the defendant. It was held that evidence of prior or subsequent abortions was not admissible. The issue was not whether the defendant was an abortionist, but whether he had produced the death of the patient. The prosecuting attorney having repeatedly obscured the issue by the introduction of evidence of such prior and subsequent offenses, the error was held to be prejudicial, the defendant's evidence, if believed, exonerating him from the charge.—People v. Follette, 164 N. Y. App. Div. 272, 149 N. Y. Supp. 888.

Practising without License or Registration — Chiropractics. — On appeal from a conviction of practising medicine within the State of New York without a license or registration, the defendant claimed to be a chiropractor, or doctor of chiropractics, having graduated from an institution at Davenport, Iowa, known as Davenport University of Chiropractics, in June, 1912. In July following, without having any further examination or receiving any license in the State of New York, he began practice in Brooklyn. He had a sign, with regular office hours, and as a witness he admitted having treated about 200 persons for ailments of the stomach, chest, or spine, also for nervousness, hysteria, and diseases arising from pressure on the nerves. The prosecution proved by a witness whom the defendant had treated that he first examined her ankle, pronounced the arch as having fallen, massaged the foot, and advised a different shoe. On a further visit he manipulated the patient's spine, which, speaking as a spinologist, he pronounced out of alignment in several places. He said he could restore it, but it probably would not stay the first time. He further gave the opinion that the nerves leading to the ankle might be impinged so as to cut off the circulation.

In view of the large increase of those who attempt treatment without drugs or instruments, Legislatures have found it necessary to deal with all who assume to treat or prescribe for physical ailments. Such regulations are within the State's police power. By the New York statute, Public Health Law, Section 160, subdivision 7, one practising medicine is comprehensively defined as a person "who holds himself out as being able to diagnose, treat, operate or prescribe for any human disease, pain, injury, deformity, or physical condition, and who shall either offer, or undertake by any means or method, to diagnose, treat, operate or prescribe for any human disease, pain, injury, deformity or physical condition."

The defendant's sign, his circular and professional card, and his own admissions as a witness, all showed that he held himself out as being able to diagnose, treat, and prescribe for pain, disease, and injury. Rubbing and pressing on the human joints are old therapeutic agents. When accompanied by such attempts at diagnosis as a statement that the patient's pains in the ankle were from the spine having come out of alignment through displaced vertebrae, the defendant's acts came within the statutory definition of the practice of medicine. He was therefore held to be guilty of the misdemeanor of practicing medicine without a license, or being registered under the Public Health Law, Section 174.—People v. Ellis, 162 N. Y. App. Div. 288, 147 N. Y. Supp. 681.

MEDICAL RECORD.

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THOMAS L STEDMAN, A.M., M.D., EDITOR.

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SEPTIC ENDOCARDITIS.

MODERN clinical and bacteriological studies have provided a sharp delineation of the various types of this condition, which less than a generation ago were grouped under the rather inappropriate term "malignant endocarditis." This was regarded as a local disease of the endocardium from which secondary systemic infection arose. To-day ulcerative endocarditis is looked upon rather as a local manifestation of a general systemic infection and is more aptly described by the term "septic endocarditis." G. Jochmann of Berlin, who has contributed much to the knowledge of this subject, presents a comprehensive review of it in the *Beiträge zur Klinik der Infektionskrankheiten und zur Immunitätsforschung*, Vol. IV., No. 1. The septic is to be distinguished from the rheumatic or verrucose type of endocarditis. The bacteriology of the former is distinct. The causative microorganisms are most frequently streptococci; next in order come staphylococci, pneumococci, gonococci, the colon bacillus, and the meningococcus.

Cases of septic endocarditis belong to one of three categories as follows: Acute septic endocarditis, chronic septic endocarditis, and the so-called endocarditis lenta caused by the *Streptococcus viridans*. In the acute type the cases run their course in a few days or weeks and are almost invariably fatal. In most instances the seat of the disease is the left side of the heart, more particularly the mitral valve. Auscultation may reveal any of the various types of murmurs, none of which is characteristic, nor is the loudness of the murmur parallel with the intensity of the inflammation. As a rule the endocarditis is accompanied by a myocarditis; sometimes the pericardium is involved. The bacterial toxins produce a central vasomotor paralysis with a resulting marked diminution in blood pressure. Dilatation of the heart is a natural sequence of the myocarditis. The pulse is increased in frequency and corresponds to the height of the temperature. Thrombophlebitis and septic arteritis are frequent accompaniments. The temperature curve may assume the most varied types; it may resemble that of typhoid fever; it may be remittent or intermittent, and chills may usher in the disease and may be repeated frequently during its course. Collapse is often indicated by a sudden drop in the temperature. Embolic processes in various parts of the body are a common sequence of septic endocarditis. Important points in the diagnosis of this condition are the necrotic patches in the retina which are present in one-third of the cases, and the purpuric and other cutaneous eruptions which are the result of bacterial emboli in the skin. Arthritic manifestations are very common in this disease. A striking pallor of the skin is to be noted in most of the cases, and very frequently an icteric tinge of the skin and mucosa is to be observed.

Chronic septic endocarditis may run a course of several months' duration. It is caused most frequently by the streptococcus. Endocarditis lenta is characterized by its insidious course. Lenhartz and Schottmüller have shown that is its caused by the *Streptococcus viridans*. The peculiarities of this type of endocarditis are the following: There is almost always a history of articular rheumatism. In the beginning the patient complains of headache, dizziness, wandering pains in the joints, and chilly sensations. In the presence of these symptoms the diagnosis of influenza is often made. There may be only a gradually increasing lassitude, a pallor, and a breathlessness on exertion; otherwise, there may be no subjective disturbance and the disease may run its latent course until an embolus produces the first objective manifestation of the endocarditis. In other cases the picture may be that of acute articular rheumatism. The portal of entry of the *Streptococcus viridans* is in most instances the mucous membrane of the upper respiratory tract, particularly of the tonsils. Sometimes the infection starts in a tooth abscess. When fully developed the disease presents the following clinical picture: The temperature oscillates between 37° and 38.5° Centigrade. There is a characteristic waxen subicteric tinge of the skin. There is a progressive reduction in the erythrocytes and the hemoglobin percentage. In most of the cases there is a leucocytosis; in some instances, however, there is a leucopenia. Occasionally there is a pronounced tenderness on pressure over the sternum.

The valves most frequently affected are the mitral and the aortic. The resulting murmurs are usually distinct, but there are some cases in which no murmurs are evident. In these cases the fever persisting for several weeks, the swelling of the spleen, and anemia in association with possibly other septic symptoms may suggest the presence of a septic endocarditis. The diagnosis is made certain only with the aid of blood culture. The *Streptococcus viridans* may be isolated from the blood in 90 per cent of the cases. In spite of this bacteriemia the patient may be in relatively good condition for as long as ten months. Towards the end, however, the appetite fails and the signs of cardiac insufficiency arise. The septic emboli and infarcts at this stage of the disease give to it a most diverse picture.

The disease is almost invariably fatal. Cases have been reported in which the patients apparently recovered with a disappearance of the microorganisms from the blood, but succumbed later to the sequelæ of the endocarditis, such as embolism and nephritis. The treatment is apparently without avail. Neither specific sera nor vaccines have given

any encouragement in the hands of Jochmann, though Gilman Thompson of New York has reported three cases of recovery out of seven in which vaccines were employed.

DELAYED CHLOROFORM POISONING.

THE pathological condition which may develop following the prolonged administration of chloroform is comparatively familiar and the edema, fat infiltration, multiple hemorrhages, and necrosis of the central portion of the liver lobule have been recognized as characteristic if not pathognomonic of this condition. The subject has been quite extensively studied in one aspect or another and much is known about the condition, but the factors involved in its development and production have never been investigated satisfactorily. The theories proposed have not found general acceptance because of the grave objections which have been offered to all of them.

A recent attempt to solve the problem has apparently met with more success. Graham (*Jour. Exper. Med.*, 1915, xxii, 48) bases his theory upon the well known fact that chloroform is quite easily oxidized to phosgene and hydrochloric acid, and the former in the presence of water is decomposed into carbon dioxide and hydrochloric acid. This process takes place spontaneously unless the chloroform is protected from oxidation in some manner. Commercially, such protection is furnished by adding alcohol to the chloroform. The alcohol has a greater affinity for the oxygen than chloroform and so protects it from oxidation. Graham reasoned that if oxidation were so easy *in vitro* it would probably occur to a certain extent in the body and that the lesions of chloroform poisoning might be due to the action of the hydrochloric acid which was thus set free. The administration of hydrochloric acid to animals both orally and into the portal vein produced all the pathological characteristics of chloroform poisoning except that the necrosis occurred in the periphery of the liver lobule rather than the central portion. In animals killed forty-eight hours after prolonged chloroform anesthesia, the attempt to demonstrate hydrochloric acid in the liver lesion was not successful although there was evidently an increase in the amount of acid present. This difficulty is not surprising, for chlorine ions are always normally present. As indirect evidence, however, it has been shown that the excretion of neutral inorganic chlorides in the urine is increased after the administration of chloroform. Graham then investigated other substances which might set free hydrochloric acid in the body and found that the administration of mono-, di-, and tetra-chlormethane resulted in similar lesions and that the severity of the condition was exactly proportional to the amount of chlorine in these compounds. Since other alkyl halides might be expected to act in an analogous manner, though they might set free hydrobromic or hydriodic acid, the investigation was extended to include iodoform, bromoform, ethyl bromide, ethyl iodide, ethyl chloride, and ethylene bromide, and in every instance the lesions found at autopsy corresponded to those found in chloroform poisoning. The administration of ether and chloral, on the other hand, does not produce such lesions and these substances do not set free hydrochloric acid in their decomposition. As further confirmatory evidence he was able to prevent or lessen the severity of the lesions produced by the intravenous administration of Fisher's alkaline solution at the time of the anesthetic.

It may be objected that all of the evidence is indirect, yet the nature of the problem is such that only indirect evidence is obtainable. Certainly the observations all tend to support the idea "that the halogen acid (hydrochloric, hydrobromic, or hydriodic acid), directly liberated in the process of dissociation, may be the important factor which makes the tissue changes seen in poisoning with chloroform and other alkyl halides so different from those following the administration of narcotic drugs of a different type. One interesting fact noted was that in the animals which received protective doses of alkali the beneficial results were particularly striking in the kidneys. In the control animals which received no alkali, these organs were always enormously swollen and weighed much more than those of the alkali animals. The effect of the alkaline hypertonic salt solution in inhibiting the swelling of the kidneys tends strongly to support Fisher's theories as to the nature and origin of edema. The question of the pathological production of acid is assuming an important position in the domain of pathological physiology. The problem is an obscure one and definite experimental results are difficult of attainment so that such reports as these are the more welcome. The practical application is clear, though the value of alkali administration after the onset of symptoms is wholly unknown and may be very slight.

MALAY MEDICINE MEN.

THE therapeusis of the native practitioners in Malaysia does not differ much from that in vogue among the "medicine men" of the American Indians, if we are to believe Dr. J. D. Gimlette[1], who has worked among them for eighteen years. Disease, according to the Malays, is due to magic influences and hence is amenable to magic. It is a sort of spell or baleful influence cast upon the afflicted individual by jinn, devils, or ghosts. In the Malay Materia Medica noise takes the place of nux vomica. If the witch doctor is not sure just which evil spell has his patient in its grip he makes plenty of noise on general principles hoping that this will scare away the malign influence. If he is able to diagnose the case accurately, however, and determine just which familiar is preying upon the victim he selects the incantation which the wisdom of his forefathers or perhaps their dealings with the powers of darkness have discovered and pronounces this with all due form and ceremony. If the demon is properly intimidated he slinks away forthwith, but if not—well, the witch doctor is too much feared himself to fear non-payment from the survivors. These witch

1. *Malay Poisons and Charm Cures*, by J. D. Gimlette, M.R.C.S., L.R.C.P. London: J. A. Churchill; Philadelphia: P. Blakiston's Son & Co., 1915.

doctors are usually very old men, old not only in years but in cunning.

Poisoning is quite common among the Malays, but, contrary to the general belief, is not practised with any degree of finesse. Poisons are part of the regular armamentarium of thieves who prefer to stupefy their victims in some way before proceeding with the work of plunder. For this purpose they most commonly use the seeds of the datura plant, which contain hyoscine. About fifty of these seeds are given in tea or coffee, the equivalent of approximately one-fortieth grain of hyoscine; or the drug may be burned in a room directly below the one occupied by the prospective victim, who is overcome by the fumes. The effect of the poison administered in either of these two ways is transitorily unpleasant but rarely fatal.

A poison derived from the upas tree is a great favorite with Malay malefactors and here again we meet with a fairly widespread erroneous belief. The exhalations of this tree were formerly thought to be so deadly that no animal life could survive within fifty yards of it. Even nowadays many think that the upas tree is the most poisonous member of the vegetable kingdom. There is a story to the effect that when the poison from this tree is wanted, twenty condemned criminals are sent for it. Usually only one or two return alive and these are pardoned. As a matter of fact, the upas tree itself may be chopped down by anyone with a sufficiently good axe and stout biceps. The juice of the tree contains a glucoside which has an action on the heart almost exactly resembling that of digitalis or strophanthus. The Malay smears his creese or arrow with the inspissated juice and if the wound made by one of these is sufficiently deep enough of the poison enters the system to produce a toxic effect on the heart which is paralyzed in systole. Although the Malays are well versed in the uses of their native poisons they have practically no knowledge of antidotes. Their only remedy seems to be the fresh juice of the cocoanut, which is slightly acid and diuretic, but appears to have no especial therapeutic action.

The Malays are subject to a peculiar psychotic phenomenon and also to a neurotic one. Among them conditions which in a civilized people would probably lead to suicide make the individual "run amuck," that is, he arms himself and runs wild, killing everyone he meets until he is himself killed. A neurotic disturbance known as the latah is prevalent among them. This seems to be practically the same as the "jumping disease" of the woodsmen of Maine and Canada and the miryachit of the Orientals.

Syphilis in the Navy.

Metchnikoff's method for preventing syphilis by applying calomel ointment immediately after exposure to infection has reduced the incidence of syphilis in the navy during the past six or seven years, but the reduction has not been so great as was anticipated. Syphilis still almost heads the list of those diseases which cause a large number of sick days. G. P. Cottle, Passed Assistant Surgeon, U. S. N., writing in the *Naval Medical Bulletin* for July, 1915, says that it is to be hoped that in time the bureau will issue neosalvarsan or salvarsan to every ship and station. Several years' experience with these drugs has demonstrated to Cottle that their administration on board ship or at stations and yards is as practicable as at a hospital. The apparatus needed is simple and found in the regular armentarium, and the drug is safe enough if a simple aseptic technique and reasonable care be used. According to the writer, in order to gain a reduction in the damage done by syphilis in the navy, early exact diagnosis and intensive salvarsan-mercury treatment are the essentials, but these essentials though simple to state are difficult to attain. The delay in reporting venereal disease by the sufferer until it is too late to make an early diagnosis from the primary lesion is responsible for many cases not being treated in time. On board ship persistence is necessary to make inspection efficient and complete. In conclusion, it is believed that sick days in hospital for this class of patient should be reduced to a minimum; that except in unusual cases syphilis should be treated aboard ship or at the station or yard; that early discovery of the treponema is now practicable; that neosalvarsan should be issued to ships and stations and that the measures above mentioned, if properly carried out, will increase naval efficiency and do much toward removing the unnecessary losses in sick days now yearly charged to syphilis.

Suspected Typhus.

The diagnosis of suspected diseases has never been elevated to a special discipline of medical teaching, although health officers are supposed to follow certain rules in isolating subjects for observation, a history of exposure being the most obviously necessary. When a disease like typhus menaces a community suspects will be in evidence, and a history of exposure cannot perhaps be obtained. In order not to work hardships on the innocent, certain criteria of due cause for suspicion should be postulated. At a recent session of the Hamburg Medical Society (*Berliner klinische Wochenschrift*, June 7) Becker cites the case of a seamstress who had been seized with chill and headache. Numerous petechiæ and actual hemorrhages were found in the integument. There were stiff neck and a weak, positive Kernig sign, and splenic tumor was absent. The patient developed notable somnolence. The diagnosis of cerebrospinal meningitis was verified later by lumbar puncture. Every patient who presents symptoms suggestive of beginning meningitis may be held suspected of typhus until differential diagnosis is possible. Naturally, however, such a patient would require isolation even without suspicion of typhus. In another case the initial symptoms were common alike to typhus and typhoid. The agglutination and diazo tests spoke for the latter, but the patient had been recently inoculated against it. Again it was impossible to cultivate typhoid bacilli from the blood. The true diagnosis —typhus—was established by the subsequent course of of the disease. Hence in a typhus menace any case of typhoid fever without enteric manifestations should be regarded as suspicious, for the general phenomena of the two diseases may parallel each other while the serodiagnostic tests may fail.

News of the Week.

Committee of American Physicians for the Aid of the Belgian Profession.—Dr. F. F. Simpson, treasurer, 7048 Jenkins Arcade Building, Pittsburgh, Pa., reports the following contributions received during the week ending August 7, 1915:

Marwick, Mitchell, Peat & Co., Chartered Accountants. Three audits of the Treasurer's accounts, March 20, May 30, and June 20, 1915.	
Dr. E. W. Smith, Meriden, Conn.	$10.00
Receipts for the week ending August 7	$10.00
Previously reported receipts	7,769.84
Total receipts	$7,779.84

Cholera in Austria-Hungary.—A cable report early this week stated that an epidemic of cholera was prevailing in Vienna, over 500 new cases occurring each day in that city, and that the ravages of the disease were even greater in Budapest. The epidemic is said to be spreading also in the eastern provinces, especially among the troops in Galicia.

Gift of an Ambulance to the Bavarian Army.—A dispatch from Berlin states that Mrs. Jessie Stillman Taylor of New York, who has resided in Munich, has presented an ambulance train to the Bavarian army. It consists of a motor ambulance and two trailers.

Health of New York City.—The Department of Health reports a total of 1,328 deaths in this city during the week ending July 31, giving a death rate of 11.94 as compared with 11.67 during the week preceding and 12.06 during the corresponding week in 1914.

Health of Chicago.—During the week ending July 31 there were 490 deaths in Chicago, giving a rate of 10.4 per thousand of estimated population, as compared with 10.8 for the preceding week and 12.9 for the corresponding week in 1914.

Enforcing the Registration of Births.—Active steps are being taken by the New York State Department of Health to enforce the law requiring the report by physicians of births within five days after they occur. Dr. Hermann M. Biggs, State Commissioner of Health, has sent to district attorneys throughout the State lists of physicians who have been persistently negligent in this matter, and the county prosecutors have been asked to warn the offending physicians that further infractions of the law will be promptly prosecuted. The State law provides that, upon conviction a physician or other violator of the Vital Statistics article of the Health Law "shall for the first offense be fined not less than $5 nor more than $50, and for each subsequent offense not less than $10 or more than $100, or be imprisoned in the county jail not more than sixty days, or be both fined and imprisoned, in the discretion of the court."

Federal Investigation of Occupational Diseases in Pittsburgh.—Officers of the U. S. Public Health Service in Pittsburgh have recently established a bureau for the study of occupational diseases and will begin by investigating the relation of workers' fatigue to temperature and humidity in the mills in that district. They will also study the effect of poisonous gases and fumes upon the general health of workmen, condition of workers, light used in mills and shops, ventilation, length of working hours, time spent going and coming from work, exposure to dust, water supply, and sanitary conditions.

Medical Education in China.—Four members of the China medical board of the Rockefeller Foundation sailed last week on the *Tanyo Maru* of the Japanese line from San Francisco to reorganize the Union Medical College at Pekin, the Foundation having bought the largest hospital in China for use as a center of a system of medical schools. Those going to China are Dr. Wallace Buttrick, director of the board; Dr. Simon Flexner, director of laboratories of the Rockefeller Institute for Medical Research; Dr. William H. Welch, professor of pathology at Johns Hopkins University, and Dr. J. C. Cater, Jr.

The New York State Veterinary College will soon, it is announced, be moved from its present location in West Fifty-fourth Street to the quarters of the University and Bellevue Hospital Medical College. The work can there be more closely correlated than in the past with the work of the medical college. A piece of land adjacent to the medical college and belonging to the University has been set aside for the new veterinary building. The course of instruction will at the same time be extended from three to four years and the requirements for admission and graduation will be raised.

The Washington State Medical Society held its annual session in Tacoma on July 21 and 22. The following officers were elected: *President*, Dr. J. M. Semple of Spokane; *First Vice-President*, A. E. Burns, Seattle; *Second Vice-President*, C. Stuart Wilson, Tacoma; *Secretary*, C. H. Thompson, Seattle; *Assistant Secretary*, J. H. O'Shea, Spokane; *Trustees*, W. M. Hunt, L. M. Sims, H. H. McCarthy, C. J. Lynch; *Journal Trustees*, Wilson Johnson, E. W. Janes, P. D. McCormick; *Delegate to the American Medical Association*, Dr. Don Palmer, Seattle; *Alternate*, Dr. E. M. Eikenbary. The next annual meeting will be held in Seattle.

The Medical Society of the Missouri Valley will hold its twenty-eighth annual meeting in Des Moines, Iowa, on September 23 and 24, 1915, under the presidency of Dr. Granville N. Ryan of Des Moines. The secretary of the society is Dr. Charles Wood Fassett of Kansas City, Mo. The oration in surgery will be given by Dr. John B. Murphy of Chicago, on the evening of the first day, and on the second day Dr. George W. Crile of Cleveland will deliver an oration on cancer of the pylorus.

A Grievance.—The French-speaking physicians in a manufacturing town in Massachusetts, at a recent meeting, adopted a report to the effect that they were systematically slighted by their ex-patients' families. In the published card of thanks after a funeral, the report stated, one "will find that everybody connected with the sad ceremonial, the bearers, the priest, and undertaker, come in for their share of thanks, the doctor alone appears to be forgotten." In lieu of the gratitude which was wanting they decided to raise their charges and established a rate of $1.50 for a day visit and $2.50 for a night visit with a flat rate of $10 for a confinement of ordinary length and $2 an hour additional if the labor was unduly prolonged.

The Boston Health Commissionership.—Dr. Richard H. Creel of the U. S. Public Health Service, who was recently appointed Health Commissioner of Boston by Mayor Curley, has declined the offer. He gives as reason for his refusal the state of his health and his belief that the administration of the Boston department is already so efficient that he could do little to improve it. Two days after this declination was announced Dr. William J. Gallivan, who was health commissioner of Boston, presented his resignation, which was accepted by the Mayor.

Dr. Otto V. Huffman, formerly secretary of the New York State Board of Medical Examiners and secretary-treasurer of the Federation of State Medical Boards, has moved from Albany to his new residence at 89 Joralemon Street, Brooklyn, N. Y. Dr. Huffman has accepted the lecturership on physical diagnosis at the Long Island College Hospital, and is also the secretary and executive head of the college faculty. No successor to the position left vacant at Albany has yet been appointed. Dr. Walter L. Bierring, president of the Iowa Board, succeeds Dr. Huffman in the Federation and will be the editor of the Federation's *Monthly Bulletin.*

Eucalyptus in Meningitis.—A dispatch from Melbourne, Australia, states that Dr. Richard Bull, director of the bacteriological laboratory in the University of Melbourne, claims to have discovered in eucalyptus a specific remedy for epidemic cerebrospinal meningitis. Details as to preparation, dosage, and mode of administration are not given.

Charitable Bequests.—By the will of the late Sarah E. Batterson, formerly of Philadelphia, and who died recently at Rockingham, Mass., bequests are made as follows: St. Mary's Free Hospital for Children, New York, $10,000; Clarkson Hospital, Omaha, Neb., $2,000; Sanitarium Association of Philadelphia, $3,000; Children's Seashore Home, Atlantic City, $3,000; Women's Seashore Home, Atlantic City, $3,000.

By the will of the late Anna Yarnall, of Philadelphai a residuary bequest of $5,000 is made to the Women's Medical College.

Mrs. Elizabeth Sprague Coolidge of Pittsfield and Chicago has given $100,000 to the Pittsfield Anti-Tuberculosis Association as a memorial to her husband, the late Dr. Frederick S. Coolidge. This fund is to be held in trust for a new building to be known as "the Frederick Shurtliff Coolidge Memorial Home."

By the will of the late Elizabeth M. D. Prince of Philadelphia, the residue of her estate, amounting to $4,300, is bequeathed to the German Hospital as a memorial to her father, Henry W. Enternach.

Medical Society Elections.—The Franklin County, Vt., Medical Society met in Burlington on July 13 and elected the following officers: *President*, Dr. C. G. Abell of Enosburg Falls; *Vice-President*, Dr. E. A. Hyatt of Burlington; *Secretary and Treasurer*, Dr. W. J. Upton of Burlington. Dr. Robert W. Lovett of Boston read a paper on the poliomyelitis epidemic in Vermont in 1914.

The North Carolina State Medical Society, at its annual meeting held in Greensboro June 16, elected the following officers: *President*, Dr. Marshall H. Fletcher, Asheville; *Vice-Presidents*, Drs. James L. Nicholson, Richlands, L. N. Glenn, Gastonia, and W. H. Hardiston, Cresswell; *Secretary*, Dr. Benjamin K. Hays, Oxford; *Treasurer*, Dr. William M. Jones, Greensboro. The next meeting will be held at Durham in April, 1916.

The Association of Surgeons of the Southern Railway, meeting in Asheville, June 2 to 5, elected the following officers: *President*, Dr. Lane Mullally, Charleston, S. C.; *Vice-Presidents*, Drs. B. M. Tittsworth, Jefferson City, Tenn.; Stephen Harnsberger, Catlett, Va.; H. H. Briggs, Asheville, N. C., and W. H. Hutchinson, Childersburg, Ala., and *Secretary-Treasurer*, Dr. J. U. Ray, Woodstock, Ala. (re-elected). Chattanooga, Tenn., was selected as the next meeting place.

The Southwestern Virginia Medical Society, at its annual meeting held in Wytheville June 24 and 25, elected the following officers: *President*, Dr. W. K. Vance, Bristol; *Vice-Presidents*, Drs. J. C. Motley, Abingdon, and G. G. Painter, Pulaski; *Secretary-Treasurer*, Dr. A. B. Greiner, Rural Retreat.

The Rutland County, Vt., Medical Society, at its annual meeting at Lake Bomosen on July 13, elected the following officers: *President*, Dr. C. E. Griffin, Fair Haven; *Vice-President*, Dr. J. S. Eastwood, Brandon; *Secretary and Treasurer*, Dr. F. H. Gebhardt, Rutland; *Auditor*, Dr. C. S. Caverly, Rutland; *Censors*, Drs. M. R. Crain, Rutland, G. D. Parkhurst, Fair Haven, and J. W. Estabrook, Brandon; *Delegates to the Vermont Medical Society*, Drs. E. S. Crowfut, Poultney, T. H. Hack, Proctor, and C. H. Swift, Rutland.

Obituary Notes.—Dr. Carl F. Kremer of New York, a graduate of the University of Griefswald, Germany, in 1867, a member of the New York Academy of Medicine, and for many years on the staff of the German Hospital, New York, died at his country home in White Plains, N. Y., on July 17, aged 73 years.

Dr. Charles Parker Hooker of Springfield, Mass., a graduate of the Harvard University Medical School, Boston, in 1879, and a member of the American Medical Association, the Massachusetts Medical Society, and the Hampden District Medical Society, died at his summer home in Biddeford, Me., on July 21, aged 60 years.

Dr. Joseph Sherrill Leech of Glasgow, Ky., a graduate of the University of Louisville, Medical Department, in 1881, a member of the Kentucky State Medical Association and the Barren County Medical Society, and Mayor of Glasgow, died at his home on July 10, aged 57 years.

Dr. Thomas Sparrow Burbank of Wilmington, N. C., a graduate of Bellevue Hospital Medical College, New York, in 1886, and a member of the American Medical Association, the Medical Society of the State of North Carolina, and the New Hanover County Medical Society, died at his home, after a long illness, on July 12, aged 61 years.

Dr. Abraham T. Dewitt died at South Danville, Pa., on July 22, at the age of 74 years. He was graduated from the Medical Department of the University of Vermont in the class of 1862, and he served as Surgeon to the Third Pennsylvania Artillery during the Civil War. He was also a member of the State Legislature for two terms from 1872.

Dr. Jacob H. Frankenberg of New York, a graduate of the College of Physicians and Surgeons, New York, in 1883, and a member of the New York State and County Medical Societies, died at his summer home in Cedarhurst, Long Island, from heart disease, on July 27, aged 53 years.

Dr. Thomas H. White died at Connellsville, Pa., on July 13 at the age of 70 years. He was graduated from Jefferson Medical College in the class of 1870. He was a member of the Fayette County Medical Society and of the Medical Society of the State of Pennsylvania and a Fellow of the American Medical Association.

Dr. James Goldlust of New York, a graduate of the New York University Medical College, New York, in 1894, physician to the Mt. Sinai Hospital Dispensary, and a member of the New York State and County Medical Societies, died at his home on July 27, aged 48 years.

Obituary.

P. BRYNBERG PORTER, M.D.

NEW YORK.

DR. P. BRYNBERG PORTER died in St. Mark's Hospital on Friday of last week, after a brief illness, at the age of 69 years. He was graduated from the Medical Department of the University of Pennsylvania in 1869 and began practice in Wilmington, Del., but removed to this city forty years ago. He was a member of the Medical Societies of the State and County of New York and of the American Therapeutic Association, and had been an active member and secretary of the Medical Association of the Greater City of New York since its foundation. He was also assistant secretary of the American Congress of Physicians and Surgeons. He was a member of the editorial staff of the *New York Medical Journal* and was also a valued contributor to the MEDICAL RECORD.

Correspondence.

OUR LONDON LETTER

(From Our Regular Correspondent.)

IN PARLIAMENT—TAXING HOSPITALS—MEDICAL ARRANGEMENTS IN THE NAVAL AND MILITARY FORCES—ANTI-TYPHOID INOCULATION—WOUNDED FROM THE DARDENELLES—ROYAL COLLEGE OF PHYSICIANS ON CRIMINAL ARORTION—MOTHERCRAFT EXHIBITION

LONDON, July 23, 1915.

PARLIAMENT has recently had before it quite a number of questions of considerable medical interest. Among them, whether the tax on hospitals, inflicted by the duty on spirits, should not be remitted. The increased cost of necessaries in this war time coincides with a diminution of subscriptions brought about by the same agency. This not only enforces the most rigid economy, but has for some time been holding before the managers of many institutions the proposal of compulsory closure by exhaustion of funds. Not that contributors have become less charitable, but their sympathies have been more and more drawn to the sick and wounded, so that in many cases the sums usually devoted by them to hospitals have been applied to the insistent calls on behalf of victims of the war.

In the House of Commons a proposal was made that the duty on spirits used in hospitals for the preparation of tinctures and other medicines should be remitted. This tax amounts to more than might be anticipated. Last year one hospital (the London) paid £229 for duty on spirits. It might be supposed that such an exemption would not be opposed, but objection was taken on the ground of some difficulties about defining a hospital so as to exclude nursing homes or any institutions run for a profit, or by the public authorities, as, for example, workhouse infirmaries. It was also said that the concession would lead to increase of the alcoholic medicines used, and of course the temperance party feared this. The clause was withdrawn with the intimation that it will be brought forward again. In reply to a question in the House, it was stated that the new medical arrangement at the royal naval hospital is that seven consultants should be given temporary commissions as surgeons-general, with the pay and allowances of that rank; two others as fleet-surgeons of ten years' seniority, with corresponding emoluments. Another question was put as to a case in which a panel committee had surcharged a medical officer on account of cost of drugs exceeding that allocated under the act. The answer was that the practitioner had a right of appeal. Of antityphoid inoculation, it was replied to a question that in the expeditionary force in France up to May 22 there had been 297 cases of paratyphoid, with ten deaths. During the whole of the campaign, from the beginning of August and so including a period when many of the men had not been inoculated, 827 cases of typhoid, with 128 deaths, have been recorded; 508 of the uninoculated, 106 fatal; of the inoculated 319, of which 22 were fatal.

The Medical Advisory Board, which was instituted by Lord Middleton, is said to be in constant touch with the medical director-general of the army, as also are the members of the two bodies, although they have no regular meetings. It would seem that there is hardly any need for both, and that the two might as well be amalgamated. Some discontent has been expressed at the anomalies as to pay in the different services. For example, the pay of a medical officer under special contract, with the temporary rank of lieutenant, is higher than the pay and allowances drawn by a captain in the R. A. M. C. It is asserted that the point is being considered by the authorities.

Some of the wounded from the Dardenelles on arrival in Alexandria were sent to the German Hospital, and the Secretary for War was questioned about it in rather hostile fashion. He declared the officer commanding in Egypt exercised a wise discretion in availing himself of the suitable accommodation ready at the German hospital, and no doubt if he had not done so he would have been criticized just as adversely as now.

Complaints have been made of the compulsory transfer of men from the R. A. M. C. to the fighting units, in view of the well understood fact that their object in joining the corps was solely to help the sick and wounded at the front. The War Secretary, being questioned in the House, said it was no longer necessary for members of the territorial force to undertake the liability of transference, but as to the regulars no alleviation was contemplated.

The Royal College of Physicians has had under consideration a question which may at any time present itself to a practitioner as to his duty in relation to criminal abortion. The question has often been a source of no little anxiety, and the conclusions of the college will no doubt exercise great influence, and may therefore be summarized with advantage. In the first place, it is laid down that a moral obligation rests upon every attendant to respect the confidence of his patient, and that without her consent he is not justified in disclosing information obtained in the course of his professional attendance. Moreover, on becoming convinced that criminal abortion has been practised on his patient he should urge her, especially if she is likely to die, to make a statement which may be taken as evidence against the operator—provided always that doing so will not imperil her own chances of recovery. If she refuses there is no legal obligation on him to take action—"so the college is advised." From which expression it is to be presumed the question has been submitted to distinguished counsel for opinion. The medical man should, however, continue to attend his patient.

The new resolution of the college is to the effect that a practitioner before taking any action which

may lead to legal proceedings would be wise to avail himself of the best advice, both medical and legal, within his reach. He would thus insure that the patient's statement would be of value as legal evidence, and also safeguard his own interests, since in the present state of our law he cannot be certain of protection against subsequent litigation. If the patient should die, the certificate of the cause of death should be refused and the case referred to the coroner.

These conclusions have been formulated as resolutions and adopted by the college, which issues concurrently the statement that it has "been advised" on this matter—no doubt by leaders of the legal faculty: (1) That the medical practitioner is under no obligation either to urge the patient to make a statement, or, if she refuses to do so, to take any further action. (2) That when a patient who is seriously ill consents to give evidence, her statement may be taken in one of the following ways: (a) A magistrate may visit her to receive her deposition on oath. If possible, facilities for being present should be given to the accused person or his representative. (b) If attendance of the magistrate cannot be secured, she may make a statutory declaration before a commissioner for oaths, who can be asked to visit her for the purpose. (c) Should the patient be firmly convinced that she is dying, only in such circumstances, she may make a dying declaration, and this may be made to the practitioner or any other person, and need not be signed or witnessed, though it is desirable both should be done.

A mothercraft and child welfare exhibition has been held here. Model rooms, nurseries, beds, toys, gardens, and many ingenious devices for promoting the health of infants and children were shown. Articles of diet and clothing to be avoided, and others to be recommended, were also exhibited. They illustrated the great improvements in mothercraft which have taken place in the last few years. The fly exhibit demonstrated how flies grow and multiply, carry disease, and may be got rid of.

Progress of Medical Science.

Boston Medical and Surgical Journal.

July 29, 1915.

1. The Work and Aims of the State Department of Health. A. J. McLaughlin.
2. Lobar Pneumonia. F. T. Lord.
3. Infant Mortality. J. L. Morse.
4. The Control of Typhoid Fever. M. W. Richardson.
5. Preventable Heart Disease. R. I. Lee.
6. Tuberculosis: The Policy of the State of Massachusetts Regarding Tuberculosis. A. K. Stone.
7. Syphilis. A. Post.
8. Contagious Diseases. E. R. Kelly.
9. Spotted Fever of the Rocky Mountains. G. F. Pope.

2. Lobar Pneumonia.—F. T. Lord outlines the following as measures which may be expected to diminish the incidence of pneumonia: (1) Education of the public concerning the manner in which respiratory infections take place and the means of avoiding them. (3) Closer supervision of the acute respiratory infections, such as ordinary "colds," so-called influenza, bronchitis and sore throats, and isolation of the more severe types of these simpler infections when possible. (3) Closer supervision of patients with pneumonia by making pneumonia a reportable disease and by the isolation of patients with pneumonia. (4) Avoidance of overcrowding and the regulation of housing conditions. (5) The diminution of dust in cities. (6) Immunization of those exposed in times of epidemics.

5. Preventable Heart Disease.—R. I. Lee states that while it is true that certain infections like the tonsillitis-rheumatic fever symptom-complex group and syphilis are particularly associated with cardiac disease, yet logically every infection may be regarded as a possible carrier of damage to the heart. There does not seem to be adequate appreciation of the possible sequelæ of infections, particularly rheumatic fever. Continued supervision after infections is important in order that an early endocarditis may be detected and the resulting damage be minimized. At present the development of medical inspection and supervision of school children seems the next step. The prevention of infections is an enormous problem, but must be faced. It is possible to control better scarlet fever and syphilis. It is possible to make milk supply reasonably safe, and it is possible to remove diseased tonsils. It is the fashion now to remove tonsils in as many school children as possible. It is still an open question as to the desirability of removing moderately large tonsils in the absence of history or evidence of disease processes in or connected with the tonsils. While further legislation may be of assistance, the true solution of this problem can be found in the proper appreciation by the public and the medical profession of the danger of all acute infections. The avoidance of infection and the prevention of its spread is largely a matter of personal hygiene.

New York Medical Journal.

July 31, 1915.

1. Total Transverse Lesions of the Spinal Cord. J. H. Lloyd.
2. Renal Tuberculosis with Occlusion of the Ureter. E. F. Kilbane.
3. Visceral Stasis, Mechanical Obstructions, and Their Effects, Relievable by Rational Measures. J. M. Taylor.
4. Acanthosis Nigricans. W. Frick.
5. Cancer of the Uterus. H. Schmitz.
6. General Faradization (Bergonié) in the Treatment of Obesity and Other Pathological Conditions. H. F. Wolf.
7. Psychotherapy. O. Lerch.
8. Hernia in the Chronic Insane. J. A. Jackson.
9. Sex Discussion. L. A. Stone.
10. What Shall We Do with Sing Sing Prison? C. D. Bles.

1. Total Transverse Lesions of the Spinal Cord.—J. H. Lloyd notes that Bastian, in 1890, first pointed out the effects of total transverse lesions of the spinal cord in man. In these lesions there is complete flaccid paralysis, with absence of the tendon jerks, and complete anesthesia; also paralysis of the sphincters, and wasting and degeneration of the muscles. This syndrome is so widely at variance with preconceived ideas about the physiology and pathology of the spinal cord, that it has always presented something of a problem in neurology. Charcot and his school had taught that an interrupting lesion in the pyramidal tracts, causing lateral sclerosis, was always followed by a spastic paralysis, with increased tendon reflexes, below the seat of the lesion; and this is a common observation in the case of such a lesion. The explanation offered by Charcot was that an inhibitory influence of the cerebrum was cut off, and that in consequence the lower centres in the cord overacted; and this overaction was intensified by a constant inflow of sensory stimuli. The reflex arc, as it were, was liberated from the governing control of the cerebrum, and a spastic or hypertonic paralysis resulted, with exaggerated reflexes. It was taught, moreover, that the nutrition of the paralyzed muscles was not affected, since the trophic function of the multipolar cells in the anterior horns of the spinal gray matter was not interfered with, much less abolished. Such a descending lateral sclerosis, with hypertonus, spastic paralysis, and increased tendon jerks, is seen in old hemiplegias and in many lesions of the spinal cord. In the lower animals it seems that the spinal cord preserves more of an autonomy than it does in the higher vertebrates. Thus the decapitated frog and the decapitated snake present

very lively coordinated movements, which must be entirely localized in the spinal cord. But in man a total transverse lesion serves practically to abolish all functions in the cord below the level of the lesion, showing that in man the spinal cord preserves little if any autonomy, but depends for its functioning upon its connection with the higher cerebral centres. Among these functions to be abolished are not only the deep reflexes, but also the muscular nutrition. The author believes that this may be the whole explanation of the phenomena seen in cases of total transverse lesion. In the higher vertebrates evolution has gone on to the development more and more of the pallium or cerebral hemispheres, which have gradually assumed, in some obscure physiological way, supreme control over the lower or cord centres. When these latter are completely cut off, they languish and finally cease to function.

2. **Renal Tuberculosis.**—E. F. Kilbane points out that many cases of tuberculous kidneys exist without causing symptoms. When symptoms do occur, they may be referred to organs other than the kidneys. There is no relationship between the severity or duration of the symptoms and the extent of the kidney involvement. Every case of silent renal tuberculosis may at any time become active or the source of infection of other structures. Nephrectomy, therefore, is the logical treatment for uncomplicated unilateral cases as soon as a diagnosis is possible.

6. **General Faradization in Treatment of Obesity.**—By H. F. Wolf. (See MEDICAL RECORD, Vol. 87, page 501.)

8. **Hernia in the Chronic Insane.**—J. A. Jackson states that from five to six per cent. of the male chronic insane in the Philadelphia Hospital for the Insane have hernia, usually inguinal. Hernia rarely develops after admission to the hospital. It does not develop in the insane during excitement or as a result of confinement and physical degeneration. The question arises: Is hernia due to the muscles suddenly acting directly opposite to each other, whereby the inguinal canal is weakened? Palliative treatment consists of careful examination by physicians and trained attendants. Trusses may be used in a selected class of cases; the absence of trusses, however, does not aggravate the condition nor increase the tendency to strangulation. Operations are not necessary, except in the case of strangulation or for physical comfort. Strangulation is an infrequent complication.

Journal of the American Medical Association.

July 31, 1915.

1. Recent Aspects of Nervous and Mental Pathology. F. X. Dercum.
2. The Prognosis of Congenital Clubfoot and Its Relation to Nonoperative Treatment. E. W. Fiske.
3. The Suprarenal Gland in Shock. J. F. Corbett.
4. Phenoltetrachlorphthalein Test of Liver Function in a Series of Unselected Cases. J. S. McLester and Blanche Frazier.
5. The Motor Functions of the Intestine from a New Point of View. W. C. Alvarez.
6. Spinal Cord Compression from Leptomeningeal Cysts, with a Report of Two Cases. A. L. Skoog.
7. The Intelligence Examination and Evaluation and a New Intelligence Examination Sheet. J. V. Haberman.
8. The Effect of Potassium Iodide on the Luetin Reaction: Preliminary Report. J. W. Sherrick.
9. Craniometry in Diseases of Children. G. H. Clark.
10. Symptomatology and Treatment of Some Common Palmar Eruptions. R. L. Sutton.
11. The Estimation of Carbon Dioxide Tension in Alveolar Air. P. Roth.
12. Empyema of Frontal and Ethmoidal Sinuses. G. W. Stimson.
13. Safety Pin in Esophagus of Young Child. G. S. Otrich.
14. A Clinical Electrical Fixing and Hot Staining Apparatus. H. J. Corper.
15. A Universal Surgical Motor. H. M. Wegeforth and P. Wegeforth.
16. A New Bladder Retractor. B. A. Thomas.
17. Suction Tubes for Use in the Nose, Throat, and Ears. H. Hays.

2. **Prognosis of Congenital Clubfoot.**—E. W. Fiske concludes that there are three factors in the prognosis of congenital clubfoot: the age and rigidity of the foot, neglect, and the method of treatment employed. Of these, the last is the one controllable and predicable factor. Other things being equal, favorable prognosis is proportionate to the flexibility of the foot, which is usually in indirect proportion to the age of the child. Absolute overcorrection of the foot and unremitting attention to the maintenance of this position until the structures have become permanently readjusted, are essential. The deformity being shared by all the structures of the foot, that treatment only which is not localized in its application is productive of uniformly satisfactory results. The destruction of any tissues prevents the restoration of natural shape, strength, and balance of the foot, and is prejudicial to the return of normal function. The nonoperative or so-called manipulative treatment of clubfoot avoids these errors in treatment, and takes advantage of the plasticity and growths of the foot. By the manipulative method, overcorrection of the foot is rapidly and thoroughly effected, and relapse is seldom seen. By the manupulative method, almost twice as many cases show ultimate satisfactory results as do those with operation. The manipulated cases are easy and practical of management, and overconfidence and carelessness are often prevented by the nature of the treatment. Although the cases are rarely so severe, the prognosis for perfect result in calcaneovalgus is not so good as in equinovarus, largely because of delay in diagnosis and failure to maintain overcorrection.

3. **The Suprarenal Gland in Shock.**—By J. F. Corbett. (See MEDICAL RECORD, July 3, 1915, page 40.)

4. **Phenoltetrachlorphthalein Test of Liver Function.**—By J. S. McLester and Blanche Frazier. (See MEDICAL RECORD, Vol. 87, page 1089.)

8. **Potassium Iodide and the Luetin Reaction.**—J. W. Sherrick finds that a positive pustular or nodular luetin reaction can be obtained in 99 per cent. of all cases irrespective of the presence of syphilis, by the administration of potassium iodide, either simultaneously, or shortly before or after the intradermal test. Other substances, such as agar and starch, when injected intradermally, will give a similar reaction when potassium iodide is administered, but with these substances the potassium iodide must be administered within a shorter time than is the case with the luetin. Other drugs containing iodine have a similar influence on the luetin reaction.

9. **Craniometry in Diseases of Children.**—By G. H. Clark. (See MEDICAL RECORD, July 3, 1915, page 36.)

11. **Carbon Dioxide Tension in Alveolar Air.**—P. Roth states that acidosis is of frequent occurrence in a relatively large number of diseases. It is detrimental in all degrees of intensity; therefore should be looked for, its degree estimated, and efforts to control or combat it should begin early. The estimation of the carbon dioxide tension in alveolar air is as yet the simplest, quickest, and most reliable practical method to determine the degree of acidosis. Simpler methods and apparatus are needed. The author has devised a simple method of collecting samples of alveolar air during unconsciousness as well as in all other conditions.

The Lancet.

July 24, 1915.

1. Functional Diseases of the Arteries. Sir Lauder Brunton.
2. A New Antiseptic Mixture for the Treatment of Gunshot Wounds and General Surgical Application. P. Fildes, L. W. Rajchman, G. L. Cheatle.
3. A Case of Diverticulum of the Bladder, with Reference to Early Diagnosis and Treatment. J. Everidge. With remarks by Sir W. Watson Cheyne.
4. Treatment of Wounded Soldiers by the Thermal Waters of Aix-les-Bains, Savoy. L. Blanc.
5. Spirochetal Ulceration of the Tonsils in Soldiers. W. S. Wingrave.

6. A Case of Polyorrhomenitis. W. A. B. Young.
7. A Case of Hysterical Paraplegia. A. Abrahams.

2. **A New Antiseptic Mixture.** — P. Fildes, L. W. Rajchman, and G. L. Cheatle employ the following formula: Bichloride of mercury (cryst.), 1 gram; 80 per cent. alcohol (industrial), 100 c.c. Malachite-green (pure), 10 gram; 80 per cent. alcohol (industrial), 100 c.c. The two solutions are kept separate in bulk and mixed for use in equal parts. It is found that if the two parts are mixed together and kept for several days a compound of mercury and malachite-green crystallizes out of solution. The malachite-green must be pure, since most of the samples upon the market contain over 50 per cent. of adulterants. These solutions are to be applied in a spray and the treatment must be thorough, comprising the whole wound and a wide area of the surrounding skin. A superficial sprinkling over a wound is of no value. There is a tendency to apply the mixture insufficiently owing to the smarting which results from the alcohol basis in the same way as with iodine. This smarting, however, occurs only during the first three or four days of the treatment of a fresh wound, and though sometimes unpleasant does not persist for longer than 1½ minutes. If the mixture is applied with a good spray held as far as possible from the wound and if the wound is vigorously fanned this disadvantage may be reduced to a minimum. After the first three or four days the application is painless. Care must be taken that the alcohol has entirely evaporated from the skin before the dressings are applied, otherwise blisters may result. This is particularly important when fomentations are superimposed upon the mixture; in fact, the stronger formula should not be used together with fomentations.

British Medical Journal.

July 24, 1915.

1. The Composition and Pharmacological Action of Spiritus Aetheris Nitrosi. C. R. Marshall and Elizabeth Gilchrist.
2. Fluid Extracts of Senna. R. Stockman.
3. Copaiba Oil and Resin. R. Stockman.
4. Experimental Observations on the Antiseptic Action of Hypochlorous Acid and Its Application to Wound Treatment. J. L. Smith, A. M. Drennan, T. Rettie, and W. Campbell.
5. Hints on War Surgery. A. W. Mayo-Robson.
6. The Diagnosis of Typhoid Fever in Inoculated Subjects. G. D. Dawson.
7. Cheap Absorbent Dressings for the Wounded. C. W. Cathcart.

1. **Spiritus Ætheris Nitrosi.**—C. R. Marshall and Elizabeth Gilchrist find that the commonly accepted view that ethyl nitrite is the active ingredient of this mixture is correct. Although the other ingredients play a part in its action this is a subordinate one, and is of little practical importance. The rapid loss of ethyl nitrite which follows the addition of water strongly suggests that to obtain the best effects it is necessary to prescribe sweet spirit of niter as such and to dilute it just before administration.

4. **Antiseptic Action of Hypochlorous Acid.**—J. L. Smith, A. M. Drennan, T. Rettie, and W. Campbell report the results of their experiments which apparently confirm the conclusion already arrived at by various investigators that hypochlorous acid is the most powerful antiseptic known. It can be used either as a gas or as a solution. The advantage of using the gas is that it will penetrate and will act at a distance. Both the gas and the solution, while extremely potent against organisms and their spores, cause little or no harm to the tissues. The effect of this antiseptic is purely local; the decomposition products are devoid of toxicity, and there is therefore no danger to be apprehended from absorption. A flow of lymph is induced from the wound as part of the reaction of the tissues. Fetor is rapidly eliminated. If pain and irritation occur they can be easily controlled by reducing the concentration of the antiseptic. The practical advantages of this antiseptic for field use are: It can be used as a dry powder and therefore obviates the difficulty of procuring water. It can be introduced into the gauze pad of the first field dressing. Where water is available the same powder can be made up as a lotion for general use. The constituents of the powder are inexpensive and easily procured; and the preparation of the antiseptic is extremely simple.

6. **Diagnosis of Typhoid Fever in Inoculated Subjects.**—G. D. Dawson concludes that a positive reaction with the *B. enteritidis* 7160 is due to something more than previous antityphoid inoculation, and hesitation in diagnosing typhoid (or paratyphoid) infection should be occasioned only by the necessity of excluding infection with the *B. enteritidis* itself. The symptoms associated with *B. enteritidis* infection are, however, generally clear enough to make the distinction easy. A single negative test with the *B. enteritidis* 7160 does not exclude a diagnosis of typhoid fever, though, if obtained late in the course of an illness, it would constitute good evidence against typhoid infection. Repeated negative tests are much more conclusive, and should be of value in deciding the nature of doubtful cases. The time required, however, is a hindrance to rapid diagnosis, which is absent in the case of a positive reaction.

Berliner klinische Wochenschrift.

June 21, 1915.

Epidemiology of Typhus Fever.—Jürgens calls attention to the fact that for decades there have been no epidemics of typhus on German soil, but that now the Russian prison camps are the seat of true epidemics. Typhus first broke out in November as an influenza-like affection. Case after case developed and the symptoms raised suspicion of typhus. Soon it became apparent that no influenza had existed. The epidemic had developed with singular suddenness and ravaged the entire camp, despite isolation and other preventive measures. As a rule in epidemics there is some irregularity in spread—a breaking out in batches—but in this one the course of diffusion was like an endless chain. There was no surcease as long as a healthy man remained in the camp. This peculiarity, always remarked in typhus, we now know to be due to the rôle of the louse in the transmission of the disease. The epidemic was dealt with by annihilating the vermin, and as soon as this had been accomplished the disease was no longer transmissible. The sound mingled with the convalescent with impunity. But carriers doubtless exist, and the lice can cause new cases should these subjects again become lousy. Another factor must, however, be reckoned with, to wit: the stage of development or degree of virulence of the actual parasite as it circulates in the carrier's blood or louse's body. It is certain that some of the German victims of the disease showed no evidence of lousiness when first seen, but this can only mean that the lice who attacked them had no opportunity of settling upon their clothing by reason of their cleanly habits. Over and above all, however, are the peculiar laws of contagion which are evident in all epidemics of contagious disease—the so-called *genus epidemicus* which makes one epidemic trivial and another malignant.

Cumulative Appearance of Infectious Parapneumonic Streptococcus Empyema.—Tykociner mentions cumulation of ordinary pneumonia in the wet, cold winter, and early spring months in those who are exposed much to the weather, and who get wet through again and again without opportunity of changing their clothing.

Other cumulation can occur, as in a series of cases seen by the author, five all told, in which empyema was a complication (four cases) or a sequel (one case). Thoracentesis with rib resection was performed in five cases. Two of the six patients died of the disease. Two patients appeared to have contracted their disease from two others. In three cases the empyema pus contained streptococci in pure culture and in the three others the same organism was associated with pneumococci or other germs. It seemed certain, however, that the streptococcus was throughout the virtual pathogenic. It is believed in some quarters the *Streptococcus pneumonia* is contagious. The author's patients presented much the same symptoms. They were seized with chills, stitch in the side and cough, and at once took to their beds. Rusty sputum and dyspnea were present. Evidences of empyema appeared between the third and sixth day in the five parapneumonic cases. The complication prevented the development of a crisis. A study of the cases and certain remarks by the author show that in one "parapneumonic" case the empyema was primary, and that no pneumonia was found at autopsy.

Etiology of Eclampsia.—Schröder gives a general account of the various doctrines concerning the nature of eclampsia. That it is a poisoning is beyond all doubt. The nature of the toxic agent is obscure but authors have had little doubt that its source is either the fetus or placenta, and of recent years the latter has superseded the former as the probable seat of origin. Evidence to this effect has been cumulative. Placental protein is heterologous to maternal blood, and eclampsia may even be regarded as an anaphylactic shock. But the placental theory cannot explain post-partum or self-limited eclampsia. The author therefore chooses to believe that the toxic substance is a product of intermediate maternal metabolism, either a high molecular clearage product or a low molecular derivative near as low in clearage as the amines. These products can cause respectively actual convulsions and a spasmophilic state.

Münchener medizinische Wochenschrift.

June 22, 1915.

The Fly Plague.—Volkmann refers to the plague of flies at the front, due to the great amount of putrefying material (cadavers, perishable food, dejecta, etc.). Bodies should be buried deep, at the greatest possible distance from the water supply. If they cannot be buried at once they should be strewn with chloride of lime. Provision for all these measures had been made in advance but there has been some lack of enforcement. Incineration is of course ideal for the disposition of putrescible material. All food should be screened to prevent fly blowing and pollution with excrement. In doubtful cases food should be scraped, washed, or cooked to destroy contaminating substances. Disposal of feces is the most difficult problem in connection with flies. Garbage can be quickly burned, as may also old wound dressings, but these duties are often neglected. Feces can at most be buried, as such extensive use of disinfectants is impracticable. In field hospitals the helpless patients suffer much from flies. The best preventive is to hang strips of fly paper from the ceilings, etc., and change them often. Fly traps are of less value and expensive. Screens for windows are said to be out of the question as these are in such demand for kitchens and pantries. However, gauze curtains hung over windows furnish a fair substitute. In a second article Kirschner objects to sticky fly paper as unappetizing and even costly. Instead he would fill soup plates with beer which contains a certain amount of arsenic in solution. The flies feed on the beer with avidity. The plates should be marked "poison."

Effects of Heat Stroke.—Bittorf states some experiences of the previous summer. Some soldiers died at the front or soon after admission as a result of heat while others reached the hospital still prostrated, but on the road to partial recovery. A number of these had not recovered as late as the following spring. Most patients when admitted complained of headache and prostration. Sooner or later hysterical convulsions developed. Epilepsy could be excluded. In individual cases there were seen tachycardia, tachypnea, speech disorders, disturbances of sensation, tetany. Without an exception hysterical manifestations of some sort followed the insolation. Predisposition was quite wanting. It was clear that overheating the cerebral cortex is able to cause hysteria in any subject. While the prognosis on the whole is unfavorable for complete recovery all the soldiers returned to garrison duty at least.

Progress in the Domain of Pulmonary Diseases.—Blümel notes favorable reports of treatment of bronchitis and bronchiolitis, also bronchopneumonia in young children and nurslings with hot baths at 40°-40.5° C. duration ten minutes. At first they are given three or four daily, reduced later to one or two daily. The favorable influence on fever, respiration, and expectoration is marked. In bronchitis of adults hydrastic preparations, suprarenin and benzoate of sodium and caffein are being used. Iodides are useful in practically all forms of bronchitis, especially some of the recent organic combinations of iodine. Broncial asthma may be controlled readily by atropin-adrenalin injections. A proprietary combination of suprarenin and hypophysin is also recommended. Artificial pneumothorax may cause but little improvement in old bronchiectases. For the prophylaxis of this condition it is well to treat pleurisies and pneumonias until resolution is complete. Hot air inhalations and respiratory gymnastics benefit both asthma and bronchiectasis by keeping the cavities and tubes empty and ventilated. When the amount of sputum is very large a thirst cure may be tested. Freund's operation for emphysema pulmonum seems to have little vogue at present; the ultimate results are not encouraging.

Deutsche medizinische Wochenschrift.

June 17, 1915.

Luetic Gastric Sclerosis.—Mühlmann reports a case of this very rare condition, as follows: A woman aged 27, previously healthy, had contracted syphilis five years before. The disease showed a marked tendency to relapse. One year before consultation she began to suffer with her stomach. With appetite unimpaired she complained of pressure and pain and vomited when food was taken beyond a fixed limit. She was constantly hungry and was nibbling all the time. She could not ingest half a pint of milk or its equivalent in bulk without promptly rejecting it, and soon became emaciated and anemic. The stomach contents after a test meal showed absence of free HCl, presence of lactic acid. The *x*-ray showed a small stomach, no peristalsis, pylorus small and constantly open, chyme passing through. The diagnosis of luetic sclerosis was made without reservation. The case being a surgical one, gastroenterostomy was promptly performed. The stomach was found to be small, with thickened walls. Salvarsan and mercurial inunctions were given. The improvement became marked in all respects, although the Wassermann reaction remained positive. The *x*-ray showed no change in form in the stomach. The gastroenterostomy functioned well. The lower esopha-

gus showed a dilatation. Study of a microscopic section showed absence of epithelium. The esophageal dilatation and lactic acid pointed to retention despite the constant passage of chyme through the rigid pylorus and later through the anastomosis. Three other carefully studied cases are on record and these show a marked agreement with the author's observation. It is of course very difficult to prove that the sclerosis was due directly to syphilis, in the absence of spirochete finds *in loco*. The treatment, despite its prompt benefit, could not restore the gastric structure and functions. The inflammatory process in the gastric wall, however, must have been arrested.

The Coolidge Tube.—Schmidt obtained one of these American tubes before they had been placed on the German market and reports concerning it as follows: It can readily be made to supply rays of any degree of hardness from 1 to 12 Wehnelt writes, and this degree will readily persist for an indefinite period. Therefore, this tube takes precedence over all others for diagnostic purposes. It can also sustain a larger charge of soft and medium rays than any other tube without any alterations in hardness.

Mortality of Noncombatants in Berlin from August, 1914, to January, 1915.—Gottstein finds that cancer mortality was unchanged, so that the emotional, dietetic, and other alleged factors in the production of malignancy are not in evidence. There has been an increased mortality from tuberculosis, and the acute, infectious diseases show even a decline, but this can have no connection with the war. There is also a falling off in nursling mortality. Of interest is the decline in suicide mortality in both sexes. On the other hand, deaths from cardiovascular disease are increased. This is no doubt due directly to the war, but the age of the decedents must be taken into account and worry, grief, etc., have acted rather upon the general vitality than upon the circulatory system.

Deutsche medizinische Wochenschrift.

June 24, 1915.

Clinical Experiences in a Typhoid Hospital in East Prussia.—Jacob has recently treated 300 cases of army typhoid. The cases were frequently severe and complications and relapses were common at the outset. At a later period the disease pursued a much milder course. There next followed a period in which cardiac weakness and pneumonia abounded. Another benign period then ensued. These vagaries could be brought into relationship with typhoid immunization, as will be seen later. The effects of the Widal diagnosis have been largely invalided by the antityphoid inoculation, and the diazo is now much more valuable. Of still greater value is the bile test, *i.e.* inoculation of bile culture media with a few cubic centimeters of typhoid blood. The results are 90 to 95 per cent. positive. Research for bacilli in urine and feces is not very satisfactory. The presence of hypoleucocytosis should not be undervalued. Disappearance of eosinophiles during the critical period and their reappearance later in the disease also possess real diagnostic and prognostic value. Of complications deafness from toxic labyrinth disease and meningism were common. Delirium was not attended by war memories; as a rule patients fancied themselves at home. Both specific and nonspecific boils and abscesses developed, and the diseased seemed able to mobilize an ordinary furunculosis. In certain cases latent tuberculosis was activated. In from 20 to 30 per cent. of fatalities pneumonia had developed, while as many more died of exhaustion, due not a little to defective nourishment in the early course of the disease. There was no parallelism between severe enteric lesions and a grave type of infection. In regard to protective inoculation this has been carried out in other diseases besides typhoid—smallpox and cholera. To prevent confusion ordinary vaccination had been practised as usual on one of the arms and immunization against typhoid and cholera on one or the other side of the chest. The soldiers were almost always ignorant in regard to which disease they had been immunized against. To form a means of discrimination the author ordered typhoid inoculation to be practised three times between the left nipple and collar bone, and cholera inoculation twice in the corresponding area on the right side. The soldiers were also carefully informed as to what the inoculations represented. In the author's series of typhoid inoculations the disease in the great majority was already developing and his figures should not be grouped with true prophylactic immunizations. The author was pleased with his results because the disease ran a mild course and relapses did not develop. To obtain results of this sort, however, inoculation must be practised at a relatively early period in the disease. When the latter has fully developed its course is not influenced thereby.

Occupations for Soldiers Blinded in the War.—Krückmann enumerates three special classes of hand work in addition to others long practiced. These comprise rope making, brush making, and basket and chair weaving. Three years' time are required in an average for apprenticeship. For these three crafts there is an abundance of raw material in peace times, and evidently the author has in mind only a state of affairs to come after the war is over. For rope making hemp comes from Russia and Italy, jute from India, aloe from the Pacific Islands. Bristles, etc., for brushes come from Russia, India, and China. In regard to basket work some materials are of domestic origin, but bamboo, rattan, varnish, etc., must come from abroad. There is a museum in Brussels which has exhibits of all raw materials and the goods which are or may be made from them. Ropemaking is not very well suited for the blind and has been repeatedly given up in institutions. Brush and broom making is a success for some of the blind, while basket work appeals most to the larger number. Massage by the blind has not been much of a success in Germany. Music holds out some promise, as the blind are fond of it, and often develop great talent in the use of various instruments. The fingers of the ex-warriors are, however, rather too stiff for mastering instruments in the absence of previous training. The author discusses other possibilities for rendering the blind self-supporting.

Abscess of Liver Due to a Streptothrix.—A. Bloomfield and S. Bayne-Jones report the case of a man aged thirty-two years who presented a chronic low-grade pulmonary streptothricosis from which was isolated in pure culture the organism found in the sputum. The points of interest are the fulminating character of the hepatic involvement during the course of a practically latent pulmonary disease.—*Bulletin of the Johns Hopkins Hospital.*

Secretion of Cerebrospinal Fluid.—C. H. Frazier and M. M. Peet note that the intravenous injection of diiodotryosine has an inhibitory influence on the rate of secretion of the choroid plexus. Iodothyrine in solution, injected intravenously, has little influence on the rate of cerebrospinal fluid secretion when given in small amounts (0.05 gram). In amount of 0.03 gram and 0.5 gram there is some inhibition of the rate of choroid plexus secretion but not as marked as that produced by diiodotyrosine or saline extracts of fresh thyroid.—*American Journal of Physiology.*

Insurance Medicine.

Life Saving As a Function of Life Insurance.—In a broad and general sense, can human life be saved? Or is the human race still measurably below a perfect adjustment to environment? Dr. Eugene L. Fisk, director of hygiene, Life Extension Institute, New York, answers his own questions by saying that a perfect adjustment of the race to environment has not been reached, but that our civilization has developed powerful resources for the upbuilding of resistance to disease and for the prolongation of human life, which have been used for systematic and intensive work among policyholders in a number of important companies. Life saving has actually become a function of life insurance.

The most striking instance of a smashing of the death rate by an adjustment of the environment to the individual is shown by the work of Gorgas in the Canal Zone, where diseases that had been regarded as necessary afflictions, or "acts of God," were practically eliminated and an annual death rate of 48,000 hammered down in five years to 21,000. "Public health is a purchasable commodity." This general conquest of pestilential and communicable diseases has lowered the death rate in all civilized communities during the past thirty years and life insurance companies have shared with the general public in these benefits. They can afford to aid in this warfare by educating their policyholders in their duties to the State and by carrying to them in the most authoritative and effective way a knowledge of community and household hygiene.

In 1903 Mr. John K. Gore called attention to the increasing mortality from the degenerative affections, as shown in the records of the registration cities in the United States; also to the improvement in the death rate among young lives and the increase in the death rate among the elderly. Subsequently the research carried on by Dr. Fisk and Mr. E. E. Rittenhouse developed an amount of evidence showing that in the United States registration area as a whole and in separate States and registration cities a fall in the death rate from typhoid fever, tuberculosis, and other communicable diseases has accompanied a decline in the death rate under forty years, similar in degree to that exhibited in England and Wales. Unlike the British experience, there was a pronounced rise in the death rate at the later age periods, paralleled by a very heavy increase in the death rate from diseases of the heart, blood-vessels, and kidneys. The British statistics for a given period showed that the mortality from these diseases in the aggregate had remained stationary, although lately showing a downward trend consistent with the improved mortality at the older ages. In the recent medico-actuarial investigation of the experience of forty-three companies, a similar trend is exhibited—a pronounced improvement among the young entrants, 15 per cent. for ages under forty, this improvement rapidly diminishing and changing into an increase of 2 per cent., after age sixty. Dr. Fisk's own investigations show a fall in the death rate during the past thirty years among entrants under twenty-five of 30 per cent. and an increase in the mortality after sixty.

What is the remedy for this life waste at middle age? In factories and mills the machinery is constantly examined by men employed for that express purpose. Is it too much, then, to inspect once a year the marvelously complex human machine with its almost infinite capacity for going wrong? We should thoroughly examine the human body once a year. It is not enough to keep people out of sick beds, they must be lead up to higher planes of average health and physical efficiency. This is properly a function of life insurance because (1) a life insurance company has a direct business interest in reducing mortality, if the mortality saving will cover the cost of doing the work; (2) a life insurance company has available the channels through which it can readily and effectively reach a vast body of people (there are 6,000,000 policyholders in the United States, each of these with his greater or lesser zone of influence); and (3) because the successful performance of this function would just about double the value and meaning of life insurance as a social institution.

In 1909 the Provident Savings Life Assurance Company extended this privilege of yearly examination to its policyholders. This was continued later by the Postal Life. Approximately 2,500 people were examined, 1,000 of whom were found sufficiently impaired to require medical treatment or advice. The average age of the impaired risks was fifty-one, and the average duration of the policies twelve years, while the actual mortality as compared to the expected by the American table was only 93 per cent. No matter how favorable the mortality may be in any particular company, the offer of this privilege of health examinations will draw a certain number of seriously impaired sub-standard and border-line risks, among whom the possibility of saving is quite as great as that above noted.

"Laugh and Grow Fat" is not good advice for the man or woman who is inclined to be heavy. Mr. Arthur Hunter, Chairman of the Central Bureau of the Medico-Actuarial Mortality Investigation, and Actuary of the New York Life Insurance Company, states that there is no doubt that marked overweight has a material effect in decreasing length of life, especially at the middle and older ages. Among men 40 lb. above the average weight the lifetime of those who entered the companies at forty-five was about 4 years less than that of men of normal weight. The public should understand that marked overweight is a serious handicap to length of life. Diabetes, Bright's disease, heart disease, and apoplexy cause a large proportion of the deaths among overweights. While the over-eater is not such a bad social influence as the excessive drinker, the former is also shortening his life by lack of moderation. Insurance companies will be glad to give to the public such information needed to overcome incorrect living, and methods by which improvements may be made.—Association of Life Insurance Presidents, New York, December, 1914.

Accident Insurance and Drowning.—A shock and fainting spell produced by entering into a swimming pool, which results in drowning, are held in Clark v. Iowa State Traveling Men's Association (Iowa), 42 L.R.A. (N.S.) 631, not to relieve an accident insurance company from liability on its policy for the death, on the theory that the death resulted partially or indirectly from "disease or bodily infirmity," within the meaning of an exemption clause in the policy.

Book Reviews.

URINARY ANALYSIS AND DIAGNOSIS by Microscopical and Chemical Examination. By LOUIS HEITZMANN, M.D. Third Revised and Enlarged Edition. One volume, 8vo, illustrated by original wood engravings. New York: William Wood & Company, 1915.

HEITZMANN'S book is so well known as hardly to require a very detailed review. Three editions are the best proof of the value of a book. The first part, dealing with chemical examinations, aims to include all the simpler methods and tests, omitting the more complicated tests, but giving those of most usefulness generally. The second part, dealing with microscopical examination, is more full, and the author emphasizes his belief that by careful, high-power study of urinary sediment correct diagnosis is usually possible; indeed, that a very accurate localized diagnosis can usually be made. The third part contains a large number of illustrations, nearly all original drawings by the author, which cannot fail to be of the greatest assistance to anyone following these methods. If any criticism should be made, it would be that the book is a little too brief in the chemical division, as compared with the microscopical sections.

All who are concerned with the making of urinary analyses can hardly fail to find this book of the very greatest assistance. It is well printed and bound. While some of the illustrations might perhaps be criticised as too graphic, or crude, yet their illustrative value is not thereby impaired; indeed it may even be the greater on that account.

THE INTERNATIONAL MEDICAL ANNUAL. A Year Book of Treatment and Practitioner's Index. Contributors: E. WYLLYS ANDREWS, A.M., M.D.; SIR CHAS. BENT BALL, Bart., M.D., F.R.C.S.I.; JOSEPH G. BLUMFELD, B.A., M.D.; FRANCIS D. BOYD, C.M.G., M.D., F.R.C.P.; FRANCIS J. CHARTERIS, M.B., B.Ch.; G. LENTHAL CHEATLE, C.V.O., C.B., F.R.C.S.; JOHN D. COMRIE, B.A., M.D.; CAREY F. COOMBS, M.D., M.R.C.P.; JOHN S. FRASER, M.B., Ch.B., F.R.C.S.; HERBERT FRENCH, M.A., M.D., F.R.C.P.; BRYDEN GLENDENNING, M.S., M.B., F.R.C.S.; EDWARD W. GOODALL, M.D., B.S.; FRANCIS W. GOYDER, B.A., M.B., F.R.C.S.; COL. LOUIS A. LA GARDE, M.D., United States Army Medical Corps (retired); ERNEST W. HEY GROVES, M.D., M.S., F.R.C.S.; OSKAR C. GRUNER, M.D.; C. THURSTAN HALLAND, M.R.C.S., L.R.C.P.; ROBERT HUTCHISON, M.D., F.R.C.P.; FREDERICK LANGMEAD, M.D., F.R.C.P.; E. G. GRAHAM LITTLE, M.D., F.R.C.P.; CHARLES FRED. MARSHALL, M.D., F.R.C.S.; KEITH W. MONSARRAT, M.B., F.R.C.S.; JOS. J. PERKINS, M.A., M.B., F.R.C.P.; BEDFORD PIERCE, M.D., F.R.C.P.; JOSEPH PRIESTLEY, B.A., M.D., D.P.H.; SIR LEONARD ROGERS, Lt.-Col., I.M.S., M.D., F.R.C.S., Calcutta; A. RENDLE SHORT, M.D., B.S., F.R.C.S.; PURVES STEWART, M.A., M.D., F.R.C.P.; A. HUGH THOMPSON, M.A., M.D.; J. W. THOMSON WALKER, F.R.C.S.; A. GASCOIGNE WILDEY, Dept. Surg., Gen. R.N.; JOHN H. YEARSLEY, F.R.C.S. 1915. Thirty-third Year. Price $4.00 net. New York: William Wood & Company, 1915.

THERE are many good things in this volume which epitomizes the contributions made to medical science during the past year. Part I comprises a dictionary of materia medica and therapeutics and includes a description of the new British Pharmacopœia and an illustrated section on radio- and electrotherapeutics. Part II forms the main body of the work, consisting of a review of medical and surgical progress for 1914, together with a brief synopsis of treatment recommended during recent years. It opens with a general review, after which follow in alphabetical order short articles on subjects dealing with every phase of medical treatment. Among these may be mentioned those on abdominal incisions and injuries, abdominal pain in children, alimentary toxemia, amebiasis, anesthetics, arterial pressure, diseases of the bladder, pathology and serology of the blood, brain surgery, infantile diarrhea, epilepsy, fractures, heart disease, infant feeding, labor, diseases of the larynx (including a detailed description with full-page plates of suspension laryngoscopy), surgery of the esophagus, paralytic deformities, pyelography, rheumatoid arthritis, spinal cord surgery, tobacco poisoning, etc. Part III includes timely and interesting articles on modern naval and military surgery. It also contains an important contribution on antiseptics in war and the method of their application. In this article G. Lenthal Cheatle reports apparently for the first time the advantages of the use of combined solutions of bichloride of mercury and malachite green. One of the admirable features of the present issue of the *Medical Annual* is the new and more prominent type. There are a large number of illustrations, including 71 full page plates, many of which are colored. In briefly characterizing this volume one may state it represents a practical digest of a year's contributions to medical science, particular attention being paid to methods of treatment.

INFECTION AND IMMUNITY. A Textbook of Immunology and Serology, for Students and Practitioners. By CHARLES E. SIMON, B.A., M.D., Professor of Clinical Pathology and Experimental Medicine at the College of Physicians and Surgeons; Pathologist to the Union Protestant Infirmary and the Hospital for the Women of Maryland; Pathologist to the Mercy Hospital of Baltimore, Maryland. Third edition, revised and enlarged. Illustrated. Price, $3.25. Philadelphia and New York: Lea & Febiger, 1915.

A COMPARISON of this edition with the preceding shows that there has not been any notable increase in the amount of material, although the work is now given rank as a textbook instead of an introduction as formerly. One important innovation to be seen in the present volume is a full bibliography at the close of each chapter. The number of the chapters remains the same. Under immunological diagnosis the section on the Wassermann reaction has been almost completely rewritten, the subject of ferment reactions has been amplified, and there is a section on gonococcus reactions. The subject of anaphylaxis has received interesting additions, with especial reference to diphtheria and tetanus. It is further noted that Hodgkin's disease may prove to be amenable to vaccinotherapy.

The relatively small size of this work is evidently to make it acceptable as an elementary textbook and at the same time as a reference work for the general practitioner.

DIE TIERISCHEN PARASITEN DES MENSCHEN, die von ihnen hervorgerufenen Erkrankungen und ihre Heilung. Bearbeitet von Dr. MAX BRAUN, o.ö. Professor der Zoologie und vergl. Anatomie, Direktor des zoologischen Museums der Universität Königsberg i. Pr., Geh. Regierungsrat, und Dr. OTTO SEIFERT, a.o. Professor fur Rhino-Laryngologie, Vorstand der Poliklinik fur Nasen und Kehlkopfkranke der Universität Würzburg. I. Teil. NATURGESCHICHTE DER TIERISCHEN PARASITEN DES MENSCHEN. Von Dr. MAX BRAUN. Fünfte, vermehrte und verbesserte Auflage. Price Mk. 13. Würzburg: Verlag von Curt Kabitzsch. 1915.

SINCE the fourth edition of this work not only has the information concerning the life history of the animal parasites of man increased very largely, but their pathological significance has increased to a tremendous degree. Many of them have been identified as the causes of hitherto obscure diseases while in other instances they are the carriers of the actual causative organisms. In the European war the parasitic plague has become very important because of its prevalence, and the appearance of this edition is all the more timely on that account. This edition has been thoroughly revised and embodies the results of recent investigations. There is appended nearly one hundred pages of references to the literature of the subject. This work remains as it has been in the past, the best one on the subject.

THE CLINICS OF JOHN B. MURPHY, M.D., Vol. IV, No. 1, February, 1915. Octavo of 185 pages, 41 illustrations. Published Bi-monthly. Price per year: paper, $8.00; cloth, $12.00. Philadelphia and London: W. B. Saunders Company, 1915.

AMONG the subjects of especial interest in this number may be mentioned: The relation of cancer research to the clinical aspects of cancer; aneurysm of the brachial artery—aneurysmorrhaphy; division of the brachial plexus with suture of the divided nerve trunks; carbuncle of the arm, followed by septicemia, metastatic pleurisy, and death; and a discussion of the treatment of contracting cicatrices based upon a case of that nature affecting the index finger and thumb. About one-third of the book is taken up in the discussion of bone cases. Is it too much to hope that some future issue will contain no references to that division of surgery?

Society Reports.

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Stated Meeting, June 2, 1915.

THE PRESIDENT, DR. JAMES C. WILSON, IN THE CHAIR.

Rupture of Portal Vein Causing Intrahepatic Hematoma Simulating Rupture of a Hollow Viscus. — Dr. JOHN E. ROBERTS cited the case of a man who fell across a step in the street and struck the upper portion of the abdomen. He suffered great pain, was supposed to have a ruptured stomach or intestine, and was operated upon by the speaker a few weeks ago. The operation showed some free blood in the peritoneal cavity, blood in the gastrohepatic omentum and in the neighborhood of the pancreas. No bleeding point was found needing control ligature. The abdomen was therefore closed. Death, either from shock or ether poisoning, occurred just as the operation was completed. Post-mortem examination showed a large clot within the liver due to a rupture of one of the branches of the portal vein or of the portal vein itself just within the capsule of the liver.

Pelvic Horseshoe Kidney Simulating Perforative Appendicitis.—Dr. JOHN B. ROBERTS under this caption said that in February last operation was performed for what was supposed to be acute perforating appendicitis with adhesion of the ruptured appendix to the anterior belly wall. The operation was done hurriedly under antiseptic treatment of the skin, and mild appendicitis found without perforation. The swelling which led to the belief that perforation with anterior adhesion of the appendix had occurred was found to be a horseshoe kidney, the right portion of which lay immediately under the appendix across the spine near the sacral promontory. The right and left portions were connected by a fibrous band uniting the lower poles in this unusual position. These cases and others, Dr. Roberts said, demonstrated the value of the surgeon's doubting tendency before operating. Though no harm was done by operating, the diagnosis in both these cases was erroneous. In Dr. Robert's opinion surgeons needed a doubting mind, because the tendency to jump at conclusions and hastily operate sometimes subjected patients in abdominal, fracture, and other departments of surgery, to unnecessary risk. A few instances of this kind were given to show the truth of this statement.

Certain Syphilitic Affections of the Heart and Aorta. —Dr. A. M. ANDERS remarked that the advent of the Wassermann reaction had shown that the etiological role of syphilis in diseases of the cardiovascular system has been heretofore underestimated. While he would not say with recent investigators that syphilis was the principal factor in the production of heart disease, it could be assumed that rheumatism and syphilis headed the list as causes of organic injury to this organ. While the cardiac lesions caused by the *Spirocheta pallida* were usually considered as belonging to the tertian stage of syphilis, Grassman, Brooks, and other investigators had expressed the opinion that serious damage might occur as early as the fore part of the second stage. Aortic and cardiac syphilis might be the result of hereditary lues. The claim made by Landois, Citron, Hausmann, Sears, and others that lues might affect the heart alone, was interesting and important. In two infants who died, one at three months of inanition, the other at eight days of asphyxia, Warthin and Snyder found the *Spirocheta pallida* in the heart muscle, while neither histological lesions nor spirochetes were found elsewhere. Among the commonest cardiovascular conditions due to syphilis were myocarditis, aortic regurgitation, angina pectoris, and mesaortitis often resulting in aneurysm. Mesaortitis with or without coronary changes was commonly the primary complaint in cases in which, as frequently occurred, two or more of the above-named affections were found in association. That this condition was due in many cases to syphilis had been demonstrated both by post-mortem evidence and the results of carefully conducted therapeutic observations. The intimate connection between lues and aneurysm, well known to the older writers, had been emphasized by those of modern times. With Hausmann, Dr. Anders would caution the medical profession against regarding every cause of aneurysm, even in syphilitic subjects, as due to lues. Two differentiating etiological factors were that the root of the aorta was the usual seat of luetic aneurysms, which aneurysms were frequently multiple. Syphilis, it was said by the author, was now generally regarded as an essential factor in the causation of aortic incompetency, more particularly in cases developing before the forty-fifth year of life. As in aneurysm, a positive Wassermann reaction alone, unsupported by clinical evidence, did not warrant an assured diagnosis of lues although it rendered highly probable the existence of syphilis. On the other hand, it was to be remembered that aortic incompetency in a luetic subject might be due to other causes, especially if the lesion developed after middle life. Early involvement of the myocardium was not infrequent in the course of syphilis. Early recognition was difficult but important. The symptoms did not differ from those of myocarditis due to other infections and it had been shown that they disappeared promptly under energetic antisyphilitic treatment. Anginoid pains were occasionally present, and obliterative endarteritis implicating the coronaries and producing myocarditis might result in attacks of true angina pectoris. Although a positive or negative Wassermann test was not an absolute criterion it was noted that Brooks contended that it was better than the 70 per cent. of error based on the history or clinical findings alone. Of 270 cases of angina pectoris collected by Dr. Anders from the literature only 72 or 26.5 per cent. gave evidence of syphilis. This percentage was much too small, since in 250 of the cases no mention was made of a Wassermann test. The close association of syphilis and angina was amply confirmed by modern authorities. Dr. Anders' discussion of the treatment of cardiovascular syphilis was limited to prophylaxis. The incidence of cardiovascular disease he thought, without doubt, would be lessened by a more systematic and vigorous treatment of luetic infection in general. Physicians should feel the serious responsibility of the treatment of early syphilis in the wisest manner possible. This was further emphasized in the hazard of administering salvarsan or neosalvarsan in the severer forms of cardiovascular syphilis. It had been found that death occurring suddenly or after several days from the use of these agents, was commonly due to myocardial degeneration secondary to coronary lesions.

Dr. GEORGE W. NORRIS emphasized the statement of Dr. Anders that the discovery of the spirochetes and the knowledge of the Wassermann reaction rendered possible the recognition of a number of lesions as definitely syphilitic which in the past were barely suspected to be such. In this relation it was interesting to note that experimental medicine sometimes followed empirical medicine. It had long been known by practitioners that the iodides did good, as did also in a good many of these cases, small doses of mercurials. The way in which the iodides did good was not known because of lack of knowledge of the manner of their action, although it was assumed to be by the action of a proteolytic ferment upon granulomatous tissue. An interesting fact was the failure of the iodides unless combined with mercury. According to the modern treatment not only were both these drugs used, but frequently salvarsan in addition. In the recent increased attention given to syphilitic nephritis it was comforting to know that if mercury or salvarsan were given the nephritis was benefited rather than injury done to the kidneys by the otherwise irritating drugs. A point emphasized in literature was the frequency with which sudden death might occur in the case of syphilitic myocarditis in the young as well as the old. Among the symptoms of diagnostic value in syphilitic myocarditis were low blood pressure, mild angeoid attacks associated with dilatation of the left ventricle and as emphasized by Dr. Anders, cardiac irregularity followed by auricular fibrillation. In these cases it was well to remember that salvarsan should not be administered without due consideration. It was noted that salvarsan was not altogether an innocuous drug and did have a tendency to lower blood pressure. Another point of interest was that of syphilitic aoritis even in the young. It had been shown that a considerable percentage of newborn infants who died shortly after birth had spirochetic disease in their aorta. Gumma of the heart could be rarely diagnosticated during life because it often involved the silent regions of the heart; a presumptive diagnosis might, however, be made if the gumma involved the conducting system of the heart, in which was found a heart block. Cases of syphilis, Dr. Norris stated, were inadequately treated in the dispensaries. Some of the hospitals even refused, or did not like to treat syphilis in its early stages, and would not admit secondary lues to their wards. There seemed to

be a general attitude among the boards of managers in hospitals that it was the patients' own fault and that they therefore should stand the consequences. These same boards of managers, however, were perfectly willing to admit such patients when they returned with the disease at a practically incurable stage. More efficient and thorough treatment in dispensaries of syphilis was felt to be one of the crying needs of medical work of the present. After all, there was much truth in the dictum of Charcot that if syphilis and tuberculosis were known in all of their manifold manifestations such knowledge would include a large part of medicine.

Dr. JAMES TYSON said that in his experience as a young man in dispensary service it was their practice in the treatment of cases including rheumatoid affections to give first iodide of potassium. Failing with the iodide, mercurial bichloride was added and an astonishingly large number of cases were at once benefited upon the addition of the mercury. It would seem therefore that the new methods confirmed the old. Later observations and the demonstration of the syphilitic organisms were proving that which the therapeutic test so many years ago had shown. He had sometimes thought that, although this was a rough and ready method of treating symptoms, it might perhaps be adhered to a little more frequently than was done in modern times.

Dr. ANDERS, in closing, said he had seen several remarkable results in the alternate and also separate use of salvarsan and mercury in the treatment of syphilitic nephritis. On the other hand he cautioned that there must be certainty that syphilis was the real cause of the cardiovascular and renal conditions. He had recently seen very disastrous results from the use of mercury in a case of nephritis which had been misdiagnosed as being of syphilitic origin. The patient had died in a few days who otherwise might have lived for months or even for years. Mercury had its selective affinity for the kidneys and there was no other variety of nephritis than the syphilitic in which its use was justified. While it was true that since the discovery of the Wassermann reaction the true etiological importance of syphilis in many heart diseases had been in great part established, this could not be said of this test in relation to angina pectoris. He believed, however, that the close association of angina pectoris and syphilis would be established when the profession appreciated the importance of Wassermann tests in all cases of angina pectoris. During the early stages of syphilis he felt that the heart should be examined systematically. The neglect of this precaution was attended with untoward results he believed in many cases. Truly, with regard to cardiac involvement in the course of syphilis the words of John Locke were applicable: "Prevention is better than cure and far cheaper."

THE PRACTITIONERS' SOCIETY OF NEW YORK.

Two Hundred and Seventy-first Regular Meeting, Held May 7, 1915.

DR. A. A. SMITH IN THE CHAIR.

Observations on Sera.—Dr. WILLIAM H. PARK said that physicians rarely recognized the reasons which caused the different sera to be of unequal value and to be applied in different ways. The antitoxic sera were alike in that they could absolutely prevent infection and neutralize any required amount of toxin. The diphtheria antitoxin produced in an animal through the stimulation of the extracellular toxin produced by any diphtheria bacillus would neutralize the toxin produced by every strain of diphtheria bacilli. The same was true of the tetanus bacillus. The extracellular toxins produced by these two bacilli were so much more powerful than the endotoxins that we did not need to concern ourselves with neutralizing them. In immunization both were alike. A subcutaneous injection gave immunity for ten to twenty days. A second injection added a somewhat shorter period of immunity. The use of antitoxins, however, varied. In diphtheria the disease of the local tissues attacked was at first of chief importance and then later the widespread action of the poison. In tetanus the local tissue involved was of no importance except as a place for the production of the poison. The central nervous system was the point of danger. In diphtheria we wished to reach all tissues of the body with an especial importance of the local tissues. Experimentation had shown that given subcutaneously the antitoxin was gradually absorbed during a period of two to four days. Even in the muscles it was more quickly taken into the blood, but still required two to four hours. Moderate cases should therefore receive the same amount or more intravenously. It was not necessary to repeat the dose, as the antitoxin remained for several days. When a suitable dose was given a later dose, while harmless, was also useless. A unit given intravenously was worth five given subcutaneously.

In developed tetanus experience with animals had shown that where the subcutaneous injection always failed, and the intravenous usually did, that the intraspinal generally succeeded. These results were so striking in a series of experiments that the speaker had for a year advocated the intraspinal injection as absolutely essential. The canal having been tapped five to ten thousand units were injected. The serum should be thin so as to pass up the canal to the ventricles. An intravenous injection of the same amount was given to immediately free the blood of toxin. The intraspinal injection was repeated at the end of twenty-four hours, as by that time the antitoxin had largely passed into the blood. This might not be necessary. In both diphtheria and tetanus the size of the patient and the severity of the disease were the controlling factors in the dosage.

When we used the sera to influence infections due to the organisms causing disease chiefly by their endotoxins we met many difficulties. The strains differed among themselves and we had no such perfect antidote as we had for the extracellular toxin. Indeed we had to satisfy ourselves chiefly with destroying the bacteria rather than neutralizing their poisons. Again we had great difficulties in standardizing the sera and we could accumulate the same amount of protective substance in a cubic centimeter. The methods of administration differed as in the case of antitoxins. In cerebrospinal meningitis the disease was chiefly located on the surface of the cord and brain and their membranes. To reach these we must inject intraspinally. As the protective bodies passed to the blood and did not return we must repeat the injections daily until the disease had terminated. The strains of meningococci were much alike, so that by injecting animals with a mixture of strains we could obtain a single serum suitable for all. Much of the serum used was very weak in antibodies. At present its strength was estimated by its complement fixing power. The pneumococci had been found to fall into many distinct groups, and not only did the serum stimulated by the injection of the strains of one group fail to have any influence on the infection produced by the strains of other groups, but many of the strains seemed to be untouched by sera from animals who had been treated by them. Thus Cole has shown that in New York only about one-fourth of the cases of pneumonia could be influenced by sera. The antipneumococcus sera are given intravenously in large doses of from 100 to 200 c.c. and repeated once or twice. In infections due to group one, the sera undoubtedly had some value. The antistreptococcus sera were similar to the antipneumococcus sera. The streptococci also fell in groups. The best we could do was to have polyvalent sera for the main types. It was very important in both pneumococcus and streptococcus infections to promptly identify the type of organism. The other sera for infections prevalent in this region were at present in the experimental stage.

There was an increasing use of human sera. That from normal persons was used to prevent hemorrhage, increase the supply of blood, and add perhaps antibodies. That from convalescent cases was used for both immunization and treatment. The most frequent use had been in scarlet fever, mumps, and in streptococcus infections. A consideration of the above brief survey taught that it was very important for the physician to have a thorough knowledge of the principles upon which the use of the different sera was founded, if he attempted to use them in treatment.

Dr. F. S. MEARA said that he thought the paper was intensely interesting. The Society was indebted to Dr. Park in so many ways that it was hard to specify particularly what was most valuable. Dr. Park's insistence on the direct method should have been carried out long ago. What was Dr. Park's opinion upon antistreptococcic sera in erysipelas? What would Dr. Park think of using the serum of a patient who had recovered from scarlet fever some time before, even if it had not been a recent case? Did the antibodies endure? These substances in human serum might explain the

dramatic results in the case of a child (quoted by him at a previous meeting) in which the father's blood was injected and cured a long-standing blood infection.

Dr. W. T. LONGCOPE asked if the tetanus antitoxin was concentrated. He said that tetanus antitoxin used many years ago intraspinously did not give good results. Did Dr. Park suppose that one could get more into the spinal canal by using concentrated serum?

Dr. PARK said that in animals he had found pretty small amounts protective intraspinously. He did not see why concentration should make a difference.

Dr. LONGCOPE asked how long after an attack of mumps would it be safe to use the serum on another person. If one took it too early one might get mumps instead of protection.

Dr. PARK said he did not know about that; it would be an interesting question. The serum was used from four to six weeks after an attack.

Dr. ABBE asked in regard to hay fever, which bore upon this subject, if any serum treatment had prevailed.

Dr. BREWER asked if there was any advantage in antitetanus serum given as a prophylactic dose intravenously in small amounts, rather than in moderate amounts under the skin, as a possible preventive.

Dr. PARK said that they did not know how long the antibody would stay in the blood after it was taken from the body. As to the question of intravenous dosage for prophylaxis, there was no advantage in that. What they wanted to do was to store it in the body. It would be eliminated more rapidly by the veins than by the subcutaneous tissues. Hay fever he had not looked into. With the first sera he did not get good results.

Dr. BREWER asked Dr. Park if he knew anything of the organism for scarlet fever.

Dr. PARK said he had done some work and found a streptococcus but the type was not decided.

Dr. SMITH asked in the case of tetanus what guided Dr. Park as to the amount.

Dr. PARK said that one had to get a sufficient quantity to pass up the whole length of the canal, 2,000 in the child and 5,000 in the adult.

Dr. BREWER asked what was the concentration? Would posture make any difference?

Dr. PARK said that the concentration was 2,000 units to the cubic centimeter. He did not think posture had anything to do with it.

Dr. ROPER asked Dr. Park if a definite demonstration had been made of bacteriolytic power on the part of any antipneumococcic serum. So far as he knew the mechanism of recovery was due to bacteriotropic action. The serum of patients convalescing from pneumonia did not seem to have any curative action on cases in which it had been tried. It would be interesting in view of the newer work on the different strains of pneumococci to have this work repeated using what might be called homologous sera. It did not seem to be possible to develop an artificial immunity against the streptococci in a normal individual and transfer it to an infected patient with beneficial results. In a recent case at New York Hospital two transfusions with blood of a vaccinated donor failed to check the increase in the number of organisms to the cubic centimeter in the patient's blood, or to influence the progress of the disease in any way.

Dr. BRANNAN said that at Willard Parker most of the deaths in diphtheria were from bronchopneumonia or sepsis. In these were antistreptococcic sera used as well as antitoxin? He did not see how antitoxin would help in the complications which usually caused death, rather than the diphtheria itself. He should also like to ask about the amount of antitoxin given. At the last meeting of the medical board it was said that the staff men were using enormous amounts of antitoxin for a dose, 20,000 to 30,000 units. Now 5,000 units given early were usually considered sufficient. Were these young men giving unnecessarily large doses?

Dr. MEARA asked if Dr. Park had any cases of streptococcus meningitis which recovered. He had heard there were one or two cases on record. He gathered that no streptococcus serum had been used in the cure.

Dr. PARK said they had recovery in one case. They tried everything. Whether serum had anything to do with the cure, he did not know.

Dr. MEARA asked were there any other authentic cases of recovery.

Dr. ROPER said Dr. Peabody had used serum in one case intraspinally.

Dr. BACON said he had tried sera in case of septicemia and of purulent meningitis but had never had any satisfactory results. Had Dr. Park had any experience with these cases?

Dr. PARK said the results in septicemia were not certain. If one had any infection on the surface one could apply sera because of the antibodies. They had used it in cellulitis and in infected uterus. In septicemia the type of organism must be obtained.

Dr. MEARA asked if intravenous as well as intraspinous injection was given in tetanus.

Dr. PARK said one intravenous dose might be given but it was probably not necessary. They had never found any results in antistreptococcus or antipneumococcus sera. In one interesting case at the Rockefeller Hospital Nicoll injected horse serum into a child with scarlet fever with a temperature of 106°. The child got well. A suitable strain was found to have been used. Some strains might not have responded.

Dr. BRANNAN asked if polyvalent serum could not be used.

Dr. PARK said they would not always get results.

Dr. BRANNAN inquired as to the danger of anaphylaxis in repeated doses of antitoxin.

Dr. PARK said anaphylaxis was impossible with a second dose.

Dr. HUDDLESTON said he had wondered when he heard of 10 c.c. of serum employed by Hess at the difference between that quantity and the amount required to produce immunity against vaccine virus—1 per cent of the weight of the animal. Was there any observation from which the amount of serum in a given case might be judged necessary?

Dr. SMITH asked, in the case of pneumonia, was the Department prepared to supply sera?

Dr. PARK said they had pneumonia I and II, viridans and hemolytic.

Dr. SMITH asked if one could rely on the sera prepared by drug firms.

Dr. PARK said that as to the question of old convalescent sera when years had elapsed, he thought the more recent the disease the greater the accumulation of antitoxin would be.

Dr. MEARA asked would Dr. Park use the serum of some years back?

Dr. PARK said the infant of a woman who had had measles did not get measles for five months. So for twenty years there must often be antibodies.

Dr. MEARA said that might be a very valuable adjunct.

Dr. PARK said he could not tell about bacteriolytic effects. The substances were mostly bacteriotropic and the results could not be the same in the tested types. They had not tried without the cells. The action was mostly opsonic. As to purulent meningitis, they had had very little success. It was a question of the involvement of the ventricles and the cases were almost hopeless. Sophian had had one success but none since. As to Dr. Huddleston's question as to the amount of serum it was hard to give a large dose to a child but a small amount gave protection in mumps. Why he did not know. A small amount of protection might be enough. In giving antitoxin the first 1,000 units did more than all the rest. As regarded the size of the dose, in a severe case a big dose might save. A large dose might act more rapidly. McCollum had given 20,000 units subcutaneously.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

WASHINGTON STATE BOARD OF MEDICAL EXAMINERS.

July, 1914.

[Answer ten (10) questions only in each paper.]

ANATOMY.

1. Describe the sacro iliac articulation, giving ligamentous attachment and nerve supply.
2. Describe the knee joint, giving ligamentous attachments, nerve and blood supply.
3. Describe the heart and its position. Give size and weight of same, with blood supply.
4. Describe the femoral artery, and give its relation to anterior crural nerve and femoral vein.
5. Describe the collateral circulation after ligature of axillary artery.
6. Name the cranial nerves in the order of their passage through cranial foramina.

7. Describe the brachial plexus.
8. What are ductless glands? Name them.
9. Describe the lungs, giving nerve and blood supply.
10. Where is the prostate gland situated? Describe its form and size.
11. Name the muscles of the eyeball and give nerve supply.
12. What is the inguinal canal? Describe the internal and external abdominal ring. Give boundaries of the canal.

PHYSIOLOGY.

1. Define human physiology.
2. Define protoplasm, and give the characteristic properties of living protoplasm.
3. Describe in detail how the placenta performs its functions.
4. Name the nerves concerned in the constriction, and in the dilatation of the pupil of the eye.
5. What is the function of the cerebellum?
6. Describe the phenomena of (*a*) asphyxia, (*b*) syncope, (*c*) sleep.
7. What is the order of occurrence of rigor mortis in the different parts of the body?
8. State the manner in which the blood circulates through the heart, and the lungs, beginning at the right auricle.
9. What would be the effect of a transverse section of (*a*) the anterior root of a spinal nerve, (*b*) the posterior root of a spinal nerve?
10. Describe (*a*) chyme; (*b*) chyle.
11. Why does the blood remain fluid in the body in life and coagulate when shed?
12. What effect is produced on the heart action by stimulation of the cardio inhibitory center?

HISTOLOGY.

1. Describe an erythrocyte. Tell how a normal cell differs in an adult human being from that found in early fetal life.
2. Define anabolism; catabolism. Discuss the vital properties of cells.
3. What layers constitute the blastoderm? (*a*) Name the structures developed from the mesothelium; (*b*) the structures developed from the mesenchyme group of cells.
4. Name the five groups of adult tissues. Describe adipose tissue.
5. Make a diagram of a cross section of the humerus, and then describe the development of the Haversian system of canals.
6. Name the histological characteristics of the cardiac muscle.
7. Describe the Peyer's patches (agminated follicles).
8. Describe a section of the human cornea.
9. Differentiate between a section of the thymus gland, and a like section of a small lymph gland.
10. Describe the structural differences between the Malpighian corpuscles of the spleen and those of the kidneys—make drawing.
11. Describe the histological structure of the lungs.
12. Describe, histologically, tactile corpuscles, where found; Pacinian bodies, where found.

ANSWERS TO STATE BOARD EXAMINATION QUESTIONS.

WASHINGTON STATE BOARD OF MEDICAL EXAMINERS.

July, 1914.

ANATOMY.

1. The *Sacroiliac articulation* is an amphiarthrodial joint formed between the lateral surfaces of the sacrum and ilium. The *ligaments* are: (1) The *anterior sacroiliac*, connecting the anterior surfaces of the sacrum and ilium; (2) the *posterior sacroiliac* passing chiefly downward and inward from the rough part of the ilium to the posterior part of the sacrum; three of the fasciculi are of large size, two of them constitute the *short sacroiliac ligament* and one of them is the *long* or *oblique sacroiliac ligament;* (3) the *interosseus ligaments* which fill up the hollow existing in the posterior of the joint, and are completely covered by the posterior sacroiliac ligament. The *nerve supply* is from the superior gluteal, and sacral plexus.

2. The *knee joint* is a ginglymus, and is formed by the condyles of the femur, the head of the tibia, and the patellæ. "The *external ligaments*: The *anterior* or *ligamentum patellæ* is the continuation of the tendon of the triceps extensor. Above it occupies the apex and rough marking on the lower and posterior surface of the patella; below it is attached to the lower part of the tubercle of the tibia. There is a bursa between the upper part of the tubercle and the ligament. The *posterior ligament* (*ligamentum posticum Winslowii*), broad and thin, covers the back of the joint. It consists of a central and two lateral parts. The lateral parts spring above from the femur above the condyles and are attached below to the head of the tibia. The central part is derived from an expansion of the semi-membranosus tendon, and passes from the inner tuberosity of the tibia to the inner side of the upper part of the outer condyle of the femur. The *internal lateral ligament*, broad and flat, is attached above to the inner condyle of the femur; below, to the margin of the inner tuberosity, to the internal fibrocartilage, and to the inner surface of the shaft of the tibia for 1½ inches. The *long external lateral ligament*, a rounded cord, is attached above to the external condyle of the femur, and below to the external part of the head of the fibula, dividing the biceps tendon into two parts, a bursa intervening. The *short external lateral ligament*, very indistinct, lies parallel and behind the preceding, attached above to the outer condyle of the femur, and below to the styloid process of the fibula. The *capsular ligament*, thin, fills up the intervals between the special ligaments; it is attached to the margins of the articular surfaces of the bones, and blends with the fascia lata of the thigh: above it receives expansions from the vasti (*lateral patellar* ligaments).

"The *Internal Ligaments*: The *anterior* or *external crucial ligament* is attached to the depression in front of the spine of the tibia and to the external semilunar fibrocartilage; it passes upwards, backwards, and outwards to the posterior part of the inner side of the external condyle of the femur. The *posterior* or *internal crucial ligament* is attached to a depression behind the spine of the tibia, to the popliteal notch, and the posterior border of external semilunar fibrocartilage, this latter slip being sometimes called the *ligament of Wrisberg;* it passes upwards, forwards, and inwards, the posterior fibers attached by side of oblique curve of inner condyle, the anterior ones to the fore part of intercondylar fossa and to the anterior part of the outer surface of the inner condyle. The *semilunar cartilages* are thicker at the circumferences than at the central margins, and serve to deepen the cavities for the head of the femur. The *internal semilunar cartilage* is oval in shape, the anteroposterior diameter being the longer. Its anterior extremity is attached to the tibia in front of the anterior crucial ligament, and the posterior extremity in front of the posterior crucial ligament. The *external semilunar cartilage* is nearly circular; its anterior extremity is attached to the tibia in front of the spine, the posterior extremity to the back of the spine." (*Aids to Anatomy.*)

3. A line from the lower border of the second left costal cartilage (one inch from sternum) to upper border of third right costal cartilage (half inch from sternum) represents the *base line;* the *right side* will be a line drawn from right side of upper limit to seventh right chondrosternal articulation; the *lower limit* is a line from this last point to the apex (in fifth intercostal space, three and one-half inches from midline); the *left side*, from left end of upper border to left of apex. The valves are: Aortic, mitral, tricuspid, pulmonary (and Eustachian and coronary)

The *aortic valves* are behind the third intercostal space, close to the left side of the sternum. *Pulmonary valves*, in front of the aortic, behind the junction of the third rib, on the left side, with the sternum. *Tricuspid valves*, behind the middle of the sternum, about the level of the fourth costal cartilage. *Mitral valves* behind the third intercostal space, about one inch to the left of the sternum.

In the *right auricle* are the Eustachian and coronary valves; the former is situated between the anterior margin of the inferior vena cava and the auriculo-ventricular orifice; in the fetus it directs the blood from the inferior vena cava through the foramen ovale into the left auricle; the coronary valve prevents the regurgitation of blood into the coronary sinus during the auricular contraction. In the *right ventricle* are the tricuspid and semilunar valves; the former prevents the blood in the right ventricle from flowing back into the right auricle during ventricular systole; the latter guards the orifice of the pulmonary artery. In the *left ventricle* are the mitral and semilunar valves; the former acts similarly to the tricuspid; the latter guards the orifice

of the aorta. The heart is about 5 x 2½ x 3½ inches, and weighs about ten ounces. It is supplied with blood by the right and left coronary arteries.

4. The *femoral artery* begins at Poupart's ligament; it is the continuation of the external iliac, and passes down the fore part and inner side of the thigh, to terminate at the opening in the adductor magnus at the junction of the middle with the lower third of the thigh, where it becomes the popliteal artery.

In the upper part of its course, the anterior crural nerve is on the outer side of the artery, and the femoral vein is to the inner side; lower down the vein passes behind the artery.

5. If the *axillary artery is ligated* (below its subscapular branch), the collateral circulation will take place by: (1) Anastomoses between the branches of the posterior circumflex and the superior profunda; (2) anastomoses between the branches of the subscapular and the superior profunda; (3) anastomoses through various muscular branches of the artery.

6. *Cranial nerves:* I. Olfactory; II. Optic; III. Motor oculi; IV. Pathetic or Trochlear; V. Trifacial; VI. Abducens; VII. Facial; VIII. Auditory; IX. Glossopharyngeal; X. Pneumogastric; XI. Spinal accessory; XII. Hypoglossal.

7. The *brachial plexus* is formed by the union and subsequent division of the anterior divisions of the fifth, sixth, seventh, and eighth cervical and the first dorsal nerves. The union of the fifth and sixth makes the upper trunk; the seventh forms the middle trunk, and the eighth cervical and first dorsal make the lower trunk. Each of these trunks is divided into an anterior and a posterior branch. The anterior branches, from the upper and middle trunks, make the upper or outer cord of the plexus; the anterior branch of the lower trunk becomes the lower or inner cord; the three posterior branches unite to form the posterior or middle cord. The plexus lies between the Scalenus anticus and medius. The *branches* are: (1) Above the clavicle; communicating, muscular, posterior thoracic, and suprascapular. (2) *From outer cord.* External anterior thoracic, musculocutaneous, and outer head of median. (3) *From inner cord:* Internal anterior thoracic, lesser internal cutaneous, ulnar, and inner head of median. (4) *From posterior cord:* Subscapular, circumflex, and musculospiral.

8. The *ductless glands* are glands which do not possess excretory ducts. They are the spleen, thyroid, parathyroids, thymus, suprarenals, carotid, coccygeal, pineal, and pituitary body.

9. "*The lungs* are two in number, occupying the lateral cavities of the chest, separated from each other by the heart and structures within the mediastinum. They accurately fill the cavity of the chest at all times, and are covered by the pleura. They are conical in shape, presenting each a base, apex, two borders, and two surfaces. The apex extends upward above the level of the first rib; the base occupies the convex surface of the diaphragm; the external, or thoracic surface is accurately applied to the wall of the thorax; the inner surface is in contact with the pericardium, and is marked by a depression, the hilum pulmonis, at the root of the lungs. The posterior border rests on either side of the spinal column, and the anterior border is thin and overlaps the pericardium. The root of each lung, situated near its middle, is composed of the following structures, surrounded by a reflection of pleura: Bronchus, pulmonary artery, pulmonary veins, bronchial glands, bronchial vessels, posterior and anterior pulmonary plexuses of nerves, connective tissue. The right lung has three lobes; the left but two, of which the lower is the larger. The *nerves* are derived from the anterior and posterior pulmonary plexuses of the pneumogastric and sympathetic; ganglia are found upon these nerves. The *blood supply* is from the bronchial arteries." (Young's *Handbook of Anatomy*).

10. *Prostate gland* is about 1½ x ¾ x ½ inches, and weighs about three-quarters of an ounce. It resembles a chestnut in size and form. It is situated at the neck of the bladder, and surrounds the first part of the urethra. It consists of fibromuscular (unstriated) tissue with imbedded follicular pouches, the whole enclosed in a firm fibrous capsule, continuous in front with the triangular ligament, and behind with the posterior layer of the deep perineal fascia.

11. *Muscles of the eyeball:* Rectus superior, rectus inferior, rectus externus, rectus internus, obliquus superior, and obliquus inferior; the rectus externus is supplied by the abducens nerve, the superior oblique by the trochlear, and the others by the motor oculi.

12. The *inguinal canal* is an oblique canal situated a little above and running parallel with Poupart's ligament. It is from an inch and a half to two inches in length, runs downward and inward, and extends from the internal abdominal ring to the external abdominal ring.

Its *boundaries* are: *In front:* the skin, superficial fascia, aponeurosis of the external oblique, and (for its outer third) the internal oblique. *Behind:* the conjointed tendon, the triangular fascia, the transversalis fascia, subperitoneal fat, and peritoneum. *Above:* the fibers of the internal oblique and transversalis. *Below:* Poupart's ligament and the transversalis fascia.

Contents: The spermatic cord in the male, and the round ligament in the female.

Internal abdominal ring: "An oval opening lying in the transversalis facia, half way between the anterior superior iliac spine and symphysis pubis, and about 1.3 cm. (½ inch) above Poupart's ligament. Superior and external boundary—curved fibers of transversalis. Inferior and internal boundaries—deep epigastric vessels. Transmits spermatic cord in male—and round ligament in female. Infundibuliform process of fascia transversalis strengthens its opening."

External abdominal ring: "A triangular opening in aponeurosis of external oblique immediately above and just external to crest of os pubis. Bounded, inferiorly, by crest of os pubis—superiorly by intercolumnar fibers, strengthened by intercolumnar fascia; internally by inner or superior pillar; externally by outer or inferior pillar. Transmits spermatic cord in male and round ligament in female."—(Bickham's *Operative Surgery.*)

PHYSIOLOGY.

1. *Human physiology* is that branch of science which deals with the functions of the human body in a state of health.

2. *Protoplasm* is the matter of which cells are made; it is the physiological basis of life, and consists of water, protein, lecithin, cholesterin, phosphates, chlorides, and other substances. Its constitution is unknown. *Properties of living protoplasm:* Irritability, or power of responding to a stimulus; power of movement; power of assimilation; power of growth; power of excretion; power of reproduction.

3. "As a separate organ, *the placenta* dates from the third month of pregnancy, and from that time gradually increases in size until the termination of pregnancy. The chorionic villi lose Langhans' layer of cells, and embed themselves into the interglandular stroma of the decidua basalis, and sometimes penetrate the mouths of the small veins. The syncytium also penetrates the endothelium of the decidual arterioles, and large blood sinuses are thus formed. By this arrangement, the fetal and maternal blood, while kept separate, are brought into such close contact that osmosis may readily occur between them, thus permitting the absorption of nutritive material from the maternal into the fetal circulation, the excretion of urea and other waste products of fetal metabolism, the passage of oxygen to the fetus, and the excretion of carbon dioxide from it. The *functions of the placenta* may be summed up as follows: 1. It is nutritive, allowing of the passage of nutritive material to the fetus. 2. It is respiratory. Oxygen passes to, and carbon dioxide from, the fetus. 3. It is excretory, allowing the escape of urea and other products of fetal metabolism. 4. It has a glycogenic function. Glycogen is stored in its cells for the future use of the fetus. 5. It is iron storing, by which iron in organic combination is passed from the maternal circulation into the fetal circulation to be stored in the liver cells of the fetus, in order to aid in the formation of new colored blood corpuscles."—(Lyle's *Physiology.*)

4. *Constriction* of the pupil is caused by the motor oculi; *dilatation*, by the cervical sympathetic.

5. *Functions of cerebellum:* (1) Coordination of muscular movements; (2) it is concerned in maintaining the equilibrium of the body.

6. *Asphyxia.* "In considering the phenomena of asphyxia, it is necessary to distinguish between rapid asphyxia, produced by complete obstruction to the entrance of air, and slow asphyxia, which is gradually established. The phenomena of asphyxia are divisible into three stages, which are easily observed in animals, especially in the dog. In the *first stage*, called the stage of exaggerated breathing, hyperpnea, the respiration is more rapid and deeper, due to the CO_2; then the phenomena of dyspnea appear, the extraordinary muscles of inspiration and expiration are called into play, the abdominal muscles contract forcibly, the pupils are

small. This stage lasts about a minute. *Second stage*, convulsive stage. Here the inspiratory muscles lose their force, while the expiratory movements become more active; next all the muscles of the body, including the expiratory ones, become convulsed, due to the carbon dioxide stimulating the central nervous system. This stage lasts about a minute. *Third stage*, or stage of exhaustion. This usually comes on suddenly, the carbon dioxide paralyzing the center of respiration; the pupils dilate, the eyelids do not close when the cornea is touched; a state of general calm ensues, which is in marked contrast with the previous agitation; consciousness is abolished; the animal lies motionless and seems dead; occasional inspiratory acts take place, then they become feebler and of a gasping character; finally, the nostrils dilate, the limbs of the animal are extended, opisthotonos ensues, the pulse disappears, and death closes the scene. This state lasts about three minutes. This pulseless condition is properly denominated asphyxia. The phenomena of slow asphyxiation follows the same course, but less rapidly." (Ott's *Physiology.*)

Syncope is the complete, and often sudden, loss of motion and sensation with diminution or suspension of heart pulsations and respiratory movements; it may indicate cardiac disease.

Sleep.—"This phenomenon is one of many instances of the rhythmic activities of the central nervous system. From time to time all animals with a well-developed nervous system go to sleep, during which psychical activity is at its lowest point. To reach this condition the most important favoring factor is an exclusion of all or most of the impulses from the central nervous system. In a well-known case of Strümpell, in which, from a complicated anesthesia, all sensory impulses were limited in their entrance to a single eye and a single ear, the patient could be put to sleep at will by closing the eye and stopping the ear. In addition, sleep has been attributed to the following influences: 1. Chemical influences. 2. Circulatory influences. 3. Histological influences. Those who hold to *chemical influences* in the production of sleep maintain that during normal activity of the body various substances are formed which are circulated in the blood and directly lessen the activity of the nerve cells or indirectly diminish the supply of blood in the brain. In the theories of *circulatory influences* a fatigue of the vasomotor center is looked upon as the cause of the anemia of the brain resulting in sleep. In the third set of theories sleep is supposed to be due to a separation of the dendrites of the brain cells due to an active contraction or to an intrusion of neuroglia cells between them. During sleep the capability of the nervous system to transmit impulses is not entirely lost. The cerebral cortex is most affected, the spinal cord least. The close relation between dreams and external stimuli is well known and it has been proved experimentally that vasomotor changes induced by external stimuli may take place without awakening the sleeper. The period of deep sleep is short and falls within the first two hours after its onset. During this time the pulse and breathing are slower, the intestines and bladder are at rest, the output of carbon dioxide is lessened, and the consumption of oxygen still more so; metabolism is less vigorous and the temperature falls. The respiration is said to become thoracic in type and to take on a more or less pronounced Cheyne-Stokes rhythm. The visual axes are directed upward and inward, but the pupils are contracted. The latter is peculiar, since an absence of light should bring about dilatation. This is connected perhaps with important actions taking place in lower levels of the brain." (Guenther's *Physiology.*)

7. *Rigor mortis* first appears in the muscles of the lower jaw, then spreads to the muscles of the face and neck, then to the muscles of the thorax and abdomen, then to those of the upper extremity, and finally to those of the lower extremity.

8. "The left ventricle pumps the arterial blood through the large arteries, the small arteries, and the arterioles into the systemic capillaries. For the most part between the capillaries and the tissues is the tissue fluid, and across this the tissues acquire the oxygen from the arterial blood and return carbon dioxide to the blood in the capillaries. The blood which leaves the tissues is venous. The venous blood returns from the capillaries through the small veins into the larger veins, and the largest veins pour the blood back into the right auricle. It will thus be seen that the right side of the heart is occupied with the pulmonary circulation and the left side of the heart with the systemic circulation. The right auricle receives the venous blood as it returns from the tissues, and transmits it to the right ventricle. The function of the right ventricle is to pump the venous blood through the pulmonary arteries into the lung capillaries, where the venous blood becomes oxygenated. The oxygenated blood returns by the pulmonary veins to the left auricle, and the arterial blood is then received into the left ventricle."—(Lyle's *Physiology.*)

9. Transverse section of the *anterior root* of a spinal nerve causes loss of motion and degeneration of the peripheral portion of the anterior root fibers; the sensory fibers of the posterior root are not affected.

Transverse section of the *posterior root* of a spinal nerve causes loss of sensation and degeneration, which latter differs according as the section is made on the proximal or peripheral side of the ganglion. If the section is made between the cord and the ganglion, degeneration only occurs in the piece severed from the ganglion, but connected with the cord. If the section is made beyond the ganglion, degeneration occurs in the fibers peripheral to the lesion.

10. *Chyme* is a thick, acid liquid, which is the result of gastric digestion; it consists of proteids, salts, liquefied fat, and undigested matter. It is passed forward into the duodenum.

Chyle is that portion of the lymph which is found in the small intestine during the period of digestion; it is mainly composed of water, proteids, and fats, the latter giving it a milky appearance.

11. The reason why the blood remains fluid in the body during life and coagulates when shed, is because during life the blood is kept moving and because the fibrin enzyme which normally exists in the blood plasma is neutralized by the antithrombin which is secreted by the liver cells.

12. *Stimulation of the cardioinhibitory center* inhibits or restrains the action of the heart; the frequency of the heart's action is diminished, and the strength of its contractions is lessened.

HISTOLOGY.

1. An *erythrocyte* is a non-nucleated, circular, concave disc; it contains red coloring matter, *hemoglobin;* and is about 1/3200 inch in diameter. In *adult* life it is non-nucleated; in fetal life it is nucleated.

2. *Metabolism* is the entire series of changes that occur in a cell or organism during the processes of nutrition. It is of two kinds: (1) Assimilative or constructive (anabolism), and (2) destructive (catabolism).

The *manifestations of cell life* are: Movement, ingestion, assimilation, excretion, growth, irritability, and reproduction.

3. The *blastoderm* has three layers—the ectoderm, mesoderm, and entoderm.

From the *mesothelium* are derived the flattened epithelioid cells which line the various serous cavities of the body.

From the *mesenchyme* are derived the various connective tissue cells such as bone, dentine, cartilage, fibrous and areolar tissue, lymph, and blood.

4. *The five groups of adult tissue are:* (1) Epithelial tissues, (2) connective tissues, (3) blood, (4) muscle tissue, and (5) nerve tissue.

Adipose tissue is a form of connective tissue and consists of vesicles filled with fat; these vesicles are collected into lobules, and vary in shape, being round or oval when not subjected to pressure, but polyhedral when compressed. The cell has an oval flattened nucleus situated just within the thin membrane which surrounds the cell.

5. For illustration, see Bailey's *Histology.* 3d Edition, 1910, fig. 102, p. 167.

Transverse section of compact bone from shaft of humerus (From Bailey's *Histology*):

"All bone is at first of the spongy variety. When this is to be converted into compact bone, there is first absorption of bone by osteoblasts, with increase in size of the marrow spaces and reduction of their walls to thin plates. These spaces are now known as Haversian spaces. Within these new bone is deposited. This is done by osteoblasts which lay down layer within layer of bone until the Haversian space is reduced to a mere channel, the Haversian canal. In this way are formed the Haversian canals and the Haversian systems of lamellæ. Some of the interstitial lamellæ are the remains of the spongy bone which was not quite removed in the enlargement of the primary marrow spaces to form the Haversian spaces; other interstitial lamellæ appear to be early formed Haversian lamellæ which

have been more or less replaced by Haversian lamellæ formed later."

6. *Cardiac muscle* consists of fibers of short, stubby cylindrical form, possessing striations and a delicate sheath, but no regular sarcolemma. There is a single, oval nucleus to each cell; this nucleus is centrally situated and is surrounded by pigment granules.

7. *Peyer's patches* are aggregations of solitary glands, measuring from about half an inch to three inches in length; they are found mainly in the ileum, but also occur in the duodenum, and jejunum; they are situated lengthwise in the intestine, and are located opposite to the mesenteric attachment. Each patch is surrounded by a group of the crypts of Lieberkühn. There are said to be from 30 to 50 of these patches in the human intestine. As a rule, they have no villi on their surface.

8. The *cornea* consists of five layers: (1) An anterior layer of stratified squamous epithelium; (2) an anterior elastic membrane, also known as Bowman's membrane; (3) the substantia propria consisting of connective tissue fibrils which are cemented together to form bundles and lamellæ; (4) the posterior elastic membrane of Descemet, similar to the anterior elastic membrane, but thinner; (5) the posterior endothelium of Descemet, consisting of one layer of flat hexagonal cells.

9. The *thymus* contains spherical or oval bodies of concentrically arranged epithelial cells known as Hassall's corpuscles; nucleated red blood corpuscles may be seen in the thymus; and the lymph nodules contain no germinal centers. The *lymph gland* does not contain Hassall's corpuscles and it has no nucleated red corpuscles; furthermore the lymph nodules contain germinal centers.

10. The *Malpighian corpuscles of the spleen* "are distributed throughout the splenic pulp. Each splenic corpuscle contains one or more small arteries. These usually run near the periphery of the corpuscle; more rarely they lie at the center. Except for its relation to the blood-vessels, the splenic corpuscle is quite similar in structure to a lymph nodule. It consists of lymphoid cells so closely packed as completely to obscure the underlying reticulum. In a child's spleen the center of each corpuscle shows a distinct germinal center. In the adult human spleen germ centers are rarely seen." (Bailey's *Histology*).

The *Malpighian corpuscle of the kidney* "is spheroidal, and has a diameter of from 120 to 200μ. The structure of the Malpighian body can be best understood by reference to its development. During the development of the uriniferous tubules and of the blood-vessels of the kidney, the growing end of a vessel meets the growing end of a tubule in such a way that there is an invagination of the tubule by the blood-vessel. The result is that the end of the vessel which develops a tuft-like network of capillaries—the *glomerulus*—comes to lie within the expanded end of the tubule, which thus forms a two layered capsule for the glomerulus. One layer of the capsule closely invests the tuft of capillaries, dipping down into it and separating the groups of capillaries. This layer by modification of the original epithelium of the tubule is finally composed of a single layer of flat epithelial cells with projecting nuclei. The outer layer of the capsule lies against the delicate connective tissue which surrounds the Malpighian body. This layer consists of a similar though slightly higher epithelium and is known as *Bowman's capsule*. Between the glomerular layer of the capsule and Bowman's capsule proper is a space which represents the beginning of the lumen of the uriniferous tubule, the epithelium of Bowman's capsule being directly continuous with that of the neck of the tubule." (Bailey's *Histology*).

For illustrations see Bailey's *Histology* 3d Edition, 1910, figs. 95 and 198, pp. 159 and 289.

11. *The structure of the lungs.*—"In the lungs the bronchi branch in a tree-like manner, the final ramifications opening into the pulmonary cells. The larger intrapulmonary bronchi are lined by columnar ciliated epithelium resting on a basement membrane. Lying under this basement membrane are longitudinally disposed elastic fibers with loose connective tissue. More externally is a layer of smooth muscle fibers arranged circularly, the bronchial muscle. External to the bronchial muscle is a fibrous coat containing scattered, irregular plates of hyaline cartilage. The smaller bronchi (bronchioles) have no cartilaginous plates, but their muscular coat is well marked. Each bronchiole leads into a small number (three or four) of wider thin-walled spaces, lined by flattened epithelium, and called atria. Out of each atrium open two or three blind diverticula, each of which is called an infundibulum. The walls of the infundibula are studded with hemispherical sacs known as alveoli, which are lined by flattened, non-nucleated, epithelial cells. Between adjacent alveoli there is a dense network of capillaries, supported by a small amount of fine connective and elastic tissue; the network of capillaries is thus common to the two adjacent air cells, and the blood in the capillaries is separated from the air in the alveoli merely by two thin layers of epithelium. In birds, even the alveolar epithelium appears to be absent, the blood and air being separated solely by the capillary wall." (From Bainbridge and Menzies', *Essentials of Physiology.*)

12. *"Tactile corpuscles.*—These consist of connective tissue which forms a capsule, from which are given off membranous partitions or septa. After winding around the corpuscle the axis-cylinder enters it, and terminates in an enlargement. Tactile corpuscles occur in the papillæ of the skin of the hand, foot, front of the forearm, lips, and nipple; also in the mucous membrane of the tip of the tongue and the conjunctiva lining the eyelids.

"Pacinian corpuscles.—These are also called corpuscles of *Vater*. Each corpuscle consists of concentrically arranged layers of connective tissue, with nucleated cells. A medullary nerve-fiber enters at one end and passes into an interior space which contains a transparent substance; here only the axis-cylinder is present. This terminates at the end of the corpuscles in an enlargement or in minute branches, an arborization. These corpuscles exist in the subcutaneous tissue of the palm of the hand and sole of the foot, and in the penis. Observers have also found them in the pancreas, lymphatic glands, and thyroid." (Raymond's *Physiology.*)

(To be continued.)

BULLETIN OF APPROACHING EXAMINATIONS

STATE	NAME AND ADDRESS OF SECRETARY	PLACE AND DATE OF NEXT EXAMINATION†
Alabama*	W. H. Sanders, Montgomery	Montgomery
Arizona*	J. W. Thomas, Phoenix	Phoenix
Arkansas	W. S. Stewart, Pine Bluff	Little Rock
California	C. B. Pinkham, Sacramento	Los Angeles Dec 14
Colorado	David A. Strickler, Empire Building, Denver	Denver Oct. 5
Connecticut*	Chas. A. Tuttle, New Haven	New Haven Nov. 9
Delaware	J. H. Wilson, Dover	Dover Dec. 11
Dist. of Col'bia	E. P. Copeland, Washington	Washington Oct 12
Florida*	E. W. Warren, Palatka	Jacksonville Dec. 7
Georgia	C. T. Nolan, Marietta	Atlanta Oct 12
Idaho*	J. F. Schmershall, Jerome	Wallace Oct. 5
Illinois	C. S. Drake, Springfield	Chicago
Indiana	W. T. Gott, Crawfordsville	Indianapolis Jan. 11
Iowa	G. H. Sumner, Des Moines	Des Moines
Kansas	H. A. Dykes, Lebanon	Topeka Oct. 12
Kentucky	J. N. McCormack, Bowling Green	Louisville
Louisiana	E. L. Leekert, New Orleans	New Orleans Dec. 2
Maine	F. W. Searle, Portland	Portland Nov. 9
Maryland	J. McP. Scott, Hagerstown	Baltimore Dec. 14
Massachusetts*	W. P. Bowers, State House, Boston	Boston Sept. 14
Michigan	B. D. Harison, 205 Whitney Building, Detroit	Lansing Oct. 12
Minnesota	T. McDavitt, St. Paul	Minneapolis
Mississippi	E. H. Galloway, Jackson	Jackson Oct. 5
Missouri	J. A. B. Adcock, Jefferson City	Kansas City Sept. 28
Montana*	Wm. C. Riddell, Helena	Helena Oct. 5
Nebraska	H. B. Cummins, Seward	Lincoln
Nevada	S. I. Lee, Carson City	Carson City Nov. 1
N. Hampshire	Walter T. Crosby, Manchester	Concord Sept. 15
New Jersey	H. G. Norton, Trenton	Trenton Oct. 19
New Mexico	W. E. Kaser, East Las Vegas	Santa Fe
New York	H. H. Horner, Univ. of State of New York, Albany	New York, Albany, Syracuse, Buffalo — Oct 5
N. Carolina	H. A. Royster, Raleigh	Raleigh June
N. Dakota	G. M. Williamson, Grand Forks	Grand Forks Jan 4
Ohio	Geo. H. Matson, Columbus	Columbus
Oklahoma	J. W. Duke, Guthrie	Oklahoma City Oct. 12
Oregon	B. E. Miller, Portland	Portland Jan. 4
Pennsylvania	N. C. Schaeffer, Harrisburgh	Philadelphia, Pittsburgh, Harrisburgh — Jan.
Rhode Island	G. T. Swarts, Providence	Providence Oct 5
S. Carolina	H. E. Boozer, Columbia	Columbia June 13
S. Dakota	P. B. Jenkins, Waubay	Pierre June. 13
Tennessee	A. B. DeLoach, Memphis	Memphis, Nashville, Knoxville
Texas	M. P. McElhannon, Belton	Austin
Utah	G. F. Harding, Salt Lake City	Salt Lake City Oct. 4
Vermont	W. Scott Nay, Underhill	Montpelier Jan. 11
Virginia	J. N. Barney, Fredericksburg	Richmond Dec. 14
Washington*	C. N. Suttner, Walla Walla	Seattle
W. Virginia	S. L. Jepson, Charleston	Elkins Nov. 9
Wisconsin	J. M. Dodd, Ashland	Madison Jan 11
Wyoming	H. E. McCollum, Laramie	

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BEITRAGE ZUR KLINIK DER INFEKTIONSKRANKHEITEN UND ZUR IMMUNITÄTSFORSCHUNG. By Professor Dr. L. BRAUER. Published by Curt Kabitzsch in Würzburg; 124 pages.

OPERATIVE GYNECOLGY. By HARRY STURGEON CROSSEN, M.D., F.A., C.S. Published by C. V. Mosby Company, St. Louis. Seven hundred and seventy original illustrations; 670 pages. Price, $7.50.

HUMAN PHYSIOLOGY. By Professor LUIGI LUCIANI. Published by Macmillan & Co., Ltd., St. Martin's street, London. With a preface by J. N. Langley, F.R.S. In five volumes; Vol. 3; 667 pages; price, $5.00.

GENERAL SURGERY. Edited by JOHN B. MURPHY, A.M., M.D., LL.D., F.R., C.S. Published by The Year Book Publishers, 327 S. La Salle street, Chicago, Ill. Vol. 2; 602 pages; price, $2.00.

MEDICAL JURISPRUDENCE AND TOXICOLOGY. By JOHN GLAISTER. Published by William Wood & Company; third edition, with 137 illustrations and one colored plate. Price, $5.00 net; 857 pages.

THE INTERVERTEBRAL FORAMINA IN MAN. By HAROLD SWANBERG. Published by Scientific Publishing Co., Chicago, Ill. Illustrated by 11 original full-page plates; 95 pages. Price, $1.75.

THE ALLIGATOR AND ITS ALLIES. By A. M. REESE. Published by G. P. Putnam's Sons, 2-6 West 45th St., New York. With 62 figures and 28 plates; 358 pages. Price, $2.50.

MODERN MEDICINE. Its Theory and Practice. Edited by Sir WILLIAM OSLER, Bart., M.D., F. R. S., and THOMAS MCCRAE, M.D. Published by Lea & Febiger, Philadelphia and New York. Volume 5; second edition; thoroughly revised; illustrated; 1092 pages.

GYNECOLOGY OF OBSTETRICS. By DAVID HADDEN. Published by the Macmillan Company, New York. Illustrated; 198 pages; price $3.50.

SCHOOL HYGIENE. By LEO BURGERSTEIN. Published by Frederick A. Stokes Company, New York. With 43 illustrations and diagrams; 188 pages.

THE INTERNATIONAL MEDICAL ANNUAL. Published by William Wood & Company, New York City. Illustrated; 760 pages; price, $4.00 net.

REPORT OF THE HEALTH OFFICER OF THE PORT OF NEW YORK. Transmitted to the Legislature, January 14, 1915. Printers, J. B. Lyon Company, Albany; 264 pages.

WHAT EVERY MOTHER SHOULD KNOW. By CHARLES G. KERLEY, M.D. Published by Paul B. Hoeber, 67-69 East Fifty-ninth Street, City; 107 pages; price, 35 cents.

OCCUPATIONAL AFFECTIONS OF THE SKIN. By R. PROSSER WHITE, M.D. Published by Paul B. Hoeber, 67-69 East Fifty-ninth Street, City; 165 pages; price $2.00 net.

THE CLINICAL ANATOMY OF THE GASTROINTESTINAL TRACT. By T. WINGATE TODD, M.D., Ch.B. Published by Longmans, Green & Company, London, New York, Bombay, etc.; 264 pages; price, $1.75 net.

WAR SURGERY. By EDMUND DELORME. Published by Paul B. Hoeber, 67-69 East Fifty-ninth Street, City. With illustrations; 248 pages; price, $1.50 net.

THE OPERATIVE TREATMENT OF CHRONIC INTESTINAL STASIS. By SIR W. ARBUTHNOT LANE, Bart., M.S. Published by the Chicago Medical Book Company, 1915. Third edition. Price, $4.00; 201 pages.

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Therapeutic Hints.

Treatment of Colitis in Infancy.—Hutinel is said to recommend irrigations of the colon with the following solution:

℞ Solution of hydrogen dioxide, 50 grams.
Sodium phosphate, 3 grams.
Sodium chloride, 5 grams.
Sodium bicarbonate, 0.5 gram.
Boiled water, 1 liter.

—*Riforma Medica.*

For Intestinal Indigestion.—The following is said to be efficient:

℞ Calcined magnesia.
Cream of tartar,
Flowers of sulphur, āā 30 grams.

M. et Sig.: One teaspoonful every morning on a fasting stomach.—*Riforma Medica.*

The Treatment of Graves' Disease.—Rummo is said to prescribe the following:

℞ Iron bromide.
Zinc bromide.
Monobromated camphor, āā 1.50 grams.
Calcium glycerophosphate.
Ergotin, āā 6 grams.
Zinc phosphide.
Extract of cannabis indica.
Extract of belladonna, āā 0.60 gram.
Extract of coca, q.s.

M. et div. in pilulæ, No. 120.

S.: One pill three times a day.—*Riforma Medica.*

The Treatment of Tuberculous Peritonitis.—M. Bonnamour is credited with the use of the following ointment:

℞ Iodine, 2 grams.
Potassium iodide, 2 grams.
Petrolatum, 30 grams.

—*Journal de Médecine et de Chirurgie.*

Treatment of Ascites.—Litard is credited with the following formula:

℞ Tincture of digitalis, 5 grams.
Tincture of adonis vernalis, 10 grams.
Tincture of jaborandi, 15 grams.

M. et Sig.: Twenty-five drops three times a day. —*Riforma Medica.*

Treatment of Catarrhal Conjunctivitis.—P. Prélat recommends the use of the following collyrium:

℞ Ammonium chloride, 0.07 gram.
Zinc sulphate, 0.15 gram.
Camphor,
Saffron, āā 0.01 gram.
Boiled distilled water, 15 grams.

This solution is known as the "yellow eye wash." It sometimes causes a painful reaction, in which case the amounts of ammonium chloride and of zinc sulphate should be reduced.—*Bulletin Général de Thérapeutique.*

Sulphur in the Treatment of Typhoid Fever.—Goubeau reports that he has treated a series of thirty-one cases of typhoid fever with this element without a single fatality. Following the initial purgation by means of calomel there are given by mouth five or six times daily cachets or powders each containing one gram of flowers of sulphur. During the first fifteen days of convalescence the drug is given in gradually diminishing doses. The effect of this method of treatment is to lower the temperature and to diminish the intensity of all the other symptoms.—*Bulletin Général de Thérapeutique.*

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Original Articles.

THE CLEARING HOUSE FOR MENTAL DEFECTIVES.

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NEW YORK.

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THE present public interest in the care of the mentally defective seems to be the culmination of a growing feeling among social workers of all types, as well as among physicians interested in this field of work, that some underlying cause must be found for the failure of so many, both adult and juvenile, to hold among their companions the place normally theirs, both in work and in school.

History of Development.—The official recognition of this need in New York City came from the judges of the Children's Court, before whom were taken juveniles, charged with offenses which seemed to be due to mental or moral defects, rather than to causes correctable by the penalties usually imposed. These children were first examined at the instigation of the Society for the Prevention of Cruelty to Children. At about this time, Mrs. William K. Vanderbilt became interested in the general subject and gave freely of her attention and money to the extension of the work. Through her generosity it became possible to develop the work of the Clearing House, and also to secure the services of a proper medical staff upon Randall's Island.

As a result of her efforts, Commissioner Drummond, of the Department of Public Charities, awoke to the necessity for the establishment of such an examination in connection with the feeble-minded and epileptic, who were constantly transferred to his department from other institutions, or for whom admission to the institutions under his control was desired by parents and social workers.

Previous to this time there had been no definite examination of such applicants. The statement of any private practitioner, whether a competent neurologist or not, had been accepted as sufficient authority for the condemnation of a patient to institutional life for so long as his natural guardians might choose, or for an indefinite time, and in many instances for all life.

The problem of finding a suitable place for carrying on the work of these examinations was solved by the generosity of the board of trustees of the Post-Graduate Hospital. The Clearing House is established in the hospital, and patients are admitted through the dispensary, as is done with its own clinics. The work of the Clearing House has been greatly facilitated by this intimate connection with a thoroughly equipped hospital. Patients may readily be transferred, for instance to the eye or ear clinic for treatment of defects of the special senses; Wassermann tests may be given, and any physical disability may be properly treated in conjunction with the examination given at the Clearing House. The extent of our obligation to the Post-Graduate Hospital is thus obvious.

An advisory committee of influential women was organized, later, with Mrs. Charles Dana Gibson as chairman; its aim being the support and direction of efforts in behalf of this work. It is with deep gratitude that the interest and assistance which this committee has rendered the Clearing House are here acknowledged.

Purpose.—The underlying purpose of the Clearing House is to deal with the problem presented by the mentally unfit members of the community, in order that the most dangerous of them may be eliminated from among the possibilities of menace, and in order that the least harmful may be adjusted to their surroundings. Aside from giving this practical help to the people of New York, the institution is also gathering definite information concerning the numbers of such defectives within the city limits. Later this information will prove its usefulness by forcing into prominence the question of proper segregation.

When the petty details which so far have obstructed the work, are relegated to the background and the question is viewed from the broad standpoint of the future welfare of the race, it presents a striking likeness to the struggle which during the past two decades marked the effort for improved, that is, scientific and humanitarian, treament of the insane. The contrast between the present kindly and comprehensive care of the insane and the neglected or abused state into which they invariably fell when left to the mercies of indifference, greed or chance, shows the absurdity of any claim that the present haphazard care which is vouchsafed the feebleminded is the best possible. It is a fact beyond dispute that the Clearing House is an important step taken toward the ultimate goal of an adequate solution of this great problem.

It seems advisable to emphasize, at this point, the fact that the work described in the following paper is not only serving its current purpose as well as may be under the circumstances, but that, also, it is amassing valuable information upon which may be based future research into the cause of mental defects. Without such knowledge there would be no hope of ever lessening this evil which so notably and increasingly afflicts the human race.

The scientific detention, diagnosis, registration of and research into mental deficiency is the aim of the Clearing House for Mental Defectives, and in carrying out this purpose the following plan should be developed:

All persons found to be socially unfit, actually or potentially, as a result of suspected mental de-

fects, should be referred to the Clearing House by the agent of the department or society which originally discovers them, and in the Clearing House they should be subjected to the following procedure: (1) Complete registration and identification of the person by means of photographs, fingerprints and mental and physical measurements; (2) diagnosis; (3) recommendations for care, treatment or training proper to each case; (4) follow-up work.

1. *Registration.*—First should be noted the name, age, occupation, personal, family, and social history of each applicant, so that a fair conception of his status in the community may be available at a glance. Then his photograph should be made, and, if he has any unusual physical deformities or markings these should be photographed and their cause noted if known. Fingerprints and Bertillon measurements should be made and recorded.

Such measurements were undertaken when the Clearing House was inaugurated, but lack of help made it necessary to abandon them. At present photographs are only made in the most important cases showing unusual conditions.

The primary importance of complete registration and identification at once becomes apparent if we recall that it is from just this class of mental incompetents that the community's criminality, degeneracy, and pauperism develop. The percentage of feebleminded among social offenders is very high, and it is accepted as axiomatic that every mentally defective person is a potential criminal. If the finger prints of all feebleminded persons were on file at the Clearing House, the prints made or secured by the police in any baffling case could be easily sent there for the proper comparison and identification. When the offender has been traced, thus a great service would have been rendered to the police, and later the Clearing House records would be of important value in the courts, as guides in the determination of mental responsibility and the just disposition of those found guilty of crime.

2. *Diagnosis.*—After registration and identification, patients are sent to the psychologist, who examines them by the various mental tests, and determines whether or not any mental retardation is present. They then are sent to the psychiatrist for further examination, to determine the nature of, and if possible, the cause of such retardations as may have been discovered. These may be due to actual mental defects, or to physical causes which often are amenable to treatment, or to mental instability which may be attributed to various factors and often may be curable.

Many cases are referred to the Clearing House, also, in which mentality apparently is not retarded; in fact, cases in which exists mental activity amounting to precocity are not unknown there, but the affective side of the patient's life in such instances is deranged, thereby causing him to commit acts which in themselves are menacing to the community. Sometimes such derangements are only temporary in character, and frequently they are the result of emotional disturbance during the period of adolescence. Persons so afflicted may become sexual perverts, kleptomaniacs, pyromaniacs, moral imbeciles, and in some cases must be segregated in order that they themselves and others may be guarded from grave social dangers. There can be no question of the necessity for their early discovery.

Very little is known about these phases of affective derangement, even by expert psychiatrists, and many cases unfortunately are diagnosed as either feebleminded or insane that really are neither, but are amenable only to treatment quite different from that which is effective in such diseases. Only the specialist can differentiate properly between such conditions and trace to its cause in each case the psychopathic sympton, obvious, perhaps, to the most superficial observer.

On the other hand, nothing is more important than that the diagnosis in each case should be based only upon the most scientific knowledge and highest technical skill, for a wrong diagnosis may often mean treatment so improper that it may result in untold danger to an individual or to society. These are of the many cases which especially demand expert and patient observation before any recommendation properly may be made for their treatment and segregation.

Upon this diagnosis, naturally, depends the course to be pursued in the treatment of the individual. Particularly among children there are many cases which show a decided mental retardation due to some removable cause and which therefore are not actual cases of deficiency. As an illustration may be cited the case of a boy who was sent to the Clearing House.

He was fourteen years old. His mother stated that he had been perfectly normal, well behaved and regularly promoted in school, previous to his eleventh birthday. At about that time he began to complain of headaches, became very irritable and fell so far below his school grade as to be lower at the end of the year than he had been at its beginning. He was placed in an ungraded class, and, later, it was decided to take him to the Children's Court on the charge of incorrigibility. His teacher, however, advised sending him first to the Clearing House.

There his retardation was found to equal the lack of three years' normal mental growth, and that this mental retardation, his decided mental irritability and his incorrigibility all were due to the irritating effects of a chronic abscess in the frontal sinuses. By means of an operation the pus and necrotic bone, which had existed from the time the symptoms began, were removed.

Soon afterward the boy began to improve, and from the latest reports which have been received of his case at the Clearing House, it is evident that he has recovered entirely and to-day is normally adjusting himself to his environment. From this case it can be seen that conditions exist which simulate feeblemindedness and which will result disastrously if they are not recognized and corrected.

Another vital function of the psychiatrist is the separation of the vicious from the harmless feebleminded. Of course, those who are a menace to the community should be given preference for institutional care. There is a real necessity for the separation of the delinquent mental defective from the dependent and non-delinquent mental defective.

This could also be done at the Clearing House. In fact, it is being done there now to some extent, Moreover, the Clearing House can be of great help to the courts in determining whether individuals who have committed crimes are, or are not, mentally deficient, as well as recommending proper care and treatment for those who are. The statistics for the last last two years show that in about one case in ten of those brought to the Clearing House come directly from the courts. By far the greatest num-

ber of these are sent from the Children's Courts and referred to the psychiatrist for examination and recommendation by the probation officers and judges. In the twenty-one months following its establishment, 521 court cases were thus taken at the Clearing House. Many of these delinquents were repeaters who had appeared in the courts two, three or four times, and had simply passed from one term of imprisonment or probation to another without being recognized as inherently defective. Besides the courts, the agencies that have contributed the greatest number of patients to the clinic are the charities, the schools, the hospitals, the orphan asylums, and the various homes of refuge. About one case in eleven is referred to us directly by the schools, and about an equal number come from the charitable societies. In the year 1913, patients were referred from 150 different sources. Owing to the lack of a statistician, the exact figures for 1914 are not yet available.

At present the Clearing House, while not able to carry out its ideals in a manner satisfactory to itself, nevertheless is really serving the community at large by doing as many things as its limited equipment will allow. In all essential points it is doing as well as is humanly possible under the existing circumstances.

Patients are being sent to the clinic daily by the courts, private charities, children's societies, settlements, school teachers, probation officers, and many other social workers. Not only are the physicians asked to diagnose degrees of deficiency and to help in the commitment of those clearly defective, but also to examine many who, after careful investigation, are found to be mentally normal. Such negative findings are surely contributions as valuable both to the individual and to the society concerned with them as is the other function of the Clearing House—that of detecting those who actually are feebleminded. Many agencies which refer cases to us have been kind enough to state before the State Commission and to me personally that they count upon our co-operative work to help them to determine the true character of those with whom they have to deal.

In the year between October 1, 1912, and October 1, 1913, 5000 visits were made by patients, for the purpose of treatment or examination at the Clearing House, and in the following year, *i. e.* from October 1, 1913, to October 1, 1914, this number increased to more than 7800. This proves the growing value of the institution to the community and, therefore, the increasing necessity of properly equipping and supporting it to meet the increasing demands upon its services.

At the present time many individuals are sent to Randall's Island from different hospitals and institutions without a definite preliminary examination, or, at least, unaccompanied by any report of such an examination. There is no way of ascertaining anything about these patients after they have been sent to Randall's Island unless members of their families call on them, and it is difficult to get the information necessary to the records even from such members of their families. Therefore, it seems advisable that all cases suspected of being feebleminded should undergo a careful examination at the Clearing House before they are admitted to Randall's Island.

This would seem to be especially imperative in the cases of children who come under the jurisdiction of the various juvenile courts for delinquencies of such a nature as to justify the suspicion of mental defect. In such cases it is highly important that a thorough and careful analysis of the child's condition be made after an extended period of observation and under a uniform system of medical inspection.

Because of their mental condition the inmates of our institutions for defectives cannot explain to the doctors their symptoms, and medical men of special training and long experience are therefore required for the medical treatment and general care of these defectives. Only through the existence of a uniform staff of physicians in touch with the work of all the city institutions of this nature, including the courts, the Clearing House and Randall's Island can we hope to have the best possible work done.

This also is true in the courts for adult offenders, particularly as regards cases of prostitution, vagrancy, and crime which give strong reason for suspecting mental deficiency as the fundamental cause of the delinquency. Such cases are now referred to the Clearing House for diagnosis, as we have before pointed out, but because of the lack of facilities and the lack of uniform medical control the examination cannot be extended over a period of time sufficient to insure accurate observation.

3. *Recommendation for Care and Treatment.*—It distinctly must be understood that recommendation for institutional care is not at all the only nor the most important function of the Clearing House. The institutions for mental defectives in New York State accommodate, approximately, 4900, and the best authorities estimate that there are almost an equal number improperly cared for in our prisons, reformatories and almshouses. As it also is regarded conservative to estimate the total number of defectives in the State at 30,000, about one-half of them are residents of Greater New York, it is impossible, of course, even to consider institutional treatment for all as a present remedy. But because of these inadequate accommodations it is the more important that a careful and scientific diagnosis be made of all cases, precedent to commitment, in order that those who, because of utter dependency or malicious delinquency, are a menace to society may be given the preference in our institutions.

It is, therefore, also of primary importance that all other cases, not so placed in institutions, should be studied carefully, and, if possible, treated so as to fit them to adapt themselves to their environments, or that an available environment that is most suited to their limited capacity for self respect and self support shall be recommended for them. This would include, for instance, the adjustment of court cases through the children's societies and the adult probation agencies, and the cross-references of such cases to the various homes, vacation centers, and social clubs conducted by our private charities. In many instances clinical treatment, such as is offered by the various hospitals and dispensaries should be made use of.

In other words, where it is not feasible to segregate all who are feebleminded, it is necessary to have such an organization as the Clearing House to select for institutional care those who form the greatest source of peril to the community, and to help the others to maintain as normal a social life as is within their capacity, adapting the form of such help to the particular needs of each individual and determining these by careful educational, psychological, medical, and psychiatric research.

Follow-up Work.—Although it properly may be regarded as a most important adjunct of the work, as yet it has been possible to inaugurate in only a slight degree the system of following up cases after they leave institutions, with the purpose of keeping complete records of their lives and surroundings from the time of their appearance in the Clearing House. A study of such records will lead, it is hoped, to a knowledge of the causes of amentia, to the education of the public with regard to the vast number of these people in our communities, their special needs, the menace which they embody and the necessity for an intelligent consideration of the best way in which to meet the question of their care.

Consideration of the great number of these defectives would make it seem a heavy and expensive task to register and examine all of them, but if this is not done they sooner or later will prove an expense to the city through custodial care in institutions primarily maintained for other classes, such as prisons, reformatories, and hospitals. Moreover, never having been identified as mental defectives, many now are likely again and again to appear in various of these public institutions, whereas their first appearance before a city department might be made their final one if, on that occasion, their mental status was defined for all time by the primary examination in the Clearing House.

Present Staff.—Although the Clearing House had an official connection with the Department of Public Charities, it is now independent of that department, and is located as heretofore in the Post-Graduate Hospital. Over 7000 cases have been examined by the ten physicians attached to the staff. Only two of these were paid by the City of New York. The work done by the others is entirely voluntary. Should the volunteer physicians withdraw, the efficiency of the Clearing House would be so badly impaired that it would fail to satisfy the demands made upon it.

To cover the needs of New York City, such an institution should be equipped with a competent paid staff, consisting of at least ten assisting physicians, four psychologists, one chief examiner, eight stenographers, one filing clerk, one finger print expert, one statistician, three trained nurses and social investigators. Only by enlarging the staff in this way can New York City properly cope with the insistent problem of the mentally defective. Only in this generous way can the many departments of government and the auxiliary social agencies concerned, be assisted in their efforts to provide for those who because of mental defect have become a burden and a menace to society at large.

The intention of the director has been to have the Clearing House serve as an experiment for the city and State. The care of the feebleminded is not properly a local, and most assuredly not a private philanthropic matter; it must ultimately be borne entirely by the State. A chain of public psychopathic clinics should be established in the various population centers of New York State, and maintained as part of a State wide program for detection detention, training, and study of the mental defectives in the community. In order to make the work more uniform, and the results of greater social value, these clinics should be organized and directed by a State board to be appointed by the Governor. The members of this board, serving voluntarily, and representing all the various professions interested in this problem, could do much, aside from their supervision of these clinics, to advance the cause of social prophylaxis in mental defect.

In theory our program for the adequate care and ultimate control of feeblemindedness has long been known to the expert, and accepted generally by the public. In brief, we must care for our unfortunates in ungraded classes in the public schools, in special training schools, and in custodial asylums, depending entirely upon the degree of deficiency. This can be determined only after the most thorough medical, psychological, and social examination in a well equipped psychopathic clinic. We must also conduct scientific research into the etiological factors of amentia in laboratories to be established at all our public institutions.

All this must be done as part of a co-ordinated, unified attack on the whole problem, and must be made by the State authorities.

The greatest barrier to the furtherance of this programme has been the lack of co-operation on the part of the experts in the various fields of social effort that come into most intimate contact with the feebleminded, and should therefore work in the greatest harmony for their betterment. The present spirit of jealousy, personal ambition, and petty partisanship must give way to a large and more truly social spirit of co-operative effort toward the one purpose that is common to all—the public provision for the feebleminded, and the public prevention of feeblemindedness. In this we must all unite if we are to preserve and develop the mental stability and moral integrity of the American people.

Since the writing of this article the Department of Public Charities has withdrawn its help from the Clearing House for Mental Defectives. The Clearing House for Mental Defectives will continue, however, to do its work as heretofore at the Post-Graduate Hospital.

40 East Forty-first Street.

INDIVIDUALISM OR INSTITUTIONALISM.*

By C. N. B. Camac, M.D.,

New York.

What some of our graduates are doing.—I would like to speak first of some of those who have gone out from this school and who are taking their place as useful members of the community. Many of you know of the work being done by these various members of the alumnæ, but some of you may not, and I am sure our many guests here to-night are not familiar with the work of our graduates. The superintendent of Mount Sinai Hospital of this city is one of our graduates. The superintendent of Binghamton City Hospital, Binghamton, N. Y., is another. The superintendent of the Mount Vernon Hospital, New York, is also a graduate. Miss Jane Dindall, whom so many of you know, is superintendent of the University Hospital, Ann Arbor, Michigan. The superintendent of the Fairfield County Hospital, Fairfield, Iowa, comes from the City Hospital Training School. That is, there are five institutions whose hospital and training school are being conducted by graduates of this school.

In charge of the first division of the Canadian Military Corps of Nurses is Miss MacDonald, one of your alumnæ. This is her third war experience. In charge of the second division of the Canadian Military Reserve Corps of Nurses is Miss Ethel B. Ridley, a graduate and former superintendent of

*Address to the graduating class of the City Hospital Training School.

this school, well known to you all. This is her second war experience. These are the only two reserve corps which have been sent out thus far (October, 1914) by Canada, and they are both in charge of alumnæ of this school.

Two weeks ago (October, 1914) the Red Cross ship sailed from New York, with 100 nurses called "nursing sisters," and among these as chief nurse of the Brooklyn division was a graduate of this school. We had on that boat also another graduate of this school, and on the Greek boat, consisting of twelve nurses, was another graduate.

Two or three weeks ago I visited Montreal and Quebec. I took lunch at the Montreal General Hospital and discovered that so many of the internes had gone to the front that they had begun to draw on the American medical profession for internes. At Quebec I visited the Princess Patricia Camp, consisting of 11,000 men, and the Valcartier Camp, where there were 33,000. It was a wonderful sight, practically miles of tents in one of the most beautiful sections in the Province of Quebec. I visited the hospital of the latter camp, and while I confess to a thrill at this tremendous military display, which is unlike anything our generation knows, the thrill which I experienced was much deeper and more real as I saw the battalions of those serving in the Red Cross.

The medical division of the army.—In the medical division of the army there are no party lines, and no national lines. To build up and not to destroy is the main object of that group. Military history abounds with the names of those whose deeds fill us with admiration—men like Chinese Gordon, Hedly Vickers, and Stonewall Jackson, noble characters who rightly have a lasting fame, yet these widely-heralded heroes had especially the spirit of adventure and boldness, while in the medical division of the army there is, I think, also something of the spirit of the Master who came "not to destroy but to save men's lives."

Public recognition of medical services.—Governments are not prone to commemorate by statue or tablet the deeds of this army, fighting to prevent and rebuild the ravages of disease and war. There is in New York, with its many memorials, but one public statue to a member of our profession. In Boston the most conspicuous tribute to medicine is not to the discoverer, but to his discovery, anesthesia. This country on several occasions was terribly stricken by epidemics of yellow fever and cholera against which many men and women in the medical and nursing profession fought; yet not a single public statue exists to teach the lesson of self-sacrifice and devotion of this heroic army, many of whom gave their lives in the fight. In London Florence Nightingale this year only has received public recognition by a monument. This recognition would never have come, I believe, had not Miss Nightingale's first field of work been the military camp, which governments honor so freely. Jenner suffered mortification from a public discussion in Parliament over the question of whether his world-wide work in smallpox vaccination was worth £10,000 or £20,000. That the United States Government is erecting a building in Washington to commemorate the services of the nurses in the Civil War is a noble tribute, but here again it is war which has called out this recognition.

What of all those faithful, persevering lovers of truth who labor in the seclusion of the laboratory and hospital in the long unspectacular years of peace?

An essential quality in the nurse, the physician, and scientific worker is modesty and self-effacement. The greater the experience in this vast field of medicine the more modest and unobtrusive does the individual become, but it seems unfortunate that these lessons of self-sacrifice and perseverance equal to that of any soldier, sailor, or statesman should be so seldom taught by statue or memorial tablet.

A letter from the front.—If what I have said about our profession not having national lines seems to be an exaggeration, let me read to you a letter from one of your alumnæ—a letter written not from the front, but from the field of duty, a letter simple and full of such soldierly willingness to go and obey orders without murmur or self-consideration; a letter which expresses by its very simplicity, far more eloquently than I can, this spirit of—what shall I call it?—*service*. As you hear this letter, picture to yourself what I saw at Quebec—nine great ocean liners, the largest we know, ready to sail. Imagine yourself as a trained nurse waiting for orders to embark. The call comes and you go on board, cross the Atlantic, and in a day or so you are to land, and this is what you write home, possibly the last of your uncensored letters. Hereafter you will be permitted to send from the military camps printed post cards only, containing stereotyped news, which you will mark

On Board the "Red Cross"
Sept. 25th, 1914 (Nearing London)

My Dear .....

We are nearing our journey's end after a very pleasant trip. They promise that we shall come in sight of land this afternoon and probably land early to-morrow morning. Contrary to expectations, I am to land also, for last evening they made many changes in the units *and my turn came.* [Italics not in original.] Am now assigned to a unit bound for England. I have been thrown entirely with another group of nurses since coming on board and have not met any of the group for England, but I suppose we shall soon get to know each other. One other nurse goes along with me. One of my friends is still with the group for Germany, but I was told yesterday that both groups may be united. The Supervisor of this group is a most charming woman and I had hoped to be with her. Do not know my new supervisor, except by name.

The time on board has passed very, very quickly. They have held us down to classes a great deal of the time, more I think to keep us busy than for anything else, except the language classes. They have been very strenuous, but now our native tongue will be all I shall need—probably. There is still chance for another change though. One of our party goes to Russia, so will be with us until our arrival in London. I wonder what the next few days will bring forth and if there is the slightest chance of our still meeting in England. I still hope so.

Do you know where Miss ..... is? I know she is in some sisterhood over here and will undoubtedly be in the volunteer nursing work now. It would be wonderful to meet her.

Our mail is to be sent to U. S. Despatch Agency, 4 Trafalgar Sq., London, England, and if you know Miss .....'s address, do send it to me there.

The time here has passed so quickly it doesn't seem three weeks since I saw you. I wonder if there are changes with you.

Will send you cards as opportunity comes.

Yours very sincerely,

The simplicity of that letter speaks for itself: the willing soldier ready to take her orders to go in any direction and to receive changes and alterations in plans which she may have set her heart on. I wish it were more generally known how this

spirit actuates the large majority of your profession.

What is required of the trained nurse to-day?—I have told you of the work of some of those who have gone out from this school and now, may I speak to you, who are just leaving the school to begin your work? What does the field of nursing offer you to-day, or rather, what does it ask of you? There is a greater demand for the trained nurse to-day than at any time since the profession of trained nurse came into existence, because, added to the work of merely bedside nursing, are the many new fields of activity for members of your profession.

Over 1½ per cent., or nearly 2,000,000 people, of the population of the United States and Canada, succumbed to disease in a year—this does not include the great mass of non-fatal illnesses requiring careful nursing, nor does it include the vast number of accident and surgical cases, both fatal and non-fatal, and the confinement cases of which there were 2,000,000 last year in the United States and Canada. Compare these figures with the number of trained nurses in the United States and Canada, and it will be evident that there is abundance of work for the trained nurse, but that the laborers are few. Why, then, is it that the applications for the profession of trained nurse are so much fewer in recent years? Is the trained nurse underpaid? This question has been under discussion in many of your associations, but in dealing with the subject the same difficulty as that referred to in the matter of public recognition exists. It is hard to estimate in dollars and cents what trained nursing is worth to the public and the State. In business enterprises this would be estimated to a nicety, and the nurse would be paid accordingly. Business enterprises, having made such estimates, offer higher salaries to women and they are, in consequence, drawing women away from the vocation of trained nurse. While the salary of the trained nurse has not increased commensurately with the salaries paid by business pursuits, the demands upon her have increased far beyond that made by business.

The good women who followed Miss Nightingale did so with no other impulse than to care for the sick and suffering and with no training—she trained them. Hundreds of all classes flocked to this new occupation and few were incompetent. To-day you enter a highly cultivated field requiring individual efficiency and technical training. These high standards, together with the great increase of vocations for women, also explain why the number of applicants at the training schools has so greatly fallen off. Hospital and training school associations are discussing the nursing problem with regard to the "individual efficiency" of the nurse, her "preliminary training," and her early social and domestic influences. The medical profession is asking for nurses trained in operative and obstetrical work, in the care of contagious diseases, in pediatrics, in dietary and metabolism work, and the State is asking for those trained in municipal and social work, and the trades are employing nurses in the accident and preventive departments of factories and great industrial plants. It is only forty-four years since the first school of nursing was established in the United States. In 1880 there were only fifteen training schools, with 323 students. In 1911 there were 1048 schools, with 16,511 students. In 1911 there were 11,384 registered nurses in New York State alone. Such extraordinary development in so short a time in a practical country like this indicates the demand that has existed for the trained nurse and is evidence of the requirements which the future will make of your profession. All this means that your calling has become a highly technical profession, essential to the welfare of the community, and the woman who would succeed must select her line of work.

Setting aside now the large question of salary and trained nursing as a vocation for women, to which I have referred, I will speak of the problems which confront the graduate. Somewhat the same problems exist for the medical graduate and each of us must take stock of our capabilities, our early training, and social associations, in order to determine where our place is, but the trained nurse, especially, will meet either failure or spend many useless years finding out her mistakes if she enters her profession haphazardly.

It has been my observation that the heads of training schools do not sufficiently impress their pupils with the importance of this consideration of individual efficiency and fitness.

Fields of work for the trained nurse.—It is impossible in a brief space to consider all the openings for the trained nurse, but I would group them under the three following headings:

Philanthropical, under which come municipal work, social service work, district visiting, special clinic nursing, Red Cross, home nursing (not private nursing—see below).

Institutional, under which may be included heads of hospitals and training schools, heads of departments, heads of diet schools and kitchens, heads of operating rooms, hospital anesthetists (see below), heads of accident departments in stores and industrial plants; and finally,

Purely bedside nursing, including general nursing, surgical nursing, pediatrics, obstetrics, contagious diseases, neurological cases, mental cases.

I will refer in particular to two of these, as they are less familiar to most of us—home nursing and hospital anesthetists.

By home nursing is meant the care at their homes of hospital and dispensary patients. It is different from social service and district nursing work, although somewhat similar. Many clinics and hospitals have adopted this method of caring for patients. There is, of course, a salary connected with the work, but it requires a worker with a philanthropic spirit. It is now well organized in several cities, especially in Boston. In the American Hospital Association report for 1913 this work is fully described.

The work of hospital anesthetist has devoloped very rapidly in this country. In Germany, licensed physicians only are allowed to administer anesthetics and in France the internes are employed exclusively in the hospitals. In the United States certain States allow only licensed physicians to administer an anesthetic. About 14 to 25 per cent. of the hospitals in Canada and the United States employ nurses for this work. These nurses receive a salary of from $300 to $1,200 a year with maintenance. In the Mayo Clinic the nurse anesthetist has administered to over 10,000 patients. These nurses assist in the operating room and so gain additional experience. In the report of the American Hospital Association for 1911, Vol. XIII, this work is fully discussed.

At the City Registry, 52 East Thirty-fourth Street, New York City, under the charge of Miss Yocum, a graduate of this school, is a card index showing the institutions in need of workers and heads of departments, and also the names of those desiring such positions. There should be such bureaus throughout the country. I am told that this is the first of its kind.

The higher call.—Out of every class of graduates, it should be possible to group those suited for each class of work such as I have outlined. Those whose ambition is to follow the more specialized lines of work should be encouraged to pursue special studies. Many a nurse will, of course, find that she cannot afford to take more time for study; must get into active, remunerative work at once, but I am speaking now more especially to those who have heard the call and have proven themselves fitted for such work. To these I say, if the purpose is kept clearly in view and every period of slack business is used to further that purpose, the end will be gained. These obstacles confront the medical graduate also, but I have yet to see the man or woman of real worth, with set purpose, who is blocked permanently by this obstacle. Yes, there are those at home depending on you, or there is that brother or sister to educate—these are ennobling incentives to good work and to the keeping of your purpose to the front. Take all the cases you can get, send the money home—keep the purpose to the front—that sister or brother will finish the education and in turn will help you with the support of the home. The purpose has been kept to the front, and presently you will emerge fully equipped for your special work—appointment to it will come. To win out in a fight like this brings a sense of fitness and joy in work well worth the struggle.

I am certain that many of you have higher motives than the "qui bono," "what is there in it for me?" "What am I going to get out of this" spirit. I believe that in a body of young women or men starting on a career, there is a large percentage that hears the call, and longs to answer it. You are not looking for the easy money-making situation. You have had aroused in you during the early years and in those of training, desires to do something, to fill some place, and in acting upon this desire you have found abilities before latent—a sense of freedom, of power has come over you. *That is the Call*—and on the efficient, untiring answer to that call result the great deeds of heroism, of courage, of devotion, of progress, for the betterment of the world. The prosaic selfish side of our nature, and even members of our family will discount and ridicule these yearnings for up and doing—verily these latter "have their reward." Such people are the dull commonplace, whose only use is to test our perseverance. They must be resisted and left far behind. Stimulating and exhilarating as is this call, danger lies in the haphazard response. To hear the call is not to be fitted.

Institutionalism.—I have spoken of individualizing in the preparatory studies, but it applies also to our postgraduate work. I say "our" because we are of the same profession. A danger confronts us in these higher lines of work. This danger is best expressed by the term "Institutionalism." I think I can make this clear by citing two incidents. At Guy's Hospital in London, Dr. Bryant, a venerable pillar of that institution, was visiting the accident ward. He was standing at the far end of the ward, possibly in dreamy retrospect of the days when he was a young surgical interne. With him was a small group of admiring students. From the far end of the ward there came a dainty, mincing, young nurse, who approached the distinguished visitor (who, of course, was unknown to her) and said, "Take off your hat, please." This young woman was an excellent example of perfect institutionalism, with eyes for nothing but the ward sign, "Remove your hat."

Upon another occasion I visited a hospital on a mission of mercy. Full of an impulse to help the unfortunate patient whom I had come to see, I entered the office of the head nurse to inquire in which ward he was. A tall figure rose and, placing two fingers on the table, said, "What may I do for you?" It was as if a chill air had struck me. I explained my object and she replied, "Well, it's after visiting hours; anyhow, I think he died this morning." This is another example of "perfect institutionalism."

You laugh at these instances, but I assure you any one of us may develop this machine-like manner after several years of institution work.

There is an active campaign in many of our hospitals against this institutionalism, but it really depends upon each one of us whether we will allow institutionalism to steal away our human sympathy. Dr. Woelfkin has spoken very beautifully of this with regard to the attitude of nurse to patient. Many men and women think that acts of sympathy in an institution are evidence of foolish sentiment detrimental to efficient work. I think it is safe to say that the nurse who does not cultivate the sympathetic attitude toward all about her in an institution or in private work reduces her efficiency by at least 50 per cent.

Business to-day, keen for every point of advantage, places *manner* high in the scale of efficiency of the employee. The following instructions are taken from a printed list for the guidance of employees of one of our large railroads:

"Words are only one means of expression and manner is quite as important; therefore, remember that a kindly and gracious manner is not only the sign and mark of a self-respecting man, but it is to your words what oil is to machinery in making them more efficient to their purpose."

Over the gateway of the great Virchow Hospital is this inscription, "Treat the patient but don't forget the human being," which, I think, best expresses what I mean by "individualism" rather than "institutionalism."

But, I see here on the table a lot of diplomas to be given out, and furthermore I am mindful of the words of President Hadley of Yale, who, when asked by a speaker how long he should talk, replied, "That is at your discretion, but there is a tradition here that no soul is saved after twenty minutes." The hands of the clock are close to the salvation point, so, in the name of the Medical Board which I represent at this gathering, I wish you "godspeed."

128 East Sixtieth Street.

Medication by Inhalation.—G. Moretti has performed a series of experiments which show that the mucous membrane of the respiratory tract is capable of absorbing to an appreciable degree for therapeutic purposes drugs insufflated in the form of a dry powder, notably the iodides and compounds of calcium.—*Giornale Internazionale delle Scienze Mediche.*

MEDICAL AND SOCIOLOGICAL PROBLEMS OF DEPARTMENT STORES AND THEIR RELATION TO TUBERCULOSIS.*

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Published reports of the industrial improvements relative to the health and welfare of employees often betray unwarranted enthusiasm. Few at all comprehensive publications have appeared dealing with the activities and achievements of department stores in reformative directions. Some of these have been stigmatized as "misleading in many points" and no statistical or discoursive studies have been made with respect to tuberculosis as a department store problem. It may, therefore, not be amiss to study and compare the essential facts, as they are revealed by what records there may be, and to open a field which promises to be fruitful in benefits.

The existing conditions may be classified under the headings economical, social and sanitary; but these are more or less associated and include the many other still disputed questions. The subjects of hygienic conditions, average wages and hours of employment are gaining due publicity and their relation to the moral standards of the community is being recognized. Education, the public Ganymede, holds out the beacon, and promises to solve some of the problems of sanitary science. It finds its greatest obstacle in the conditions of labor and home life, created in the rapid development of the industrial revolution.

In considering changes for the improvement of the conditions of a community, whether from a sanitary or a social standpoint, it is reasonable primarily to acquaint oneself with the existing habits of the people, with respect to the necessaries of life, their home conditions, their sources of income, and in what measure the modes of their life and their occupations are unfavorable to their health. These have all been discussed with respect to the organized industries, but the motley crowd of unskilled employees of department stores have been passively waiting for the study which is but now on the wing. The economic conditions of department store employees are well known. In some families, where management is poor, or from which money is drained by sickness or intemperance, there is often indebtedness for food and other commodities. The more frugal or fortunate provide for a duller hour. The great proportion fluctuate between these limits, with the variations occasioned by sickness, seasonal unemployment, and those many domestic changes that may affect each household.

In speaking of department store employees as a class, it should be noted that salespeople form the great majority as compared with the office force, bookkeepers and stenographers who are trained for their work. An attempt has recently been made to organize schools in department stores, aiming to supply a more definite preparation, physical and mental, for salesmanship. But so far, the vocational schools seem to have added little to the happiness of the employees. And the reason is not far to seek. The vocational teacher is confronted with numerous individuals who have been forced into occupations they may not fit. They take up the task which offers itself first, though their natural inclination may be toward something different or as yet uncertain. As a result, many industrial misfits are cultivated, discordant with and unadjusted to the work they pursue. It is in our formative years that our industrial ideal may be recognized and the so-called motive of our life-career should be discovered and brought into play as early as possible. Typical of this conception is the early autobiography of Benjamin Franklin, who says: "He (my father) therefore sometimes took me to walk with him and see joiners, bricklayers, turners, braziers, etc., at their work, that he might observe any inclination and endeavor to fix it on some trade or other on land." The individual would thus manifest his search for individuality with greatest success in the best permanent occupation for which he is capable. But instead of such an evolving process, some phases of vocational training convert it into a mechanical hammering process, which moulds people into positions unsuited to their ability and uncreative of their happiness. And it is the independent opinion of a number of observers that many thus employed devote very little time to abstract thought. They look no further than the immediate future. Ignorance is their opiate. They suffer, but they know it not. They attribute their ills to the iniquity of God, instead of directing their own endeavors toward bettering their own conditions. Ignorance and inefficiency are the two aspects of such conditions, which while self-accusing, form their own defense. A machine that does not fulfill the purpose for which it was constructed may be said to be inefficient; and by a metaphor, a man may be charged with inefficiency or ignorance only after he has been educated or trained for his work. Otherwise, his excuse lies in those social conditions which confined his childhood to the stuffy, stagnant air of overcrowded homes and commanded him to spend his early years in seeking self-support.

In studying the social needs of employees as a body, the department store administrator is confronted by the inevitable fact that but a very small proportion of the working day can be devoted to pleasure. Recreation-rooms on an enclosed roof, soft-armed chairs, music and books may all be provided to beguile the fleeting hours. These are good signs of the times. But in reality the fleeting hours crawl behind the counter. The value of such recreation is, however, not to be denied. It serves as a stimulating break in the monotony of routine and an incentive to the expression of those regrets which many of us have heard made by employees on their having to return to work. It also fosters the desire for education and gives the employees the taste for the conveniences and comforts of life, with a resulting desire for bettering their condition, which has been happily called "the mainspring of public prosperity." The atmosphere of ease in some stores is taken advantage of by serving a lecture on hygiene as the last course of their midday meal, and there is reported manifest interest in health topics.

The welfare service, as it is called, is a needed part of the social work. One or more intelligent girls, preferably nurses, visit the families of needy employees and investigate conditions chiefly investigate conditions. They then provide immediate relief, as food, clothing, or coal, when necessary, and then they study the case comprehensively with a

* Read at the meeting of the Association of Physicians Attending the Tuberculosis Clinics of New York City, April 14, 1915.

view to ascertaining the fundamental need of the family, and treating the cause of the trouble as best may be done. This work is carried on along the lines set down by the organized charities. Another institution maintained by department stores without profit is the loan fund for employees, which protects them against the usury of unconscionable individuals.

But almost all social service in the industries is merely an apology. It is like the bone pacifying the animal which it cannot satisfy. It may temporarily ameliorate conditions, but there is often a vicious circle which creates and maintains the conditions calling for correction. However, as the basic causes seem invincible, and do not easily permit of being assailed, what is being done is commendable in a high degree. But it must be conceded that it does not strike at the root of the existing evils.

Prevention of disease by sanitary measures and early recognition of disease are the great aims of medical supervision. In the several industries the physician is on the premises for a varying number of hours during the day and examines and treats the medical and minor surgical cases. When found ill and with fever the cases are sent home and instructed to stay in bed. Throat cultures are taken in all suspicious cases. Exact treatment is outlined until the following morning and the patient is advised when able to consult the family physician. If the patients are better the following morning and return to work they are seen then. If still ill they report the fact, after which they are visited and advised according to their need. When necessary, the patient is referred to the proper hospital and arrangements are made for admission. Cases requiring dispensary care, as for test-meals, *x*-ray examinations, etc., are sent to the proper clinics. One store has granted leaves of absence for this purpose to employees on pass from the physician, without deducting the time.

During the past several years some industries, department stores also, and municipal departments have undertaken a method of medical supervision which calls for periodical physical examinations of every individual in their employ. These are not compulsory. In insurance companies and other large corporations where the plan has been tried good results are reported. In many department stores there is still a general lack of appreciation among the employees of the advisability and need of a personal physical examination about once each year. Through such routine studies, cases of unsuspected kidney-disease, heart-disease and diabetes have been discovered, and cases of pulmonary tuberculosis. It is natural, however, that employees should hesitate to undergo a physical examination by the physician supplied by the industry. There is certainly apprehension in the minds of the workers, as has been expressed by one of their representatives, that as soon as their illness or their deficiency is ascertained they will be discharged, with prospects of an ensuing idleness, which will aggravate their situation and condition.

But education is a weapon that can with safety be placed into the minds of every individual. "The only cure for public distress is public education." It is evident that no great progress can be made in disease prevention or in any other reform without education. Individual progress is characterized by accumulation of knowledge, just as social progress is by its diffusion. One follows the other inevitably. That is to say, when one person makes a step forward intellectually the whole world advances to the tune. A visionary might look forward and contemplate the distant time, when each individual may be self-sufficient: just, wise, and healthy, his own doctor and his own counsellor.

This is a far cry from the present. Several principles may be outlined along which certain medical conditions in department stores can be dealt with. One principle asserts the transfer of employees from one kind of occupation to another more fitting their state of health. This is particularly serviceable in department stores, because of the variety of work available. The employees are moved about so that with regard to their infirmity, they are the better adapted to their work; and what might have caused harm for them is converted into benefit. In cases of heart-disease an unskilled girl, working at a busy counter, for example, may be put at rest as a cashier. So also with rheumatic individuals working on the more or less wet floor behind a soda fountain. Again, members of tuberculous families, or individuals showing a predisposition to tuberculosis, can be transferred from indoor to outdoor occupations. These changes, it may be remarked, should not involve a reduction of wages, which would detract from the benefit derived by the mental worry ensuing.

The occupational diseases deserve a passing mention. As has been stated, department store labor comprises no unity of employment. The proportion of employees engaged in obviously injurious occupations is necessarily small. Probably the one consideration of significance from this standpoint would be the dust of especially the packing and delivery departments. Salespeople may also be exposed to fiber dust, but though few are the occupations in which dust is not given off, in none can it be absolutely harmless. However, no morbidity statistics can be compiled because of the unstationary and fluctuating mass of people employed.

Pulmonary tuberculosis occurs in a sufficient number of department store employees to demand consideration. Very little concern has been given to this subject that presents such an importance. One department store in New York City revealed twenty-four cases of pulmonary tuberculosis, with physical signs in the first thousand consecutive examinations, and another store showed about the same proportion, with four cases of advanced tuberculosis with positive sputa in the first two hundred and fifty cases examined, and a number of suspected incipient cases besides. No other statistical data on this subject are to be found. All department stores, and many other industries as well, have great difficulty in properly disposing of their tuberculous employees. It is a universal practice of these institutions, necessary and apparently just, to exclude from employment cases of pulmonary tuberculosis that are a menace to the community. Yet this is often disastrous for the employee and his family and may cause domestic havoc. By excluding a tuberculous employee, not only does he become in many cases a charge upon the community, but the family is deprived often of its only source of income. Sometimes the tuberculous case is sent to a sanitarium or municipal hospital. Frequently this means the disruption of the family, the mother assuming the support of children who are kept in a day nursery or scattered among strangers. A tribute is to be paid by department stores to Stony Wold and other sanatoria, which have taken

care of a number of cases referred to. But for the larger number the benefits of sanatorium treatment are often unavailable on account of cost, insufficient capacity of the existing institutions, and the too brief period of time the patient is permitted to remain in them. And when sanatorium treatment is possible, the lesson learned is of no permanent benefit, if upon discharge from the sanatorium, they are returned to the unfavorable living conditions which contributed to cause the disease.

The idea of the Home Hospital, if generalized, would promise greatly as a solution of the problem. The dwelling places of most of the employees lack both fundamental principles expressed by the name. Many can scarcely be called a home, and much less a hospital. The old housing problem seems to have a long youth. The vivid description given of tenement house life by Dr. Armstrong and Commissioner Kingsbury would allow of but one suggestion—*that the principle of slaughter, with or without compensation, as used in the management of tuberculous cattle, be applied to the treatment of tuberculous tenements.* The analogy lends itself further. The following quotation from the report of the International Commission on the Control of Bovine Tuberculosis needs no annotation. "In the eradication of tuberculosis, it should be kept in mind, that, in addition to protecting animals against exposure to tubercle bacilli, it is desirable to make them as resistant to infection as possible. This can be done by stabling them in clean, disinfected and properly ventilated and lighted barns, giving them abundant clean water and nutritious food, a sufficient amount of daily exercise in the open air, and attending generally to those conditions which are well known to contribute to the health of animals. Young stock particularly should be raised as hardy as possible, and should be accustomed to liberal exercise and living in the open."

At a meeting of the Industrial League of New York, about a year ago, I had the privilege to recommend and urge the co-operation among employers in establishing a special sanatorium for workers who develop incipient tuberculosis. It would be practicable for department stores to join in a movement so beneficial to themselves and the community. Dr. Lee Frankel, Dr. Winthrop Talbot, Dr. George M. Price, and others present expressed favorable opinions with the hope, as Dr. Alfred Meyer said at the dedication of the McGregor Sanatorium, "that this kernel may grow to great porportions." And in his recent report to the Joint Board of Sanitary Control, Dr. Price has incorporated this idea, prophesying that "the time is not far distant when the enlightened members of the industry will be confronted with the necessity of co-operating with the workers' unions to establish their own tuberculosis sanatorium." The home hospital plan, that is, the building of habitable houses, permitting of an abundance of fresh air and sunlight, deserves great consideration in such a movement. In the department store cases, the tuberculosis and the poverty are more or less incipient, and the dependency is very often due to the disease of the wageearner. The family must be conserved for the welfare of the household.

I believe the seed has takn root at length. Two members of the Retail Dry Goods Association of New York have pledged their material support of the idea, and their secretary recently informed me that "the matter of establishing a sanatorium for tuberculous employees was discussed, but laid over until one store is in a position to decide certain points in connection with this matter." Some department store employers may object to being thus saddled with another burden. But, in reality, it has already been found that sanatoria of the character of the East River Homes Foundation pay for themselves. Besides, when established and maintained by many department stores, it would mean no greater expense for each than the present expense of each in expressing its moral obligation toward those employees who inherit tuberculosis as a legacy from their work. It is to be hoped that the physicians of all industries will see the need and study the practicability of such a cooperative measure.

165 West Seventy-first Street.

A CASE OF COMBINED EXTRACRANIAL PARALYSIS OF CEREBRAL NERVES.

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Combined lesions of cerebral nerves occur quite frequently, being usually due to some *intracranial* causes, as syphilitic meningitis or brain tumors, especially of the cerebellopontine angle. The *extracranial* occurrence of combined paralysis of cerebral nerves is exceedingly rare, much rarer than that of spinal nerves, as is the case, for instance, in brachial plexus paralysis of Erb, etc. The reason for the extreme rarity of extracranial combined nerve paralysis is probably the fact that the cerebral nerves do not form plexuses in the sense the spinal nerves do, the only exception being the IX, X and XI nerves which are massed underneath the jugular foramen in one bundle, forming, as it were, a plexus. Any pathological cause, a tumor, for instance, is liable to affect this mass of cerebral nerves and cause their paralysis. A possibility of such a lesion was pointed out by Oppenheim,[1] Bernhardt,[2] Unverricht,[3] and Flesh,[4] but a careful perusal of the literature did not reveal a single fact of a unilateral lesion of the above named nerves, outside the skull, caused by a tumor. This, however, was the case in our patient.

Miss McC., aged 18 years, consulted one of us (Beck) about two years ago for continuous pain in the neck, face, and forehead, and for difficulties in deglutition and speech. At the age of three she had measles and diphtheria; when six years old, tuberculosis of the cervical glands for which she underwent an operation. At the age of thirteen torticollis developed on the right side. Two years later she had continuous pain over the left side of the neck, radiating to the occipital region, and to the left side of the head. A year later impairment of speech was noticed, and the voice became rather hoarse and nasal, while the deglutition troubles were getting worse, solid food she could swallow with difficulty and fluids regurgitated. The speech and deglutition troubles and also the pain in the neck were getting worse during the following months, and the examination of the patient in October, 1913, revealed the condition as follows:

A well nourished young girl, physically and mentally well developed. Her speech was very unintelligible, disarthric, and with a nasal twang. The voice was slightly hoarse, interrupted by a stridor-like breathing. Along the left side of the lower jaw there was a scar 5 inches long caused by a previous operation (Fig. 1). The muscular and bony systems showed

no abnormalities, except the left sternocleidomastoid and the upper portion of the trapezious muscles which appeared rather atrophied. Passive and active movements, as well as the muscle power, were normal. The gait showed no abnormalities. Romberg was absent. The tendon reflexes very brisk, without clonuses,

Fig. 1.—Scar and incision.

Babinski, or Oppenheim. The skin reflexes, as abdominal and plantar, were normal. Pupillary reflexes, the mucous reflexes, except pharyngeal, the bladder, and rectal reflexes showed no abnormalities. The sensibility was not impaired. The cerebral nerves showed a rotatory nystagmus upon looking to the extreme right or left, but there was no nystagmus during the quiet position of the eyeballs.

The first seven cerebral nerves, including the eye grounds, disclosed nothing abnormal, but the eighth, ninth, tenth, eleventh, and twelfth cerebral nerves showed various disorders on the left side. Thus, the patient was totally deaf on both ears, which deafness was due to a bilateral otosclerosis. The lesion of the left ninth and tenth nerves was evidenced by a paralysis of the left half of the soft palate and uvula which was deviated to the right; by great diminution of the pharyngeal reflex and paralysis of the left vocal cord. The taste was not impaired. The pulse was 144, which also probably spoke for an involvement of the tenth nerve. The eleventh nerve paralysis was represented by deviation of the head toward the right, by the atrophic degenerative condition of the left sternocleidomastoid and of the upper portion of the trapezious muscles. The lesion of the left twelfth nerve was shown by a left hemiatrophy of the tongue (Fig. 2) with marked fibrillary twitchings. The left half of the tongue appeared soft, spongy, and covered with deep furrows. When protruded the tongue deviated to the left. The subjective complaints were an indistinct dysarthric nasal speech, hoarseness, slight difficulty in breathing which was stridor like, difficulty in swallowing with regurgitation of fluids, and some difficulty in moving the head to the left and keeping it straight. These symptoms could very well be explained by the lesion of the ninth, tenth, eleventh, and twelfth nerves. In addition there was, as mentioned, a nystagmus, upon looking to the extreme right or left.

The above named nerves all were involved on the left side, and the question arose what could be the cause of this combined nerve lesion. The history showed that the patient had been suffering from enlarged cervical glands, tuberculous in origin, for which she was once operated upon. It was proper to assume that one of these glands affected all these nerves somewhere where they are massed together, such a place being the jugular foramen. Passing the latter, the ninth, tenth, and eleventh cerebral nerves are joined by the twelfth and it was concluded that all these four nerves were compressed by a tumor which probably was a tuberculous gland. An *x*-ray showed a calcareous mass in the indicated place (Fig. 3) and an operation was decided upon.

Four weeks later operation was performed. An incision was made from the mastoid tip to the level of the cricoid cartilage along the sternocleidomastoid. The hypoglossal vagus, spinal accessory and superficial cervical nerves were dissected particularly upward to the base of the skull with exposure of large vessels. A calcareous gland with a number of smaller infiltrated glands were dissected from the nerves and jugular vein, each nerve being surrounded with Cargile membrane, and the wound closing by primary intention. We must mention here that the tuberculin test was slightly positive, while the blood, urine, and spinal fluid serologically and otherwise proved frankly negative, all these examinations having been done before the operation.

The patient showed marked and progressive improvement. Thus, the pain disappeared almost immediately after the operation, and the rest of the symptoms were gradually, though slowly, subsiding. When examined six months after the operation, there was noticed marked improvement in the shape of the tongue. The atrophy was almost gone but the fibrillary twitchings were still present. The soft palate and the uvula were normal and deglutition troubles, as well as difficulties in breathing and speech, were absent. The reflexes, sensibility, and other findings were the same as before the operation. The eye grounds were normal, there was no tremor and the nystagmus was very slight, in the form of slow rotatory movements during movements of the eyeballs to the extreme right or left. The mental and the general physical conditions were excellent. The patient, in fact, did not complain of anything and was happy and eager to do housework. The pulse was 96 as against 144 before the operation. The patient's condition was the same a year after the operation, being thus stationary. The slow disappearance of the anatomical changes was ascribed to the slow regeneration of the nerves involved and to the possible formation of adhesions. This is the more possible, as there was no further marked improvement since the patient was seen last, about one month ago, i.e., sixteen months after the operation, yet the general and

Fig. 2.—Hemiatrophy of the tongue.

local symptoms were found to be considerably better than before the operation and the improvement of so long a duration must be attributed to the release of the ninth, tenth, eleventh, and twelfth nerves from pressure in the vicinity of the left jugular foramen by enlarged and infiltrated cervical glands.

Analyzing this case, we wish to call attention to the following features: (1) Pain in the neck, occiput and forehead. (2) Marked hemiatrophy of the tongue. (3) A combination of the tongue atrophy with paralysis of the ninth, tenth, and eleventh cerebral nerves. (4) Nystagmus. The pain in the neck, occiput, and head was, in our opinion, due to pressure on superficial branches of the cervical plexus (occipital nerves, great auricular nerve), to vascular disorders in the cerebral sinuses (inferior and superior petrosal, cavernous) also probably caused by pressure on the jugular vein with possible vascular disturbances in the gasserian ganglion, as the result of the sinus troubles. The hemiatrophy of the tongue was the object of numerous discussions in the literature. Thus, Ballet,[5] claimed that it almost exclusively occurs in tabes, being exceptionally rare in any other disease. Ballet's contention was combated by Marie and Koch,[6] who showed that hemiatrophy of the tongue also may occur in brain syphilis, paralytic dementia; and by Hirt,[7] in whose patient it was probably caused by a bulbar hemorrhage. Our case also proves that lingual hemiatrophy may occur in diseases that have nothing to do with

FIG. 3.—Calcareous lymphatic gland

tabes. A combination of the tongue hemiatrophy with paralysis of other cerebral nerves has been repeatedly described. We shall mention Fränkel,[7] Hirt,[8] Jackson,[9] Remak,[10] Unverricht,[11] Pel,[12] and Debove.[13] In Fränkel's patient there were symptoms similar to those in our patient, but in addition also some symptoms on the part of the sympathetic nervous system, as contraction of the left pupil with preserved reaction to light, but normal palpebral fissure; right exophthalmos; and severe pain. The cause was a tumor of the right cervical region (lymphosarcoma) involving the superior sympathetic ganglion. As Bernhardt[2] reports, Fränkel had to change the diagnosis to that of tuberculosis of the base of the skull and of the cervical glands.

Jackson's patient, a syphilitic, showed right hemiatrophy and paralysis of the tongue, of the right half of the soft palate, of the right vocal cord, *i. e.* the same symptoms as in our patient, but there was also present a degenerative atrophic paralysis of the muscles supplied by the brachial plexus. There also was a left Argyll-Robertson pupil and sweating of the left side of the face. Mackenzie, discussing Jackson's case, spoke of eight cases of unilateral paralysis of the tongue, soft palate, and vocal cords. He thinks that such a combined nerve paralysis was due to a lesion of the vagoaccessory nucleus, but adds that it could also be caused by some extramedullary morbid process. In two cases he could demonstrate the involvement of the sternocleidomastoid and trapezious muscles. In one case the paralysis of the tongue, palate, and vocal cord came on, like in our patient, coincidently with the paralysis of the sternocleidomastoid and trapezius muscles, but he did not know if a bulbar lesion could cause such a coincidence. Mackenzie's two patients bear a striking resemblance to our case but the etiology in his patients remained obscure. In Hirt's patient who was 76 years old there was a sudden paralysis of the right half of the tongue and right vocal cord with a lost pharyngeal reflex, which lesions followed an apoplectic stroke. Hirt thinks that there was a bulbar hemorrhage with embolic softening of the vagohypoglossus nucleus. Remak's patient had a bilateral paralysis of the posterior cricoarytenoid muscle and of the right half of the soft palate and uvula; right hemiatrophy of the tongue, combined with left ptosis; Argyll-Robertson pupil, and paralysis of the left arm and right thenar atrophy. Remak excludes tabes (?) and diagnoses lead poisoning. In another patient Remak[14] found paralysis of the right vocal cord, soft palate, and tongue, with fibrillary twitchings; difficulty in deglutition; paralysis of the right side of uvula; deafness of the right ear (four-five years standing); and atrophy of the right sternocleidomastoid and of the clavicular portion of the trapezius. These symptoms, so similar to those in our patient, were combined with twitchings in the right cheek, followed by seventh nerve degenerative paralysis. There were also present nystagmus and Argyll-Robertson pupil, the tendon reflexes having been normal. Remak could not make a positive diagnosis but excluded tabes in spite of the Argyll-Robertson pupil (?). In Unverricht's case, a sarcoma of the base of the brain, all the cerebral nerves became rapidly paralyzed, and he ascribed the paralysis of the ninth, eleventh, and twelfth to pressure in the jugular foramen. Pel's patient complained, like our patient, of pain and stiffness in the neck and occipital region, and showed atrophy of the left sternocleidomastoid and trapezius muscles, a left vocal cord paralysis, left hemiatrophy of the tongue, and paralysis of the left side of the soft palate and uvula. There were nasal speech and deglutition troubles with regurgitation of fluids. To complete the analogy with our case, there was enlargement (universal) of the glands but the patellar reflexes were lost. Pel rightly concludes that he had to deal with a peripheral lesion of the ninth, tenth, eleventh, and twelfth nerves, "an einer Stelle, wo die Nerven von der vena jugularis getrent werden," yet he excludes a peripheral lesion, because he says circulatory disorders, the reaction of degeneration and the entire (?) involvement of the eleventh nerve were absent. He also excludes any basilar lesion, and diagnoses possible tabes with endarteritis of single branches of the left vertebral artery, which carry the blood supply to the nuclei of the hypoglossus and vagoaccessory nerves. Finally Debove's case must be mentioned. In this the left ninth, tenth, and twelfth nerves were injured, together with the left sympathetic, during an operation on the neck for an epithelioma. The left

carotid was ligated, and the clinical symptoms caused by a lesion of the above named and sympathetic nerves, as hemiatrophy of the tongue, paralysis of the left vocal cord, hoarseness, miosis, and enlargement of the palpebral fissure, were followed by a right hemiplegia and aphasia 24 hours after the carotid had been ligated.

There have been numerous other cases reported of combined lesion of the cerebral nerves, by Avellis,[15] Dinkler,[16] Rothman,[17] Rose,[18] Léjonne and Oppert,[19] Foix,[20] but the majority of these cases were either due to intracranial tumors (Dinkler), syphilitic meningitis, or unknown causes (Avellis), thus differing clinically from our patient and from the cases quoted above. The cited cases also show how difficult it was to interpret them and to properly diagnose and treat them. These cases also show that in none of them were the ninth, tenth, eleventh, and twelfth nerves exclusively involved by an extracranial tumor (except possibly Pel's case) which continually pressing upon these nerves caused their paralysis and degeneration.

In conclusion we would like to touch briefly upon the last peculiarity of our case, the involvement of the eighth nerve and nystagmus. The eighth nerve involvement was bilateral, as the patient was completely deaf on both ears, and the deafness was due to otosclerosis. The latter seems to be a family trouble, as the patient's mother and two sisters suffer from deafness due to the same pathological cause. The nystagmus was marked only during active movements of the eyeballs, and during the last sixteen months became quite peculiar, showing slow oscillatory movements toward the left or right, according to the direction of the intentional movements of the eyes, without the quick return to the opposite, this slow deviation being, according to Wilson and Pike,[21] the only essential movement of a socalled labyrinthine nystagmus. The question arises if the labyrinthine trouble of our patient, the otosclerosis, could not cause the nystagmus, which is thus most probably of vestibular origin. At any rate, the nystagmus and deafness are in our patient essentially different and independent lesions, having nothing to do with the principal affection our patient suffered from, namely, tuberculosis of the cervical glands with secondary involvement of the ninth, tenth, eleventh, and twelfth nerves in their extracranial course. Such a diagnosis was not only verified by the *x*-ray examination, a successful operation, but also by the subsequent progressive improvement. The latter cannot be looked upon as a remission of some brain lesion proper, multiple sclerosis, for instance, which was diagnosed in this case by a competent neurologist, but must be ascribed to the removal of the cause, which was a tumor in the form of an enlarged infiltrated cervical gland.

NOTE.—A few months after the date of the above report the patient began to show a recurrence of the symptoms of pressure on these nerves and another operation for the exposure of them was decided upon by us. On July 5, 1915, the operation was performed and the nerves were found surrounded by dense fibrous tissue. The hypoglossal, spinal accessory, and vagus nerves were again dissected up as far as the jugular foramen (the internal jugular vein was wounded in the dissection). Recovery from the operation was uneventful and the marked improvement in the voice and tongue showed again that our diagnosis was correct. The progosis however is certainly unfavorable since secondary scar formation and contraction over the nerves cannot be prevented.

108 N. STATE STREET.
31 N. STATE STREET.

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A STUDY OF THE OCCURRENCE OF DIPHTHERIA BACILLI IN NORMAL THROATS.

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THE purpose of this paper is the determination of the number of virulent diphtheria bacilli in normal adult throats.

During my experience as medical inspector in the Bureau of Health of Philadelphia the occurrence of positive cultures of Klebs-Loeffler bacilli in apparently perfectly healthy throats, of both adults and children, was astonishingly frequent. This was especially apparent in children. The district to which I was assigned covered a large mixed population mostly of the poorer classes. While crowding was not a feature, the houses were mostly damp, having been built to a large extent upon "fill-in" ground.

The frequency of positive cultures in normal throats eventually led me to disregard the cultural findings entirely in a diagnosis of diphtheria. This seemed to me to be a serious state since so many men rely upon the culture to settle a doubtful case. The principle which I came to follow was that it was better to give 100 cases of tonsillitis antitoxin than to withhold it from one true case of diphtheria.

*Read before the Philadelphia Pathological Society, June 10, 1915.

From a practical standpoint this plan worked out very satisfactorily. Anyone who has had any considerable experience must admit that the doubtful case turns up every once in a while, diminishing in frequency as his experience increases, but never becoming an entirely negligible factor.

Because of this experience, which I am sure must be the experience of many others, especially those working on health boards, I determined to examine the throats of 100 students whom I knew to be free from exposure, to have sanitary housing conditions, and to be generally in good physical condition. I had fully made up my mind to find not a high but a moderate percentage of positives.

The technique was as follows: Swabs were made by carefully going over the entire tonsil on both sides without contamination from the tongue or other parts. These were well drawn over blood-serum slants and dipped in the water of condensation. The tubes were incubated at 37° C. for 24 to 48 hours. Smears were made from the slants and from the water of condensation and stained with Unna's methylene blue. All cultures containing suspicious-looking rods were plated out on plain agar-agar, blood serum, or in some instances both. These plate cultures were examined from their gross and microscopical characteristics and where still suspicious the throats were recultured.

The results: Ninety-seven cases were examined over a period of two years, 50 in one class and 47 in another. Of these 21 cases had suspicious rods. By this I mean any rod which morphologically resembled the Klebs-Loeffler bacillus. In no case were they perfectly typical and in no case did they occur in more than a few colonies. Of these four cases were replated and recultured. But one of these was considered likely and this was injected into a 750-gram guinea pig. A slight local reaction resulted and the pig was alive at the end of five days. This was considered a negative result and the type a pseudodiphtheria bacillus.

Recent literature does not contain many similar reports, but those recorded generally agree with this result. The percentage of positives in adults varies from 0 to 2. In children this is a great deal higher, up to 25 per cent.

Conclusions:

1. The percentage of occurrence of Klebs-Loeffler bacilli in healthy normal adult throats under hygienic conditions is low or nihil.

2. A positive culture with suspicious membrane in this class of cases should have a great deal of weight.

3. Granting this positive evidence of value I am still inclined to believe that cultures play altogether too large a part in the routine handling of diphtheria.

I am indebted to Mr. J. A. Magoun and Mr. Charles E. Behney for assistance in the technical work.

A FURTHER REPORT UPON THE ETIOLOGY OF PELLAGRA.

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In presenting this paper I realize that I am claiming to have accomplished what better men have failed to do, men who are not only better trained than I am, but have given their entire lives to the study of this disease; who have examined hundreds of cases to my one, who have made careful post-mortem examinations where I have been denied that privilege. But, with all these facts staring me in the face, I still believe I have a message that will be worth a great deal not only to the medical profession, but to the human race in general.

I shall limit my paper to the etiology of pellagra and what I take to be the causive factor of this disease. I shall first give a list of the different theories of this disease, quoting from a report of the United States Public Health Service (Bulletin No. 48) on pellagra, prepared by Dr. C. H. Lavender. While this report is three years old, it is the best thing that I have been able to find upon the subject.

That corn had something to do with this disease was first advanced by Gaspar Casal, in about 1735. That corn was responsible was taught by Marzari, the founder of Zeist school, in 1810. He believed that corn was lacking in some of its nutritive properties. Balardini believed it to be due to the use of damaged or fermented corn. Later Lombroso devoted many years of his life to the development and defense of this theory as the cause of pellagra. Other workers of this school believed it to be due to certain mold upon corn. Various others believed it to be due to some specific organism. Pari incriminated the maize smut, Majocchi and Cuboni the *Bacillus maydis*. Carrorriola described a *Bacillus pellagræ*. In 1902, Ceni thought the *Aspergillus fumigatus* and *A. flavescens* were causes. His work, however, has not been confirmed. In 1906 Tizzoni described a streptobacillus. This micro-organism he found in spoiled corn, the blood, spinal fluid, and certain tissues of pellagrins. His work lacks confirmation.

Sambon in 1905 advanced the idea that it was due to some parasite and was transmitted through the bite of some blood-sucking insect. He thinks it is some species of the buffalo gnat; as to the causive factor he advanced no theory. Alessandrini believes it to be caused by a water-borne nematode worm; others believe it to be caused by the action of cottonseed oil through some of its end products. Dr. C. H. Harris of New Orleans has shown that it belongs to the filterable viruses. He was able to pass the spinal fluid through a Berkefeld filter, and by inoculating a monkey obtain typical lesions. There has been no one able to get his work confirmed up to the present time from theories advanced.

This brief review of theories that have been advanced by various workers on this disease, I do not think has been in vain; as my work in a great measure will tend to show that both factions are partly right. I shall first give a brief history of my work upon this disease, later describe the morphology of the organism, and lastly give the statistics that I have collected which will tend to show that this disease is infectious and is transmitted through some infected insect.

My preliminary report of this work was published in the *Texas State Medical Journal* of October, 1913, in which I reported how I had obtained an organism from the blood culture of a pellagrin suffering from a high temperature at that time, and had been able to grow this organism, and at that particular time thought that I had succeeded in infecting a chicken by intraperitoneal inoculation; the comb peeled off some six weeks later, and after cool weather set in, the chicken apparently got well.

In the latter part of January I had a patient

come to me suffering from a bullous pellagra lesion on the back of both hands. I made a culture from them, from which I obtained typical growth. I also made smears from which I was able to stain a typical organism. In these smears I would often find small organisms looking a great deal like spirilla. I had seen this in culture tube smears. In March I conceived the idea that one ought to be able to make a fixation test from a proper antigen so I grew several tubes and prepared an antigen. Six weeks later I made a fixation test from three different male pellagrins, all of which were strongly positive, no hemolytic action taking place after several hours.

On May 30 my chicken died; at that time he was over a year old and should have weighed two or three pounds; instead he weighed only half a pound, and I never saw anything so near a skeleton. Being very busy, I did not have time to make a careful post-mortem, so I took a sterile knife, removed the bone from the top of its head, inserted a sterile hypodermic syringe (all glass with a platinum needle) down to the base of the brain. I was able to obtain about one c.c. of fluid which I planted out in three separate tubes. I had two positive cultures with typical growth; I also made smears and was able to obtain the organism by staining. The chicken began to develop lesions some six weeks prior to its death and became very nervous before expiring. From the character and size of the spores I thought the organism belonged to the filterable virus class of organism, so after sterilizing, I filtered one of my cultures through a Berkefeld filter with the aid of a water suction pump. The filtrates I centrifuged for fifteen minutes, then made plantings on moist blood serum, and got typical organisms in each tube.

In June I had a pellagrin with one of the most severe cases of cystitis that I have ever seen, not excepting a carcinoma of trigone. Her doctor sent her to me for stone in the kidney, but after *x*-ray, uranalysis and cystoscopic examinations, white blood, and differential leucocyte counts, together with a history of extreme nervous symptoms, sore mouth, and vague, indefinite pains of great severity, I made a diagnosis of pellagra. She had a pain on the left side at the lower border of the ribs, and as this has occurred in every case of pellagra that I have treated, and does not occur so far as I know in any other disease, it always makes me think of pellagra. She was running some temperature and having a chill every few hours. I tried to get some blood from the median cephalic vein to make a fixation test, but the vein being small I succeeded in getting only about one c.c. that I planted out, getting a typical growth from which I was able to get the organism, confirming my previous diagnosis.

On September 20 I inoculated a Rhesus monkey subcutaneously with one c.c. of blood serum cultures. For the first month he lost weight and grew nervous and lost his appetite. He had a marked increase in the pigment of his hands and face, which became nearly black, while his control remained normal in every respect. At the present time this discoloration is gradually fading and is only half as dark as it was. I do not expect any more lesions in this monkey before spring.

The pellagra organism belongs to the higher bacteria in an unclassified group. It may be a streptothrix, as in many ways it fulfils Tuttle's excellent description of a streptothrix as given in Park's Bateriology, but it probably belongs to an unknown fungus family, in which there is a double cycle as occurs in the moss family. I have been able to study this organism through both of its cycles. The human cycle takes place in about the following manner, as worked out through my cultures: The spores of this organism are deposited in the deepest layer of the skin by some blood sucking insect, where they begin to grow by sending out long fine mycelia that enter the lymph spaces along the basement membrane. These mycelia contain within them many very tiny spores which are liberated in the blood stream by the dissolution of the mycelia. Whether this takes place before these mycelia are broken off or after, I do not know, but they are very resisting to destruction. These are able to pass out of the capillaries through the stomata due to their extreme small size, as I estimate them to be about one-tenth micron in diameter. Here they begin to grow and develop into the second stage by sending out mycelia that develop into bacillus-like bodies that are actively motile.

This organism is a facultative aerobe, and when grown on suitable media forms a false membrane on top of the culture. When stained by Wright stain in fresh cultures, it is about the size of a small tubercle bacillus, but stain very poorly. After a few generations on artificial media it grows larger and, stained with above stain, cannot be distinguished from a culture of the diphtheria bacillus, as stained by Loeffler's method. When grown in bouillon from old culture, I have found filaments so fine that they were hardly visible with the 1000 magnification, while others were nearly a micron in diameter, and in some of my old culture that have been transplant-perhaps a dozen times on blood serum they very much resemble a potato bacillus. This occurs only after several generations on artificial media.

The primary blood culture will stain only with Wright's blood stain; after several generations they acquire more staining properties and are then stained with hot carbol fuchsin.

It grows best on moist Loeffler serum or bouillon, or acetic agar. It will not grow on plain agar or glycerine agar. Within the body I do not think that it ever forms spores unless it comes in contact with the air. I base this opinion upon the character of the pathological lesions.

From my study of this disease I think Sambon's theory is correct, that it is transmitted through the bite of some insect, as the stock fly, mosquito, flea, bedbug, or some other blood sucking insect. We have never had a case that did not occur in unscreened houses. As to the maize theory, I think from a little observation of my own that corn unquestionably harbors the host at some period of its cycle, as I found a similar organism in some bole worms in green corn that grew close to several cases of pellagra. With the exception of a few protozoa and spirilla there is absolutely nothing known of our parasitic microorganisms outside of the body, and then only in the insect that carries them. Why could not corn harbor the host? I am going to describe a theory of my own as to the mode of transmission of this disease. I shall illustrate this theory with the mosquito and malarial plasmodium. In some of our dense swamps of the tropics, man is scarcely known, due to the virulent malaria. Yet there are unnumbered billions of infected malarial mosquitoes there. Billions of these mosquitoes never saw a man, as their life cycle is less than six weeks, yet they are infected. It is through the increased virulence of the malarial plasmodium that grows under certain favorable conditions in the

swampy waters; it is able to infect the mosquito as it is able to do so when it is sucked from an infected man's blood, as the step up from the water to the mosquito would be no greater than from the mosquito to man, or vice versa. Man can live in one of these infected swamps, as has been proven, and drink this infected water, if he can keep the mosquito away without becoming infected. This same theory applies to corn; when grown in a moist, hot climate it permits this organism to grow with such virulence that it is able to infect some insects, and by them is conveyed to man. This organism, I think, was sown broadcast throughout the United States when the Agricultural Department at Washington imported this infected corn and distributed it to the farmers as foreign corn for them to try. All of our cases have practically occurred on the Wichita River or some tributary, and all European writers say that water seems essential to its growth. The reason I assign for this is that it is hotter along the river and creek valleys, the dews are much heavier than in the highlands, and the most essential things to the growth of this organism are moisture and heat, and these we get, especially in a rainy season along the creek and river valleys.

Below I am giving a list of forty-eight cases of pellagra that have occurred in the vicinity of Wichita Falls. Some of these cases were imported and died here, but the great majority were natives. Twenty-six of this number occurred in nine families or can be traced to them. I have not had the time to work out in detail whether any more of these cases came from infected houses or not.

My first case of pellagra occurred in 1909. This case was one that had severe hemorrhage from the uterus. She passed into other hands for further treatment. She had the rash, nervous symptoms, sore mouth, and a slight diarrhea, being typical in every respect. In April, 1913, I was called to treat her sister-in-law, who was suffering from pellagra. I had delivered this woman seven months previously of a child, and at the time of my first visit I ordered the weaning of the child. This patient gradually grew worse, her baby took what I diagnosed as pellagra in July. The little fellow lasted only three weeks. I made my diagnosis from the following symptoms: Sore mouth and serious diarrhea, stools being passed every few minutes; dry skin, with harsh branny desquamation, temperature that ran over 150° during the last days of illness, increase of muscular movements that became constant toward the last, and finally death in convulsions. I made a blood smear from this child and was able to demonstrate the organism. The mother of the child gradually grew worse and died on December 22. The mother of the first case now is suffering from pellagra, I have been informed by her physician.

Second Series: I was called in to treat a little fellow for eczema, and found the mother and three children with the disease. I made some photographs of this child. They soon left town and I lost all trace of them.

Third Series: I have a patient whose father died with this disease in Big Springs, Texas; now two of his sisters are afflicted.

Fourth Series: I had a patient die with pellagra in 1913. Her aunt had died the year before, and her mother had it at that time.

Fifth Series: I was called as a witness in a case of insanity due to pellagra, in April, 1913. Her doctor told me that she had not seen her parents for a number of years, but hearing that she was sick they made her a visit and were in the house only four days. Her father took the disease and died in less than a year.

Sixth Series: I had another patient who had pellagra, and there was another family living with her to do the housework. The ten-months-old child of this other woman took pellagra and died in three weeks. This was a breast-fed baby with every symptom that the other child had. These people were exceptionally filthy; they first lived in one house for about two months, then moved next door, and perhaps lived that long in the latter. I have treated a case of pellagra in each of the families that moved in after they left, this woman having infected three families.

Seventh Series: Dr. Amason reports to me that in one of his families the mother and son both died of this disease.

Eighth Series: Dr. Joe Daniels reported he has a man and wife suffering from this disease. I saw these cases with Dr. Daniels and confirmed his diagnosis.

Ninth Series: Dr. W. W. Shirley reported a mother and baby with pellagra in 1913. The child died, but he thought he had cured the mother at that time.

The other twenty-two cases occurred singly. I treated five of this number and one or more members of the families of five of the other cases, and know that these cases are authentic.

I have tried to locate every case of pellagra that has occurred in the vicinity of Wichita Falls by having each doctor furnish me with a list of the cases that he has treated.

In conclusion, I would like to call attention to the way in which these organisms grow within the body. In this disease, as in many others, we have areas where only they will grow. In this disease they grow best in the lymph spaces along the basement membrane of organs that either contain epithelium or are covered by it, in the skin, intestinal tract, including mouth, genital tract, uterus, respiratory, including the nose and pharynx, brain and spinal cord. These organisms live off of the excretions of epithelial cells, and are distinct saprophytes. Their toxic action is due to the liberation of a ferment within the blood, for the destruction of these organisms that gives the peculiar cachexia of this disease. When these organisms gain access to some organ as the uterus, bladder, or intestinal tract, where there is an excessive growth due to the abundant blood supply, we find chilly sensations, with a rise of temperature. These chills may occur every few hours. I have seen the temperature as high as 106° F. But we may see pellagrins die without ever having a rise of temperature.

My work upon this organism has been done with the most rigid technique; some of these cultures were made in the home of patients, some in the hospital, and only one in the office, and the same organism obtained each time in pure culture. I have utilized every case where there was any hope of obtaining satisfactory culture, as I do not think one could hope to obtain a culture unless the patient had an elevation of temperature with preceding chill. The higher the temperature the more likely we are to obtain a culture, and the more virulent it will be.

I have fulfilled Koch's laws in the chicken, and it looks now as if I am going to do the same in the

monkey, as the first change in a yellow negro, who is suffering from pellagra, is for his skin to turn black, as it has done in the monkey.

My antigen test I consider the most important, as it enables the physician to make his diagnosis before it is too late to benefit the patient; as many cases of pellagra never have any skin lesions, or only very late in the disease. This test has been employed in only three cases, as they are all of the patients that I have been able to get to let me make this test.

From the description one can see why I was able to confirm the statement of Dr. C. Harris of New Orleans on this organism, that it is a filterable virus. I also think Tizzoni has been working with this organism, but he has studied only one cycle and has used too dry a medium to get typical growth. The organism described by him corresponds to one cycle of my organism which, in a dry culture, looks like a streptobacillus. I have obtained this organism three times from the blood stream, twice from cultures from blister fluid, twice from the spinal fluid after death of the patient, and three times from blood smears from the blood, and six times from blister fluid smears.

Any one ought to be able to obtain this organism from the blood by culture methods, if he will use a sterile syringe and pick up the median cephalic vein under strict aseptic technique. One c.c of blood should be drawn and planted on blood serum that has been coagulated in a hermetically sealed tube. Such a blood slant should contain about one c.c. of fluid above the coagulated serum, as this is very essential to the growth of these organisms; the use of cotton plugs permits the evaporation of this fluid and leaves the medium too dry. This blood should never be collected unless the patient has a high temperature, and the sooner after a chill it is taken the better is the chance of getting a growth.

I know my work is based on very few cases, but I believe I am on the right road, as I have more tangible results than any other investigator of this disease. In my present location I am unable to get but few cases each year, and one cannot do with private patients as he would like to, as they will not submit to blood examination. It is to get other investigators interested in this problem that I prepared this brief review of my work upon this disease that is so serious in our Southland.

A FREQUENTLY UNRECOGNIZED SYMPTOM-COMPLEX.

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In the past three years I have observed on several occasions a symptom-complex which, although seemingly closely related to the febrile exanthemata, possesses a certain sequence of symptoms that, it seems to me, differentiate it from the others of this group, namely, rubella, rubeola, scarlatina, and Dukes' disease. When Dukes in 1900 first described the "fourth disease," he was met with much opposition, and although there are still some who deny it to be a distinct disease-entity, I think that Weaver[1] in England and Winfield[2] and Simpson[3] in this country have shown that it deserves a place in our medical nosology. It is therefore with no little trepidation that I offer still another distinct condition, and ask for it a separate place in what seems to be an already overcrowded nomenclature.

Either this symptom-complex is a very rare condition, or it is not being recognized as a distinct entity. The latter is more probably the case. On studying the literature I find that Dr. John Zahorsky[4] of St. Louis has reported, with case histories, under the title of "roseola infantum," a symptom-complex which corresponds with the one that I have observed. With this one exception, I have been unable to find any reference to it. Zahorsky has pointed out that some of the earlier writers (Meigs and Pepper[5]) recognized this syndrome and classed it with toxic erythemata. An analysis and study of thirty-seven cases shows the following salient features of this symptom-complex.

Season: Three cases occurred in January, 6 in February, 4 in March, 4 in April, 3 in May, 2 in June, 2 in August, 2 in October, 6 in November, 5 in December. While the cases were distributed throughout the year, there seems to be a preference for the winter and early spring, since 28 of the cases occurred in the six-months' period from November to April.

Sex: There is little preference here; 17 cases occurred in males, and 20 in females.

Age: in 20 cases the patients were under one year, between 1 and 2 years old in 13 cases, between 2 and 3 years in 3 cases, and over 3 years old in only 2 cases. The evidence here shows it to be distinctly a disease of infancy, 33 of the patients being under 3 years of age. The predisposition, apparently, is in inverse relation to the age.

Onset: In all cases the onset was sudden. The child while apparently in good health suddenly becomes fretful and disinclined to play, the eyes become dull, or during the night the child is wakeful and restless. The mother or attendant upon investigation finds the child feverish, with a hot, dry skin.

Temperature: The temperature, while not recorded in all the cases reported, varied from 102° to 105° F. The individual cases showed very little daily fluctuation, the morning temperature being about 103° and the evening about 104°. This temperature was steadily maintained until the appearance of the eruption, when it dropped by crisis to normal or almost normal. In one of my cases, for instance, the temperature was 104° at 10 P. M. and the child was restless and fretful until midnight, at which time she fell asleep. The mother, worn out by the several days of vigilance, lay down and shortly after fell asleep also. When she awakened it was broad daylight, and she ran to the baby's crib, only to find the child still peacefully slumbering but with a rash all over its face and neck. I was called immediately, and when I arrived the child was sitting up in its crib, apparently well and content with things in general. Its temperature was 99.8° by rectum.

Eruption: In 12 cases the eruption appeared on the third day, in 24 cases on the fourth day, and in only two cases on the fifth day after the acute onset of fever. The eruption appears first on the face and neck and spreads in a quick wave-like manner down over the body. This process occupies as a rule not more than a few hours, and not infrequently the rash starts to fade on the face and neck at the end of 24 hours. In two of my cases there remained no vestige of the eruption after 72 hours.

The lesions are at first bright red, discrete, pinhead to split-pea sized macules, which soon become flat, slightly-raised papules. As the lesions grow more numerous, they become confluent, making various size patches. When the eruption is very profuse, patches the size of the palm of one's hand are not uncommon on the buttocks and inner side of the thighs. While the eruption usually starts on the face and neck, it is more profuse on the trunk and extremities; hence it tends to maintain its discrete character on the face and neck, while on the trunk and extremities erythematous patches interspersed with discrete lesions may be the presenting picture. In none of the cases reported was desquamation noted, and I saw it in only one of my own cases. There was a fine branny scaling more or less over the body, with coincident itching. The scales were coarser in those areas where the eruption was more profuse. In another case the eruption was followed by an eczematous condition of the forearms, which cleared up promptly under appropriate treatment. I must interpret this eczematous sequela as the result of itching and irritation, produced by attempted rubbing and scratching.

Lymph glands: In only 6 cases were the cervical glands palpable.

Gastrointestinal disturbance: Seven of the cases had suffered from gastrointestinal disturbances. The remaining 30 cases were all robust breast-fed or bottle-fed infants. During the fever stage 9 showed signs of gastrointestinal disturbance; that is, 3 were constipated, 5 showed some diarrhea, and one a marked tympanitis. In only 2 of the cases with increased movements were the stools distinctly abnormal in character.

Respiratory tract: In 4 cases there was slight cough and coryza. These symptoms were probably coincident with, rather than part of, the affection. In most of the cases the fauces and pharynx showed varying degrees of congestion. This congestion spread to the tongue and mucous membrane of the mouth, subsiding with the fading of the rash. In one case reported a few follicular spots were noted on the tonsils. Aside from this, no spots or patches were observed in the mouth or throat.

Blood examination: The only abnormal feature of the blood was a mild leucocytosis varying from 11,500 to 16,000 whites, with 75 per cent. to 80 per cent. of polymorphonuclear cells. The increase in the polymorphonuclear cells was at the expense of the lymphocytes. I regret that I did not make a second blood count in my cases, after the appearance of the eruption.

Urine: The quantity was always markedly diminished, dark in color, with increased specific gravity. Albumin was present in traces, in all the urines examined. Tests for the presence of blood, indican, and sugar proved negative. The microscope showed some epithelial cells, and in some cases actively motile bacilli. No casts were found. These urinary findings are of only a negative value, as they are what might be expected in any febrile condition.

Previous eruptive conditions: Two cases had a previous history of rubella, 2 of rubeola, one of scarlatina, and in one case a previously unidentified eruption. I was myself fortunate enough to have seen, in two of my cases, a previous eruptive fever, which I had diagnosed as measles and German measles respectively. Both cases were so typical that I am confident I did not err in diagnosis.

Contagion: In none of the 37 cases was there any contagion noted either to or from the patient, although in many cases there was ample opportunity for it. The eruption not appearing till the third or fourth day, there was not as a rule much incentive for isolation during the time preceding the eruption.

Complications: In no cases were any ear, lung, heart, or kidney complications noted during or following the attack.

Summary of symptoms: To sum up, then, we have here a symptom-complex, consisting of a sudden high temperature with but little daily variation, developing in an infant under 3 years of age, and lasting 3 or 4 days, during which time the child appears very toxic and is drowsy and fretful by turns. With the exception of congested fauces and pharynx, physical examination, and examination of the blood, urine, and stools reveal no cause. There is no general glandular enlargement, although rarely the cervical glands are palpable. On the third or fourth day a morbilliform eruption appears on the face and neck, spreading in a quick wave-like manner over the body and disappearing in 48 hours. Coincident with the appearance of the rash the temperature falls by crisis, the child appears well and happy, and there remain no complications or sequelæ about which we need concern ourselves.

Differential diagnosis.—Erythema scarlatinoides: I am of the opinion that erythema scarlatinoides, while described as a special disease entity, has been made the scrap-basket for a number of clinically similar erythematous eruptions, and I fear that some cases, which really belong to the symptom-complex I have described, have in the past been dumped into this basket. Probably, though, rubella has been made to assume the responsibility of some of these cases. In describing erythema scarlatinoides, Stellwagon ("Diseases of the Skin") says that although the eruption is usually scarlatiniform it occasionaly presents a morbilliform appearance; that while in certain severe cases the systemic disturbances persist for several days after the appearance of the eruption, yet not infrequently they disappear with its outbreak, and that while desquamation is usually present, varying from fine branny scales to large thin pieces, occasionally desquamation is not perceptible. Given, then, a case of erythema scarlatinoides with a morbilliform eruption, the systemic disturbances subsiding with the appearance of the eruption, and a scarcely perceptible desquamation, we have a syndrome resembling in its essential features the symptom-complex above described. If these cases are eliminated from the erythema scarlatinoides group, there should be no difficulty in differentiating the remainder from our symptom-complex.

Rubella: With rubella is probably the greatest danger of confusion. In fact, I should hesitate to make a differential diagnosis on the eruption alone. In German measles the eruption may be a lighter red; the child rarely appears so extremely sick; does not have such a high temperature; the febrile period is much shorter (usually from 12 to 24 hours), and the temperature remains constant with the appearance of the eruption, coming down by lysis as the eruption fades. General glandular enlargement with occasional tenderness of the postcervical and submaxillary glands is another characteristic of rubella. Hess (*Archives of Internal Medicine*, June, 1914) reports a constant lympho-

cytosis in the blood examination of patients suffering from rubella.

Rubeola: The onset of measles is with a varying degree of catarrh of the eyes, nose, throat, pharynx, and larynx. By the end of the second day Koplik's spots may be seen on the buccal mucous membrane. These symptoms have not been regularly observed in our symptom-complex. In measles it is not uncommon to have the highest temperature during the first two days of the eruptive stage, falling by lysis as the eruption fades. The eruption in our symptom-complex lacks the characteristic crescentic arrangement seen in measles.

Scarlatina: Scarlet fever has a short period of invasion (12 to 24 hours), at the end of which time the eruption usually appears, and during which time there is usually some vomiting. The rash is bright red and punctiform, and appears first on the chest and upper extremities, whence is spreads downward over the body. While the face usually shows a flush, it is rare to see a true scarlatinal rash in this location. The rash increases in intensity until the third day, when it begins to fade. This is followed by marked desquamation. The temperature runs *pari passu* with the eruption.

Dukes' disease: The eruption is red and punctiform, and in this respect resembles scarlatina. The prodromal period is mild. To quote from Dukes himself, "The rash is usually the first indication of the disease, and may cover all of the body in a few hours. There are few general symptoms. In mild cases the temperature is slightly elevated, but the pulse rate may be unaffected." Here again the symptoms, especially the mild temperature, persist until the rash disappears.

The eruption of erythema multiforme, a fading purpura, a drug rash, and in tropical countries dengue, might resemble the eruption of the symptom-complex, but the sequence of symptoms is lacking.

While in all the foregoing diseases there are certain symptoms in common with our symptom-complex, there is one symptom present in the latter which is lacking in all the former, and I believe it is pathognomonic of the condition. *That symptom is the drop in temperature by crisis, and the feeling of well-being that the patient experiences, upon the appearance, or shortly after the appearance, of the eruption.*

Etiology.—Taking as a basis the phenomena of infection as interpreted by Vaughan, this disease can be placed, I think, in the class of "protein-fevers," the result of parenteral protein digestion. It remains to be determined, however, first, whether the foreign protein is an organized or living protein, or an unorganized or non-living protein, and, second, what is the portal through which this foreign protein enters the system. Gamaleia in 1888 showed that fever followed the introduction into an animal of dead as well as live bacteria, also non-pathogenic as well as pathogenic bacteria. He also observed that the less virulent the infecting organism, the higher and more prolonged the fever. Judging from his experiments, then, it is possible to produce fever by the introduction of non-living, unorganized proteins into the body. Vaughan by experiment and logical deduction has shown that since the body cells have the power to utilize for their structural work only the simple proteins, such as the amino-acids, when a protein of a more complex nature is introduced into the organism it must be broken down into amino-acids before the body-cells can utilize it. This is accomplished in the alimentary tract by the various juices containing the ferments, and the amino-acids are absorbed through the intestinal wall and carried by the blood and lymph to the cellular tissues of the body, each cell selecting such of the simple proteins as it needs for its maintenance. If, however, through some fault of the digestive juices and ferments, the proteins are not reduced to amino-acids, so that the partially broken down or more complex proteins are absorbed, or if complex proteins are introduced into the body by some other route, as, for example, the pollen protein through the respiratory tract in hay fever, or if bacteria which are living, organized proteins enter the body, the body cells respond to this invasion by elaborating a specific ferment for the particular complex protein, which ferment reduces it to the amino-acid stage. This is the process of parenteral digestion. According to Vaughan every complex protein molecule contains a poisonous group and a non-poisonous group, and it is the splitting up of the complex protein molecule and the liberating of this poison group which causes the symptoms in "protein fever," and jeopardizes life. When this poison is liberated in enteral digestion it is prevented from entering the circulation by the protective power of the intestinal wall.

There are three factors in our symptom-complex that I interpret as being the result of the introduction into the body of a non-living, unorganized protein. First, the absence of any evidence of contagion; second, the lack of lymph-gland involvement, which is a rather constant accompaniment of all the generalized bacterial infections; and, third, which I consider the most important, the drop in temperature on the appearance or shortly after the appearance of the eruption. This unorganized foreign protein, after gaining entrance, is carried to the tissues of the body. The large skin area probably gets the major portion. The process of sensitization begins, during which period the patient has a fever, due to certain chemical alterations to the structure of the cellular tissue for the production of the specific ferment. At the end of 72 or 96 hours sensitization is complete, a specific ferment is produced, the complex protein is split, and the poison group liberated. The irritation of this poison group in the skin causes congestion and round cell infiltration of the derma, and where present in large quantities may even cause a small hemorrhage into the derma and subcutaneous tissue. On account of this protein poison being so close to the surface of the body, it is easily and quickly eliminated, the temperature drops, the child appears well, and there remains only the repair of the derma from the irritation of the protein poison.

If a living, organized protein were the provoking cause, then there would be a double process, namely, a growth of the virus with sensitization in one part, while in another part ferment production and parenteral digestion. We should expect here the continuation of the fever after the appearance of the eruption, and its continuation until sensitization had reached the point where all the invading microorganisms were destroyed. This is probably the case in scarlet fever, measles, and German measles.

Lastly, as to the port of entry of this unorganized protein. With few exceptions the patients ranged between five months and two years of age.

It is during this period that the digestive juices are being called on to attack new kinds of proteins introduced into the gastrointestinal tract. Surely they ought not to be censured if they fail in an occasional attempt.

I think it is fair to assume that either on account of the introduction of some new protein into the gastrointestinal tract and the inability of the digestive juices to reduce it to amino-acids, or if on account of a mild catarrhal condition of the stomach and upper intestine the digestive juices have been so altered that they are unable to reduce the amino-acids such proteins as they had been capable of digesting under normal conditions (that is, normal enteral digestion), then as a result the semi-broken down, complex proteins are absorbed and the process of parenteral digestion is established. I do not think it essential that gastrointestinal disturbances (*i.e.* vomiting, diarrhea with abnormal stools, etc.) need be a constant accompaniment in order that one may establish an intestinal origin for this symptom-complex. I should argue, on the contrary, that vomiting and diarrhea would so increase the elimination that very little of the semi-broken down complex protein would be absorbed.

Conclusions.—From an etiological as well as from a clinical viewpoint I do not think that this symptom-complex bears any relation to rubeola, rubella, scarlatina, and Dukes' disease. From a clinical viewpoint it probably has been, and from an etiological viewpoint it probably could be, relegated to that rather irregular and diversified class of conditions summed up as erythema scarlatinoides. However, on account of the almost constant and typical course of this disease, I think it deserves a separate place in our medical nomenclature.

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TRICHOCEPHALUS DISPAR INFECTION.

WITH REPORT OF A CASE.

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This infection is thought to be a harmless affair in the vast majority of instances, if we are to judge by opinions expressed in the various textbooks on Clinical Diagnosis and Internal Medicine. Emerson[1] says that it is one of the most common of intestinal parasites, and that autopsies indicate its presence in 100 per cent. of the cases in Southern Italy. It is present in the stools of 45 per cent. of the population in some parts of Germany and occurs in 10.3 per cent. of adults in this country. He recognizes, however, that in some cases it may give rise to severe symptoms and even death. He cites an article by Becker[2] which I have reviewed. This author also mentions the fact that the parasite is generally considered as living a commensal existence in the human intestine, but does not consider this contention exactly justified, as is shown by his review of the literature and his own cases.

Simon[3] describes the organism in his Clinical Diagnosis, but makes no reference to its pathogenicity. Wood[4] relates that mental symptoms have been occasioned by it, but as a rule it did not cause symptoms. He quotes Gerard, who refers to the possibility that the lesions induced in the mucosa of the appendix favors a secondary infection of that organ.

The worms are 40 to 50 mm. long and usually occur in pairs. The anterior part is threadlike, while the posterior part is much thicker, in which respect they resemble an ordinary whip. The posterior part is usually coiled like a watchspring in the male, while it is either straight or comma-shaped in the female. The eggs are very striking and are not easily mistaken for anything else. They measure about 20 to 25 mm. in width and about 50 mm. in length. They are colored a dark brown, have a doubly contoured membrane and two highly refractile plugs at either pole. A granular yolk fills the center.

Askanazy[5] says that they are passed with the feces and developed to larvæ in moist places and may live in their shell for as long as five years. They are usually swallowed with the water, or with dirt by children, which gives opportunity for the development of the mature parasites. About four weeks later the eggs are found in the stools.

Pascal[6] reports a case of a little girl who developed anemia and died with symptoms of cerebral irritation. The trichocephalus was present in the cecum and colon in large numbers, although the brain was negative. Barth[7] reports a similar case with the exception of the meningeal symptoms. The autopsy showed a completely normal central nervous system. The colon contained a large number of the organisms. Gibson reports a case in a six-year-old girl who gradually developed a condition of nervous irritability. Inability to dress herself through lack of coordination was soon followed by interference with her speech from the same cause. Finally, paralysis of the extremities and loss of speech supervened. Moderately large doses of calomel produced a rapid improvement and ultimately a complete cure.

Burchardt[8] gives an instance of a nineteen-year-old man who vomited several times a day from an unknown cause. Later, he had profuse diarrhea. After temporary improvement following the Karlsbad cure the symptoms returned and blood appeared in the vomitus. Severe vomiting and purging three and four times a day. Gradually he grew very weak and developed severe pains in the region of the transverse colon. A microscopical examination of the feces showed the eggs of the *Trichocephalus dispar* in every preparation. From the number of eggs he calculated that there were about 500 males and 500 females in the intestine. The patient then developed signs of peritonitis in the right hypochondriac region. Santonin was administered after which he repeated the Karlsbad cure. Marked improvement followed. Several months later the symptoms returned, this time accompanied with severe icterus and complete aphonia. Later he completely recovered, although Burchardt did not find out whether the parasites were driven from the intestine owing to his inability to procure specimens for examination. Two other cases are reported in the group with like symptoms.

Another patient of Burchardt's gave a history which revealed the fact that he had visited a school where the above patients attended. He believes

that they all contracted the infection from the drinking water, because the well lay very near a latrine.

Morsasca[9] gives a case of severe progressive anemia with frequent diarrhea and abdominal pain. The stools are bloody and many eggs are present. Anthelmintics cured him.

Moosbrugger[10] reports a case of a boy one and one-half years old who had suffered for 24 days with a slimy, bloody diarrhea. In addition, he had a high grade anemia in spite of a good appetite and nourishing food. Large numbers of the trichocephalus eggs were found in the feces. After a severe attack of bronchitis his mother was able to get twenty-six of the worms from the mucosa of the rectum while the child was straining. Treatment was unavailing. A second case occurred in a two-year-old boy who had frequent evacuations, watery in character and containing much blood. No vomiting or nervous symptoms. Many eggs were found in the feces. Treatment was not successful. At the autopsy it was found that the large intestine contained a thick mucous exudate and many trichochepalus worms knotted together in clumps, some of which contained thirty. In some places the colon was much injected and at other places pale. In one location a bleeding ulcer was found.

Megnin[11] reports cases of pernicious anemia in dogs, in whose cecums he finds several hundred worms. He suggests a connection between the parasites and the anemia, but does not attempt to establish it.

Becker (*loc. cit.*) observes the case of a 22-year-old cook. The blood count was reds, 3,456,000; whites, 6,250, and the hemoglobin 35 per cent. Marked poikilocytosis and many macrocytes. No nucleated forms were seen. A differential white count showed: Polymorphs 69 per cent., lymphocytes 26 per cent., eosinophiles 2 per cent., mononuclears 3 per cent. The eggs were found in every preparation of the feces. There were no physical signs with the exception of a loud mitral murmur. She derived no benefit from a month's treatment with liquor ferri sesquichlorati. She was then treated with daily injections of benzene, five drops to a liter. The patient gradually improved, and was finally cured. Fourteen days following the cure the red count was 4,350,000 and the hemoglobin 50 per cent. A week later it was 5,100,000 with a hemoglobin of 70 per cent. The patient was dismissed at her own request, and although numerous observations were made, no eggs could be found in the stool.

As the blood findings in the above case resembled those of chlorosis, Becker successfully eliminated this condition as a diagnostic possibility by the administration of antichlorotic treatment over the course of a month. Although the blood findings are similar, the great decrease in the number of red cells combined with extensive morphological changes serves to distinguish. Then the fact that nucleated forms are often found in this condition forms a differential sign of value. No megaloblasts have been reported, however.

Becker divides the symptoms of this infection into three groups, as follows:

1. Intestinal: Severe catarrh of the colon with copious diarrhea. Ulceration, blood in the stool, and perityphlitic symptoms. Peritoneal phenomena and vomiting.

2. Nervous system: Brain symptoms, headache, vertigo, aphonia. Meningeal symptoms, reflex phenomena of various kinds are often present, such as disturbed digestion and deterioration of the blood.

3. Blood symptoms: Anemia with headache, vertigo, palpitation of the heart, and debility associated with abdominal pains.

This organism occurs in varying numbers in the intestine. Rudolph found over 1,000 in his case, Bellingham found 100, Heller 60 to 100, Askanazy 50 to 100. Moosbrugger[10] in two cases found 887. It is possible that they produce an anemia in the same manner as the *Bothriocephalus latus* or fish tape worm and the *Ancylostoma duodenale* or hookworm.

Askanazy[12] has found that the gut of this parasite contains small brown and black pigment granules which give it a diffuse brown color. That this pigment is iron containing can easily be demonstrated by the potassium ferrocyanide-hydrocloric acid reaction. The pigment is found exclusively in the gut of the parasite, and can only be derived from the hemoglobin of the host through the mucosa of the intestine.

It can be seen in the sections that the parasites burrow into the mucosa in such a way that the thin fore part of the body forms a loop, with the anterior end just protruding through the wall of the host's intestine. Whether the trichocephalus swallows whole blood corpuscles or takes up hemoglobin alone is not known, but he has observed within the esophagus of the parasite a cell resembling a polymorphonuclear which caused its distention to 10 microns. Sometimes, however, its caliber is normally that size.

During life all of the parasites are attached to the mucosa and are not driven off by vermifuges, so that it is an extremely rare thing to find them in the stool. Shortly after death they begin to drop off and in 48 hours most of them are found free in the intestine.

It is supposed that certain diseases may alter the intestinal wall or its blood supply so as to make the environment distinctly unfavorable as a habitat for this organism. As evidence for this contention, Becker cites the case of Moosbrugger.[10] A complicating attack of severe bronchitis in a one and one-half-year-old boy was supposed to be the cause for the appearance of the worms in the feces. The child's mother was able to take 26 from the rectal mucosa.

The rôle of this organism in appendicitis has been much discussed. Aschoff (*loc. cit.*) says that since the parasites are able to bore into the living tissue they may favor the development of pathogenic bacteria. But usually there are no symptoms of typhlitis when these organisms are present, while appendicitis usually occurs without their presence. However, there has been very little careful search for either the parasites or eggs in these cases.

Case Report.—Patient is a little girl three years old Although American born, she has lived in the Philippines for the past year where her father is employed by the Government. Her constitution is not strong, although she has had no sick spell previously. About five or six months ago, her appetite disappeared, and marked abdominal bloating was noticeable. She did not sleep well, not infrequently awakening with a shriek. At these times, clonic spasms of the muscles occasionally occurred. Not infrequently, a generalized tonic spasm produced rigidity of the entire body.

About two and one-half months ago, she suddenly developed a moderate jaundice with a temperature of 104°. In twenty-four hours, the temperature was normal and the jaundice gradually disappeared. The Tri-

chocephalus eggs were found in practically every preparation examined. One c.c. of feces contained approximately 200 eggs. A blood examination showed: reds, 3,330,000; whites, 8,200; hemoglobin, 70 per cent. Differential: Polymorphs, 36 per cent.; large mononuclears, 42.2 per cent.; small lymphocytes, 14.5 per cent.; eosinophiles, 7.3 per cent. Cina was administered in the first dilution ten drops per day for a week. The next week, two saline purges were given. The following week, santonin, the same strength and frequency of dosage as the cina, was administered. The bloating in the abdomen nearly disappeared and the whole symptom complex was greatly improved.

During these three weeks, six examinations of the stools were made and at no time had the eggs completely disappeared. The stools were almost normal in color and consistency. At the end of three weeks more, with no additional treatment, all symptoms had disappeared, the stools were normal and no eggs could be found after three examinations. The blood count at this time was: reds, 4,185,000; whites, 10,400; hemoglobin, 85 per cent. (Fleishl.) Differential: polymorphs, 65.5 per cent.; mononuclears, 1.5 per cent.; transitional, 1 per cent.; eosinophiles, 4.5 per cent.; large lymphocytes, 8 per cent., and small lymphocytes, 20 per cent. At the time the patient had a mild streptococcic coryza, which probably caused the slight polymorphonuclear cytosis.

Summary.—Although it is not the usual thing for this parasite to assume a pathogenic rôle, it is not as harmless as the ordinary text-book on Clinical Diagnosis would have us suppose. Since it is a blood-sucking organism, the appearance of its eggs in the feces should not be considered too lightly in cases of obscure anemia. It is quite noteworthy that the rapid disappearance of the clinical symptoms and blood picture occurred simultaneously with the absence of the eggs in the feces. This forms the best evidence that I possess of the pathogenicity of the trichocephalus in this case.

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BREAKING GLASS TUBES CONTAINING SUTURE MATERIAL.

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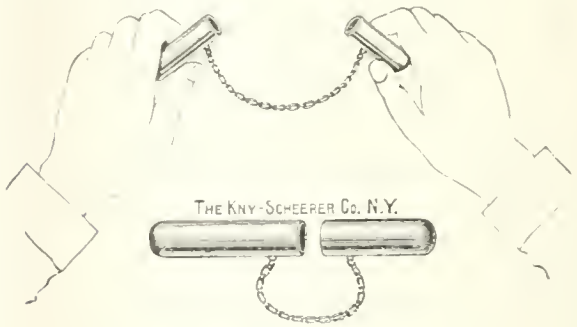
ALTHOUGH catgut and other suture materials put up in sealed glass tubes are used extensively, an efficient means of breaking these tubes has been lacking. The usual practice is to cover a tube with gauze and break it with gloved hands. By this method not infrequently gloves and hands are cut by broken glass and in the course of a year considerable gauze is wasted. To obviate these disadvantages we have adopted at the New York Hospital a simple and cheap device. Two metal cups, connected with a chain, as shown in the illustration, are used for breaking the glass.

The success of the device depends upon the fact that the glass tubes of most, if not all, supply houses have a standard distance between one end and the filed line or fracture line near the center; the distance between the filed line and the other end is somewhat variable. *The shorter cup is made the same length as the fixed distance* between the file mark and the end.



Cups for breaking glass suture containers.

Application. Holding the short cup in the left hand, that end of the glass tube which is of uniform length (this is usually the shorter end) is introduced into it. *The filed line is placed away from the person holding the tube.* The other cup is then placed over the other end of the tube and with a sudden sharp bending motion the tube is readily broken.

107 EAST SIXTIETH STREET

Medicolegal Notes.

Physician's Liability for Chauffeur's Negligence.—A physician, having been driven to his club in his automobile, ordered his chauffeur to return in the evening. His wife, late in the afternoon, having authority to give orders to the chauffeur in the use of the car in her husband's absence to do "anything reasonable," directed the chauffeur to take her to the club. While on the way they discovered an injured woman by the roadside. The physician's wife stopped, and, finding the woman too badly injured to be moved, directed the chauffeur to go for a doctor. This he did, finding a doctor who got into the car. On the way back to the scene of the first accident the car collided with a wagon and the doctor was injured. In an action for his injuries against the physician for his chauffeur's negligence it was held that the physician's wife under the circumstances was not exercising exclusive control over the chauffeur, and, she having authority to direct the chauffeur to go for a doctor, her orders to him to do so did not destroy the relation of master and servant otherwise existing between the defendant and the chauffeur, and the defendant was therefore liable for the consequences of the chauffeur's negligence.—McHarg v. Adt, 163 N. Y. App. Div. 782, 149 N. Y. Supp. 244.

Suggestion of Insurance to Jury in Malpractice Case Causes Reversal.—In an action against the visiting senior surgeon of a hospital for damages for his alleged negligent failure to care for the plaintiff's dislocated knee, the evidence was held to make a close case as to whether the surgeon had neglected to care for the plaintiff to his injury or whether the want of treatment was not in accordance with the plaintiff's expressed wishes. The surgeon was serving without pay. The plaintiff's counsel sought to appeal to the prejudice of the jury by placing the defendant, contrary to the facts, in the position of one owing a special duty to the plaintiff out of the many patients in the hospital. On appeal from a judgment for the plaintiff, it was held that the action of the plaintiff's counsel in asking the jury whether they were interested in any insurance company issuing policies for protection against liability for injuries from malpractice, was ground for reversal.—Rothenberg v. Collins, 161 N. Y. App. Div. 387, 146 N. Y. Supp. 762.

MEDICAL RECORD.

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THOMAS L STEDMAN, A.M., M.D., EDITOR

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DIGITALIS DOSAGE.

IN the development of the various branches of medicine the department of therapeutics has proceeded more slowly than most of the others, especially in the matter of drug treatment. The activity of the laboratory has added a few valuable remedies to our armamentarium, but much of the research on this subject has tended rather to disprove the value of many drugs, both old and new. The number of really invaluable drugs is certainly very small, but it includes digitalis. Digitalis has been studied at length by many investigators and its mode of action has been fairly definitely established. Of its dosage less is satisfactorily known. Different samples of the leaf and different preparations vary enormously in their potency and much effort has been devoted to the problem of finding a means of standardization. Of the standards proposed, the "cat unit" of Hatcher is becoming accepted as the most reliable for translation into dosage for man. The cat unit, it may be explained, is "that amount of the drug which is just sufficient to kill one kilogram of cat when slowly and continuously injected into the vein. This is expressed in terms of milligrams of the drug, whether it be a pure principle or the leaf."

Following this method of standardization Eggleston (*Archives Int. Med.*, 1915, xvi, 1) has determined, in a series of cardiac cases, the amount of the drug which has proved necessary to produce "full therapeutic or minor toxic action." He emphasizes the desirability of using a preparation which has been standardized by the cat method, but states that if such is not obtainable it is safe to proceed on the basis that a high-grade leaf has an average cat unit strength of 100 mg. He concludes that "the average therapeutic dose of digitalis, given orally to man in the form of the tincture or infusion, is 0.146 cat unit or about 0.146 c.c. of an average high-grade tincture per pound of body weight." Likewise 0.066 cat unit, or 0.023 mg. per pound is the average therapeutic dose of crystalline digitoxin. In his cases the majority did not vary 15 per cent. above or below this average. The chief drawbacks of digitalis therapy have been first, that it developed its action rather slowly and second, that the stomach not infrequently became intolerant to the drug before the desired therapeutic result could be attained.

Eggleston proposes the following method of administration which he claims will largely overcome these disadvantages. The dose for the patient is estimated on the basis of one-seventh of a cubic centimeter of a high grade tincture for each pound of the body weight. In estimating this dose it is necessary to estimate and disregard the proportion of the patient's weight, which is due to edema as well as that due to fat in the very obese. One-third to one-half of this dose is given at once and followed, in four to six hours, by one-quarter to one-third the dose. The remainder is to be given in smaller amounts at intervals of from four to six hours. If, after the total dose has been given, the patient fails to show the full therapeutic effect, administration of small amounts should be continued until such effect appears. Given in this way, the full effects of the drug may be manifest in from twelve to thirty-six hours in the majority of cases. Eggleston says that the large amounts of digitalis given early do not cause gastric irritation since he has given from 5 to 15 c.c. repeatedly and has never seen the least disturbance as a result. Indeed, when it is realized that the vomiting of digitalis is a result of its central action it will seem probable that large amounts may be given in this way before the onset of nausea. It is, of course, understood that this method is for cases of acute cardiac decompensation and is not designed to supplant the so-called chronic digitalis therapy which is followed in the less urgent cases. He states that both digitalis and digitoxin are probably rapidly and fairly uniformly absorbed from the alimentary canal of man, but digitalis is less completely absorbed than is digitoxin. Strophanthus, strophanthin, ouabain, and true digitalin, on the other hand, are poorly and irregularly absorbed when given by mouth and are unsuited for therapeutic use in this way.

CASTELLANI'S COMBINED VACCINATION.

ONE of the most signal advances recently made in the prophylactic use of vaccines is Castellani's method of combined vaccination which is now being used on an extensive scale in France and Italy. This method is based upon the experiments conducted in Kruse's laboratory in 1901 and 1902 by Aldo Castellani, who showed that if an animal is inoculated with three different species of bacteria the quantity of agglutinins and antibodies elaborated in its blood corresponding to each species is equal to the amount that would be produced if this species alone were injected.

The results of his latest work on this theme are reported by Castellani in *Lo Sperimentale*, July 14, 1915. He states that in the experimental animal which he has employed, namely, the rabbit, it is not possible to obtain regularly good results with more than three species of bacteria. In man, however, satisfactory results are apparently obtained with four species of microorganisms, and in certain instances even with a greater number. Ten different combinations of vaccines have been prepared for prophylactic use. They are the following: (1) Typhoid + paratyphoid A + paratyphoid B. (2) Typhoid + Malta fever. (3) Typhoid + para-

typhoid A + paratyphoid B + Malta fever. (4) Typhoid + paratyphoid A + paratyphoid B + *Bacillus asiaticus* + *Bacillus columbensis*. (5) Typhoid + paratyphoid A + paratyphoid B + *Bacillus asiaticus* + *Bacillus columbensis* + Malta fever. (6) Typhoid + paratyphoid A + paratyphoid B + dysentery (Shiga-Kruse) + dysentery (His Y) + dysentery (Flexner type No. 1) + dysentery (Flexner type No. 2). (7) Cholera + bubonic plague. (8) Cholera + typhoid + paratyphoid A + paratyphoid B. (9) Cholera + bubonic plague + typhoid + paratyphoid A + paratyphoid B. (10) Cholera + bubonic plague + typhoid + paratyphoid A + paratyphoid B + Malta fever.

The inoculation of any of the above vaccines into a human being is harmless. The reaction is not a severe one excepting in the case of the vaccines containing the plague bacillus. These give a reaction more intense than that produced by the simple antipest vaccine of Lustig and Galeotti, but less than that produced by Haffkine's antipest vaccine. The combined vaccines are prepared from agar cultures in the form of emulsions in physiological salt solution with the addition of one-half of one per cent. of phenol. Such an emulsion gives a less intense reaction than one in which the microorganisms are killed by heat. Twenty-four hours suffice for the destructive action of the phenol. The typhoid + paratyphoid A + paratyphoid B vaccine may also be prepared by heating the broth cultures to 53° C.

Individuals inoculated with mixtures containing as many as four species of bacteria produce in general agglutinins for each species, and the quantity in each instance is not much less than if a simple "monovaccine" has been employed. In the case of vaccines containing more than four species of microorganisms some give satisfactory results and some do not, the agglutinins developing for certain species of the bacteria and not for the others. The vaccines which Castellani has found of most practical value are the typhoid + paratyphoid A + paratyphoid B vaccine introduced by him in 1905; the cholera + bubonic plague vaccine; the typhoid + paratyphoid A + paratyphoid B + Malta fever vaccine; and the typhoid + paratyphoid A + paratyphoid B + cholera vaccine. The use of these combined vaccines has obvious advantages over the use of the separate simple vaccines, particularly in dealing with the large aggregations of individuals in armies.

THE WASTE OF LIFE.

In Europe, at the present time, life is being wasted on a scale never before witnessed in the history of the world. But it is not only in war that life is wasted, for it is being wasted all the time when the ordinary routine of existence is being pursued. In the *Popular Science Monthly* for July, 1915, this subject is discussed by Elaine Goodale Eastman, and although the matter has been pretty well threshed out during the past few years it is important enough to bear repetition. The writer pertinently says that the death rate among young children is actually a touchstone of community welfare; a test of civilization. A high rate of infant mortality means individual ignorance and social injustice. As for the causes of high infant mortality, these are attributed to the mother's condition before and during the birth, as affected by alcoholism, social disease, and overwork. There is also lack of proper care during confinement. According to Mangold, in American cities about one-half of the births are attended by midwives, 90 per cent. of whom are inefficient. The next greatest cause is lack of maternal nursing. It has been estimated that as many as 70 per cent. of the infants in New York City are bottle fed, a fruitful cause of infant mortality. A third leading cause is the use of impure milk.

The remedy for this state of affairs, the writer thinks, should consist in an active propaganda among women concerning the importance of maternal nursing. Emphasis should be laid upon the dangers and inconvenience of artificial feeding. Let it be thoroughly understood that bottle feeding is a grave misfortune if unavoidable, and if avoidable an unnatural wrong. It is pointed out that New Zealand has the lowest rate of infant mortality in the world, and this result has been brought about mainly through the activity of volunteer societies.

The writer does not refer to the most important work of this description, the schools for expectant mothers and mothers. Such schools were first established in Belgium and France and then in Great Britain, and in the large cities of all these countries. They have done magnificent service in reducing infant mortality and improving the physical and mental condition of poor children. American cities are now beginning to recognize the menace of child destruction, and many of them are engaged in what is known as a "Baby Saving Campaign." The program of a "Baby Saving Campaign" is somewhat of this nature: (1) Insistence upon complete and prompt birth registration as a basis of work. (2) Rigid inspection of the milk supply, with frequent tests for fat content as well as for dirt and bacteria. Recognized grades of wholesome milk include (*a*) certified milk; (*b*) inspected milk; (*c*) pasteurized milk. (3) The establishment of pure milk stations, where such milk may be obtained at or below cost, and to mothers unable to pay the price may be furnished free. Such milk must be supplied only on proof of inability to nurse the child, if too young for proper weaning. (4) Baby clinics and the employment of trained nurses to visit the homes, especially of the very poor, to care for sick babies, and to instruct mothers in the care of infants. (5) Improvement of bad housing conditions, warfare against flies and the breeding of flies, and general educational work.

THE HEMOPLEUROPNEUMONIC SYNDROME.

The study of a large number of cases of penetrating wounds of the chest during the first six months of the present war has enabled M. Piéry, of the medical faculty of Lyons, to delineate a condition to which he applies the above name. In the *Presse*

Médicale, June 3, 1915, he describes the characteristics of this syndrome as observed in fifty-three cases. The essential elements are a pneumonia combined with a hemothorax. The physical signs are said to be characteristic: on auscultation there is tubular breathing at the level of the middle of the lung; there is dullness or flatness on percussion at the base; radiography reveals a shadow which diminishes gradually from the base to the apex, and on aspiration of the pleural cavity there is obtained a bloody fluid. The symptoms are hemoptysis, sudden dyspnea which tends to diminish; moderate tachycardia, and a temperature curve exactly similar to that of pneumonia. Characteristic features are the recurrent rises of temperature and the slow resolution.

The above picture is frequently complicated by the presence of a slight or severe degree of pneumothorax; or by a secondary suppuration in the pleural cavity, which phenomenon is accompanied by a new rise in the temperature which assumes an oscillating character, and by a change in the character of the pleural fluid. Rare complications are caries or latent fractures of the ribs; collections of fluid in the mediastinum; wounds involving both the thorax and abdomen, and general pyemia with abscess of the lung and infective myocarditis. The treatment of simple cases of wounds of the lungs comprises whatever antirevulsive measures would be demanded by a case of pneumonia, and excludes, above all, operative intervention. The hemothorax particularly is to be let alone and the extraction of projectiles from the thoracic wall is to be delayed as long as possible.

The description of the above syndrome is an excellent instance of the manner in which, amid the turmoil of war, it is possible for the clinician to apply his mind in the study of problems of disease that are presented on a larger scale than during times of peace.

American Limb Prosthesis and the War.

The quality of the work done by our artificial limb makers is not half as well known among us as it deserves to be, although the subject has received full recognition in the successive editions of the "Reference Handbook of Medical Sciences." One of our leading manufacturers was also once selected to contribute the article on limb prosthesis for a German surgical system, and the excellence of the work done here is often made the subject of comment in Germany. At a meeting last April of the Royal Imperial Medical Society of Vienna (*Berliner klinische Wochenschrift*, May 31) von Eiselsberg presented a subject who eight years before in America had had amputation of all four extremities as a result of gangrene following very severe electrical burns. The amputations were made respectively in the continuity of the upper arms and legs. The man after six months' practice in exercising the stumps was supplied with four artificial limbs by an American manufacturer. He became able then to earn his living; could walk without a limp and had covered, without a cane, 18 kilometers (11¼ miles) in a day; was able to dress and undress, and feed himself and in fact seemed to show no great incapacity. He had been shown, for the moral effect, to the local soldiers who had lost their limbs in battle and it was proposed to exhibit him for the same purpose in the other military hospitals. As we noted recently, a society has been formed by Americans in Paris to supply the crippled French soldiers with artificial limbs made in this country.

The Ubiquitous Uterus.

In all lands and all ages the source of life has been the subject of human speculation, and this interest attaches to everything connected therewith. It is not surprising then that the uterus has always received more than its share of attention from medical writers. Before this organ had ever been studied in what we nowadays would call a scientific spirit there were hosts of theories, traditions, and legends about its anatomy, physiology, and pathology. The most widely held view of its nature and functions was that it moved about the body of its own volition, thereby causing the various disorders grouped under hysteria, which disease as is well known gets its name from the Greek word for uterus. For instance, the globus hystericus was due to the pressure of the vagrant uterus on the throat. Much as this idea may amuse us to-day it is hardly stranger than are the facts in the case when we compare the uterus at full term with the non-gravid one. A concrete illustration of the present-day appeal of this subject can be found by consulting the nineteenth volume of the second series of the index catalogue of the Surgeon General's Library, which has appeared recently. This book is devoted to the letter U, and no less than 291 of its 674 pages are filled with references to articles on the uterus!

News of the Week.

Committee of American Physicians for the Aid of the Belgian Profession.—Dr. F. F. Simpson, M.D., 7048 Jenkins Arcade Building, Pittsburgh, Pa., reports the receipt of the following contributions for the week ending August 14, 1915:

Dr. W. L. Keller, Hot Springs, Ark.	$5.00
Dr. E. C. Ellett, Memphis, Tenn.	10.00
Dr. David W. Cheever, Boston, Mass.	20.00
Receipts for the week ending August 14	$35.00
Previously reported receipts	7,779.84
Total receipts	$7,814.84
Total disbursements	7,310.04
Balance	$504.80

The American Red Cross in Italy has sent out an appeal for aid from Americans, in order that the work of the society may not be impeded by lack of co-operation from its friends here. It is stated that the American colony in Florence, which is the central base hospital city of Italy, is equipping and will maintain a convalescent home for soldiers, for which supplies from America are urgently needed.

Serum Treatment of Wounds in the French Army.—A report from Paris announces that a number of remarkable cures have been effected by the new polyvalent serum, the discovery of which was announced last March. Complete recovery is announced of men who were terribly mutilated and for whom all hope had been given up before the serum was employed, so badly infected were their wounds. Drs. Leclanché and Vallée, the discoverers of the serum, have been unable up to the present to make more than 2,000 flasks of it daily, most of which goes to the base hospitals, where the worst cases are to be found. It is hoped, however, that it

can soon be made in sufficient quantities to supply the firing line, where it could be used prophylatically as antitetanus serum is now.

Germany's Loss Through the "Lusitania" Massacre.—The following note from Mr. Francis Potter is published in the *New York Times* of August 12: "I see that in the new German music hall song glorifying the sinking of the *Lusitania* the name of the late Alfred Vanderbilt is coupled with that of Sir Edward Grey, Germany's arch enemy, according to her publicists. It may interest the German public to know, through your columns, that Mr. Vanderbilt sailed for Europe with the intention of giving a very large sum of money to the Red Cross of the Allies and the Austro-Germans. Naturally, his death put a stop to the realization of this project and many wounded men of the Teutonic forces will suffer and perhaps die who might have been spared both suffering and death had Mr. Vanderbilt been spared to complete his plans."

Charitable Bequests Lost Through the Mexican Troubles.—In the will of the late Dr. Frederick S. Pearson of Great Barrington, Mass., who was killed on the *Lusitania*, bequests were made of $500,000 to Tuft's College and $50,000 each to the Home of Mercy Hospital, Pittsfield, and the General Hospital, Lowell. The estate, however, consisted largely of investments in Mexico, which have so depreciated that no funds are available for the payment of those legacies.

New York City Death Rate.—During the week ending August 7 there were 1,451 deaths in New York City; during the corresponding week of last year the deaths numbered 1,314; the death rates were 13.04 and 12.28 respectively, and for the week ending July 31, 11.94. The rate for the first thirty-two weeks of 1915 was 13.78, compared with 14.57 for the corresponding period of 1914.

Chicago Death Rate.—During the week ending August 7 there were 535 deaths in Chicago, compared with 615 during the corresponding week of 1914; the death rates were 11.4 and 13.4 respectively, and for the week ending July 31, 10.4.

A Case of Bubonic Plague in California.—The California State Board of Health reports the death of a man in Contra Costa County from bubonic plague. This is said to be the first death from this disease which has occurred in California since October, 1913. The man is believed to have contracted the plague from ground squirrels, many of which are known to be infected with the disease.

An Epidemic of Typhoid Fever has prevailed during the past three weeks at the boys' reformatory and branch workhouse on Hart's Island, New York City. There have been over sixty cases. The outbreak is believed to be due to the presence of two carriers, one a cook, the other a waiter in the workhouse.

Accident Service at the Norwegian Hospital.—Owing to the great influx of manufacturers into the district along the water front of South Brooklyn during the past fifteen years, there has been a marked increase in the work of the accident and emergency department of the Norwegian Hospital, the number of calls averaging about ten a day, or over 3,000 a year. For this reason the Board of Managers announce a portion of the addition to the hospital, now in course of construction, will be devoted to a special accident department.

Dr. Andrew J. Gilmour of this city has succeeded, in company with Professor Helvey of Excelsior Union, in scaling Mount Geike, one of the highest and steepest peaks in the Selkirk range of the Canadian Rockies. This is the first time, as far as known, that the summit of the mountain has ever been reached.

Dr. George W. Alexander of Gardiner has been appointed medical examiner of Kennebec County, Maine. He is a native of Prince Edward's Island and is a graduate of the medical department of Georgetown University, Washington.

Physicians Must Pay Postage.—The Health Department of Minneapolis has hitherto supplied the physicians of that city with stamped envelopes for use in reporting births and deaths. This is regarded, however, as a needless expense by the city fathers, who happen just now to be on economy bent, and accordingly they propose to cut out the appropriation for postage from the health department budget for 1916.

New Oregon Physicians.—At the recent State Board examinations in Oregon, 30 out of the 49 candidates received licenses to practise medicine. Of 11 osteopaths who applied for licenses 9 were successful. The Board of Medical Examiners consists of Dr. Charles T. Chamberlain, president; Dr. L. L. H. Hamilton, secretary; Dr. Herbert S. Nichols, treasurer, and Dr. Harry F. McKay, H. L. Henderson, and F. E. Moore.

A Collective Investigation of Twilight Sleep.—Dr. A. J. Rongy, 62 West 89th street, New York, writes that, on request, he has undertaken a study of "twilight sleep" the results of which will be presented at the next annual meeting of the Association of American Obstetricians and Gynecologists. He is desirous of obtaining all the available statistics on the subject and has prepared a set of questions which he will be glad to send to any one who has had any experience with this obstetrical method and is willing to favor him with the results of such experience.

American Electrotherapeutic Association.—The twenty-fifth annual meeting of this association will be held at Atlantic City, N. J., September 14, 15, and 16, 1915, with headquarters at the Hotel Chalfonte under the presidency of Dr. John W. Torbett of Marlin, Texas. All physicians interested in physiotherapy are invited to attend. The secretary of the association is Dr. J. Willard Travell, 27 East 11th street, New York City.

American Association for Study and Prevention of Infant Mortality.—The sixth annual meeting of this association will be held in Philadelphia, November 10-12, 1915. The subjects to be discussed include: Eugenics; effect of the economic standing of the family on infant mortality; infant welfare nursing in small cities, towns, and rural districts; institutional mortality; midwifery conditions, and treatment and prevention of respiratory diseases. Mr. Homer Folks of New York is president of the association, and Dr. S. McC. Hamill of Philadelphia president-elect for 1916. Dr. Joseph S. Neff, 801 Weightman Building, Philadelphia, is chairman of the Committee on Local Arrangements. The sessions will be under the chairmanship of the following: Eugenics, Dr. Wm. F. Snow, New York City; Pediatrics, Dr. Charles A. Fife, Philadelphia; Obstetrics, Dr. Mary Sherwood, Baltimore; Economic Aspects of Infant Welfare, Mr. Sherman Kingsley, Chicago; Nursing and Social Work, Miss Ella Phillips Crandall, New York City. The session on Economic Aspects of Infant Welfare will be a joint one with the Philadelphia County Medical So-

ciety and will be held at the College of Physicians. All other sessions will take place at the Bellevue-Stratford Hotel. Programs or other information in regard to the meeting can be secured from the executive secretary, Miss Gertrude B. Knipp, 1211 Cathedral street, Baltimore, Md.

Obituary Notes.—Dr. ARTHUR T. HILLS, formerly of New York, a graduate of the New York Homeopathic Medical College and Hospital in 1875, a member of the American Medical Association and the New York State and County Medical Societies, and consulting surgeon to the Metropolitan Hospital, Blackwell's Island, died at St. Joseph's Hospital, Nashua, N. H., on August 7, aged 64 years.

Dr. CHARLES HARVEY SHATTUCK of Everett, Mass., a graduate of the Dartmouth Medical School, Hanover, N. H., in 1881, died at his home on July 26, aged 57 years.

Dr. WILLIAM J. HAMLON of Mt. Carmel, Pa., died at Philadelphia on July 11 as a result of nephritis at the age of 55 years. He was graduated from the Medico-Chirurgical College of Philadelphia in the class of 1895.

Dr. CHARLES CARROLL O'BRION of Groveton, N. H., a graduate of the Medical School of Maine, Portland, in 1881, and a member of the New Hampshire and Coos County Medical Societies, died at his home on July 16, aged 66 years.

Dr. JOHN WESLEY GRESHAM of Jackson, Tenn., a graduate of the Kentucky School of Medicine, Louisville, in 1895, and a member of the American Medical Association, the Tennessee State Medical Association, and the Madison County Medical Society, died at his home, after a brief illness, on July 16, aged 40 years.

Dr. JOHN H. MAHAN of Memphis, Tenn., a graduate of the Memphis Hospital Medical College in 1896, and for twenty years in charge of the Memphis City Hospital, died at St. Joseph's Hospital, Memphis, on July 19, aged 55 years.

Dr. MERRILL E. DAWSON, formerly of Otsego, Ohio, a graduate of the Cleveland College of Physicians and Surgeons in 1895, died from drowning on July 18, on his farm at Loranger, La., aged 51 years.

Dr. CORTLAND KIERNAN HAND of Mt. Vernon, N. Y., a graduate of the College of Physicians and Surgeons, New York, in 1914, died at his home on July 30, aged 23 years.

Dr. WINFIELD BECK SHEPHERD died at Philadelphia on July 13 at the age of 30 years. He was graduated from the University of Michigan, Department of Medicine and Surgery, in the class of 1910, and he had served as intern in the Samaritan Hospital.

Dr. EDWARD BEDLOE died at the Samaritan Hospital, Philadelphia, on July 24 at the age of 67 years. He was graduated from Jefferson Medical College in the class of 1869 and from the Pennsylvania College of Dental Surgery in the class of 1870. He was at different times United Consul at Verona, Italy; Alexandria, Egypt, and Amoy and Canton, China.

Dr. DAVID R. UMSTEAD of Philadelphia, died of heart disease at Wildwood, N. J., on July 25 at the age of 57 years. He was graduated from Hahnemann Hospital and Medical College in the class of 1878.

Dr. J. KINNIER CRAWFORD died of uremia at Philadelphia on August 1 at the age of 48 years. He was graduated from Jefferson Medical College in the class of 1894.

Correspondence.

THE MENACE OF CANCER.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—Since my name and work are mentioned in them, I venture to claim the courtesy of the insertion of a few remarks in your pages upon the interesting series of articles on the menace of cancer in your issue of July 3, 1915. I note in your leading article the significant words: "Surgical treatment nevertheless does not afford an absolute cure, and herein lies the weakness of the contention that cancer in its early stages, or at any stage, is a purely local disease." Practically the same thing is said (p. 12) by Dr. Duncan Bulkley, who certainly from his professional position ought to know the truth or falsity of this. Coming from the quarters it does, that weighty medical statement would be a sufficient justification, were any needed, for any attempts of mine to throw scientific light upon the nature and rational treatment of cancer. In your article you speak of the problems of the "nature and origin of the disease," about which I shall presently have something to say. But first of all allow me to refer to general scientific principles in the treatment of cancer or any other disease. On p. 41 of the same issue is a statement, by Dr. Brem of Los Angeles, to the effect that the cerebral type of malignant malaria "does not recover"—that is, is incurable. Certainly this may well be true, so long as in its treatment no scientific principles underlying malaria be taken into account, but, strange to say, my friend, Major F. W. Lamballe, of the Royal Army Medical Corps, has demonstrated (Case XII) in the pages of MEDICAL RECORD (November 22, 1913), that the "severe cerebral type" with double infection *is curable*, and in a very easy fashion, provided the scientific general principles and their consequence, laid down by me, also in your pages (MEDICAL RECORD, March 29, 1913), be followed. The like is true of tuberculosis, as well as of many other things, but, notwithstanding the striking results obtained in the pancreatic treatment of tuberculosis by Baetzner and Major Lamballe, not many days ago I had to inform a correspondent, in reply to a query, that I did not know of anyone else within one hundred miles of Edinburgh, who was treating tuberculosis *scientifically*. With equal truth I might have written within five thousand miles. Now, sir, I am about to make an assertion, the truth or falsity of which can be proved readily by the answers given by your readers to a simple question. Notwithstanding all the talk there is about "medical science," the medical profession as a whole has not yet grasped the scientific general principles underlying the practice of medicine when attempting to deal with the ravages of microorganisms and cancer. I assume, by the way, that they have not seen the solution of the question, which I intend to give very shortly, after stating it.

Only a few weeks ago I put this question to a physician, a former pupil, in practice in this city. His reply was prompt, brief, and decisive. It was in the words, "Hanged if I know." To this I said, "the answer is very simple." But first of all let us state the question, which every medical man ought to have put to himself long ago. It is: "Why do certain microorganisms, such as the tubercle bacillus, the parasite, or antisite as I should prefer to term it, of malaria, the cancer-

cell, *et hoc genus omne*, attack the human body?" "Hanged if I know," says each and every one of your readers! The scientific reply was as follows: The microorganisms of disease (including the cancer-cell) attack the human body, pulling down the compounds making up this, because these organisms (and the cancer-cell) are themselves made up of compounds, including albumins, of opposite stereochemical constitution to those making up the human body. It is owing to this antithesis in stereochemical constitution that these organisms produce (intracellular) ferments or enzymes of opposite stereochemical constitution to those found normally in the human body, especially in the pancreas. It is this production of enzymes of opposite rotation, that is, opposite stereochemical constitution, which enables these organisms, including the cancer-cell, to attack the living laevo-rotatory albumins of the human body and to pull them down, inverting the products for their own purposes. It follows, by the way, inevitably from this conclusion, that the only rational, that is, scientific method of meeting and defeating the attacks of such organisms, including the cancer-cell, is the employment of genuine pancreatic ferments, trypsin and amylopsin, of great purity and potency. If I be asked for the production of the evidences establishing the scientific validity of these conclusion, it must be obvious, that in the limits of a letter these cannot be given. Nor is it necessary that they should be. They have been produced already by me in the pages of the MEDICAL RECORD of former years. References to all the papers concerned will be found either in Beard, "The Enzyme Treatment of Cancer," London, 1911, Chatto & Windus, or in a paper by me entitled, "On the Occurrence of Dextro-Rotatory Albumins in Organic Nature," MEDICAL RECORD, March 29, 1913.

It is most remarkable that, although many of the fundamental facts regarding these stereochemical compounds were described by that genius Pasteur so long ago as 1860, and although Duclaux said that with Pasteur chemistry had taken possession of medicine, these facts and the additional ones discovered by me have not had the slightest influence upon medical practice. For all the use made of stereochemistry in clinical medicine it might, as before 1860, have no existence! I suppose that one may say that medical men are very careful, as is mankind in general without knowing much or even anything at all about it, to see that their patients receive nourishment of the proper stereochemical constitution! They do not, for example, recommend a laevo-rotatory sugar, such as laevulose, because they know, instinctively or chemically, that such a compound would have no food-value, even if it were not a rank poison to the human body. But they never trouble themselves about the stereochemical constitution, or the rotation, of any of the remedies which they employ against the microorganims of disease. Why it should ever be expected that such remedies, as for example quinine, should be efficacious agents when employed against the microorganisms of disease is, scientifically regarded, not in the least clear. Why, for instance, should it for a moment be supposed, that in nature there is, under the name of quinine, an absolute specific for malignant malaria? no one can give any reason at all why quinine should be a specific for malaria, or how it acts upon the organism of malaria. On the other hand, my researches have demonstrated not only that trypsin and amylopsin in combination are bound to attack and kill the organism of malignant malaria, even in cerebral cases, but also how and why these ferments do this without injury to the living human patient. All the same, quinine is still regarded as a specific for malaria, even by those who sometimes instead employ methylene-blue! Years ago I was informed by more than one scientific man that in tropical medicine there were, as is the case with cancer, no vested interests concerned. My actual experience has been that this assertion was mythical. Vested interests are present in both, and in reality in both they are the same in kind. They are not the love of money, but they are due to the innate stupidity of human nature and its intense dislike of the new and the strange.

Returning to the menace of cancer, all the essential facts regarding the nature, treatment, and cure of this in suitable cases, as is also true of tuberculosis, malignant malaria, etc., are now known. In nature cancer and these other things are asexual generations, of opposite stereochemical constitution to the organism they attack, and for all of them, and many more such things, the proper, that is the scientific treatment is the employment in the form of hypodermic or intramuscular injections of the pancreatic ferments, trypsin and amylopsin. It does not matter how long, whether decades or centuries, official research into cancer, tuberculosis, or malaria goes on, no other scientific solutions of the problems they present will ever be found. For in fact there can possibly be no other scientific solutions. On p. 14 of the MEDICAL RECORD of July 3, 1915, Dr. Harrower once again assigns to me, quite erroneously, the "trypsin" treatment of cancer. I have never employed the term "trypsin treatment," and, indeed, times without number I have repudiated the authorship of it. What in 1905, first of all, I did urge was the use of "the secretion of that important digestive gland, the pancreas," including both trypsin and amylopsin, and later on I was enabled to state, that injections of trypsin and amylopsin in combination should be the agents employed, as also in tuberculosis and malaria. Ten years ago no suitable injections of either trypsin or amylopsin were upon the market, and, as a fact, it took me seven years to obtain for the years to come injections which would in my scientific opinion meet all the requirements. In their latest and best shape the preparations of Messrs. Fairchild Bros. & Foster have the form of a dry powder, which will keep indefinately in any climate, and which can be dissolved for injection in a few minutes. But now, that at last adequate preparations are on sale, and at remarkably cheap prices, now that the scientific requirements have been met fully, the medical people have no use for them. These preparations are at least twenty times as powerful as those first put out in 1906, while they are infinitely more potent than certain other preparations largely used in that year and later on. But why should I trouble to argue the thing at length? Scientifically, one does not need to reduce the statistics of the deaths from cancer, as Dr. Harrower would appear to suppose, in order to demonstrate the scientific truth of the statement, that a cure, the cure, for cancer has been discovered. The reasons why seemingly the treatment failed when first enunciated were threefold, viz., the hopeless nature of the cases selected, the inadequacy of the preparations first used, and the wrong methods in which the preparations were

employed. All the same, as the pages of the MEDICAL RECORD bear witness, the very first Fairchild preparations did cure a few cases of cancer. The scientific treatment and cure of cancer, or malaria, or tuberculosis are of the nature of a chemical experiment, and, being such, a single positive result carries with it, scientifically, conviction. A single successful case is of the nature of what Pasteur termed "a crucial test."

Though these are not his exact words, Professor Emil Fischer is often quoted as having laid down the thesis, that "a ferment fits the substance upon which it acts as a key fits a lock." In the MEDICAL RECORD of March 29, 1913, I cited his exact words and showed what he had proved. Rightly, he regarded his thesis as fully established by setting up two experiments and their positive results. The first experiment was needed scientifically in order to establish the fact, the second merely to confirm it. There was no occasion for any alteration in statistics, or in anything else in this universe, after that to establish the eternal truth of his thesis. Some of the cured cases of cancer are described, with the published references, in my book, "The Enzyme Treatment of Cancer," and in the form of a single case of round-celled sarcoma, with microphotograph of a section of the tumor before treatment, with photographs of the patient and other details, the "crucial test" of the scientific truth of all my theses regarding cancer, its nature and treatment, was offered to the whole world. An invitation was there given to any medical man to inspect all the evidences, including the charts of the case, but to this day not a single medical man has ever expressed the slightest wish to see any of these evidences, which are still in my possession. No, Sir, like the Royal Army Medical Corps, although one of its members some two years ago showed his colleagues in their own journal how relapse malaria could be cured easily, quickly, and cheaply, and which chooses to invalid soldiers suffering from relapse malaria in France home to India, the medical profession prefers its own antiquated views concerning cancer, malaria, tuberculosis, etc., because otherwise it would need to learn something new. A scientific knowledge of cancer, tuberculosis, malaria, etc., postulates some acquaintance with embryology and stereochemistry. These sciences, in my experience, are not taught to medical students, or if they are taught, it is not as they should be taught. Until embryology is regarded and taught as one of the most important courses in medical study, and until a knowledge of the elements of stereochemistry, as established by the researches of Pasteur, Emil Fischer, and myself, comes to be looked upon as essential for the medical man to possess, it is quite hopeless to expect to see further advances made in the direction of curing cancer, tuberculosis, or even malignant malaria. For there are none so blind as those who deliberately shut their eyes to truth and refuse to recognize its existence.

J. BEARD.

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Splanchnoptosis and Gastric Acidity.—E. P. Sandrock finds that in ptotic stomachs there is a general tendency toward diminished acidity and that hypochlorhydria, and achylia are more frequently met with than hyperchlorhydria, the ratio being about 2 to 1. Cases complicated by marked atony give a still higher degree of diminished acidity.—*Bulletin of the Johns Hopkins Hospital.*

OUR LONDON LETTER.

(From Our Regular Correspondent.)

ORGANIZATION OF RESEARCH—CANCER—ARTIFICIAL LIMBS—SIR J. FRENCH ON THE MEDICAL SERVICES—HOSPITAL SATURDAY FUND—DENTAL ASSOCIATION—MORTALITY OF WOUNDED IN WAR—THE KING GEORGE HOSPITAL—DR. MURRAY AND THE OXFORD DICTIONARY—THE LATE MR. OWEN.

LONDON, July 30, 1915.

A NEW scheme for the organization and development of research has been issued through the Board of Education. It is not to supersede or interfere with the War Office, Admiralty or other ministerial arrangements, but is to be a responsible body for assisting research with a single fund for the whole kingdom. It provides for a committee of the Privy Council responsible for the expenditure of moneys granted by Parliament for research and, further, for a small advisory council responsible to the committee and composed mainly of eminent scientists and men engaged in industries dependent on scientific research. The primary function of this advisory council will be to report on proposals for instituting researches or for establishing or developing existing facilities for scientific study of problems connected with industries in relation to awards of studentships and fellowships in research.

The Council will keep in close touch with all Government departments interested in research and particularly with the National Physical Laboratory. It will act in cooperation also with the Royal Society and other scientific and professional institutions. The general principle on which grants are to be made is that discoveries made shall be available under proper conditions for the public advantage. An annual report is to be made and presented to Parliament. Office accommodation and staff will be provided by the Board of Education.

The Cancer Research Fund has had its annual meeting of the General Committee. The report shows that four members of the staff are on active service with the R. A. M. C., which has curtailed largely the work of the research laboratories. Two Japanese gentlemen, who had been conducting researches in Germany, came to this country on the outbreak of the war and have been at work in connection with the fund and are now carrying on investigations in the laboratories.

During the year animals inoculated with tumor have been supplied to professors in other laboratories at home and abroad in accordance with the practice of the fund to provide others with material for research. Dr. J. A. Murray, general superintendent, presented his report. In it he dealt with the factors determining (a) metastasis formation, (b) immunity, (c) biochemical problems.

The metastasic process consists of two phases—first, the passage of the tumor cells through the endothelial layer of the lymphatic or blood vessels in the primary focus, whether of a spontaneous or transplanted tumor. The second phase is separated by the mechanical transport and arrest of the intravascular emboli in sites remote from the primary focus. By intravenous inoculation the first phase factors are eliminated and the success or failure of growth is determined entirely by processes at the site of arrest. As to immunity, it has previously been shown that it has only been demonstrated against cancer grafts and the tumors arising from them, but there is no effect on spontaneous tumors.

Among the biochemical problems I may name the results of an investigation concerning the reaction of the medium on enzyme action communicated to the Royal Society by Dr. Compton before taking charge of a military bacteriological laboratory. Also Dr. Bullock's experiments showing that the autolytic ferment in the serum is responsible for the liberation of aminoacids by digestion of the serum proteins. He had completed these before leaving for service with the R. A. M. C.

The report concluded with a study of cancer founded on the report of the Registrar-General for 1913.

Sir Watson Cheyne, treasurer, said the subscriptions for the year had been rather less than in the previous year.

We have had an exhibition of artificial limbs organized by Queen Mary's Convalescent Auxiliary Hospital. At a conference in connection with it, among the speakers were Sir Watson Cheyne, Sir W. A. May and Surgeon-General Russell. They emphasized the importance of ensuring that men should be fitted at the earliest possible moment they were in condition for them and should be taught how to use them. A month's delay, Sir W. A. May declared, might throw the patient back a whole year. More than a thousand men are said to be now waiting, and it was decided that orthopedic surgeons should be asked to report on the type of limbs that should be supplied in view of the work to be done by the recipient while the question of how the necessary appliances could be obtained was also considered.

The Orthopedic Surgeon's Committee have awarded a gold and a silver medal for exhibits showing the chief advances in mechanical skill—a silver medal for the best general excellence. Gold and silver medals have yet to be awarded for the exhibit with mechanism best fulfilling the requirements of the soldier, taking expense into consideration. The conference has excited a good deal of public interest and among those present at the reception in connection with it were Queen Amélie, Princess Louise, and many well known leaders in society.

Sir John French in a recent dispatch says he has much pleasure in again expressing his warm appreciation of the admirable manner in which all branches of the medical service in the field have met and dealt with the many difficult situations resulting from the operations. The medical units at the front, he says, were frequently exposed to the enemy's fire and there were many casualties in the regimental medical service, but at all times their duties were carried on with fearless bravery and great devotion to the welfare of the sick and wounded. He adds that "the whole organization of the medical services reflects the highest credit on all concerned."

The Hospital Saturday Fund's receipts for the first half of the current year amounted to £12,253, being more than £1,000 above the same period last year.

At the annual meeting of the Dental Association Mr. Dolomore, President, dwelt on the disasters which follow neglect of the teeth, indications of which have been observed in the present war. Much was done by dental hospitals and practitioners at the outbreak of war, but voluntary effort was notable to cope with the emergency and the War Office tardily undertook the work, but did not appoint a committee with dentists on it who were able to advise. The need of special supervision was admitted and the knowledge of dentistry by the R. A. M. C. he pronounced nil. Perhaps that is a little too positive, as some have certainly exhibited considerable knowledge of it.

The death rate among our wounded has been high and in parliament Mr. Asquith had to admit a percentage of 24, though in the Crimean war it did not exceed 22 and in the Boer war 20. In the Franco-Prussian war the Germans only lost 17.53 per cent. With all the boasting about asepticism greater improvement might have been anticipated.

The King George Hospital is the largest in London for treating the wounded. It had been built for another purpose and was bought by the military authorities on the outbreak of the war, as it required scarcely any alterations and was completed and fitted up as a hospital. It consists of six floors, each extending over $1\frac{1}{2}$ acres of space. There are ten lifts; some can take patients lying down from the entrance direct into the wards. It is said there are nearly three miles of corridors. The wards vary in size from those of three beds to others of sixty-five. There is a roof garden with twenty-four revolving shelters. About fifty-five miles of electric wire have been laid and there are 3,500 electric lamps in the building.

Dr. James Murray, the chief editor of the Oxford Dictionary of the English language, died on Monday, aged 78. His health had failed for some time and an attack of pleurisy was the immediate cause of death. It was his hope to finish the dictionary by his eightieth year. He did not originate the dictionary, but when the scheme seemed to be a failure and practically abandoned he took it up and made it a success. When he began many slips of quotations had been lost but he appealed to readers to extract illustrative quotations. About 6,000,000 were collected and three years were spent in arranging them and a million are included in the work. It was reckoned in 1880 that ten years would suffice to complete a lexicon of 7000 pages, but it was not until 1883 that the first part of 352 pages was issued and more than three times the estimate have already gone through two additional editions. Drs. Bradley and Craigie have joined the staff and numerous assistants have been engaged. He made his the most authoritative dictionary ever produced, which will no doubt be the basis of any future work of the kind for the English language and which may well be the model of such works in other tongues.

Dr. Murray was Romanes lecturer at Oxford in 1900. He made a number of contributions to literature, of which the article "English Language," in the *Encyclopedia Britannica*, may be named. He received honorary degrees from several universities and was knighted in 1908. A civil list pension was awarded him in 1884.

Edmund Owen, F.R.C.S., LL.D., Chevalier of the Legion of Honor, died on the 23d inst., age 68, the result of a paralytic seizure on the 20th. He was consulting surgeon to St. Mary's Hospital and surgeon to the French and other hospitals; surgical examiner at the universities of London, Cambridge, and Durham, as well as the Royal College of Surgeons, to which he had been vice-president. He received honors from other universities and long enjoyed the position of distinguished authority on surgery and a leading practical hospital surgeon. Among contributions to surgical literature I may name that to the *Encyclopedia Britannica*.

Progress of Medical Science.

Boston Medical and Surgical Journal.

August 5, 1915.

1. The Treatment of Eczema, with Special Reference to the Use of Vaccine and the Part Played by Bacteria in Its Etiology. Report of Cases. L. S. Medalia.
2. Variations in the Sensory Threshold for Faradic Stimulation in Psychopathic Subjects. Manic Depressive Insanity. The Dementia Precox Group. G. P. Grabfield.

1. Vaccine Treatment of Eczema.—L. S. Medalia concludes that eczema in its primary stages is a dermatitis the exciting cause of which may be any external or internal irritant capable of exciting a dermatitis. The "necessary something" or the "unknown quantity" in the etiology referred to in the text books, responsible for changing the dermatitis into a true eczema is the secondary bacterial invasion of the dermatitis. The absence of bacteria in the primary or dermatitis stage of eczema and the abundant growth obtainable from the secondary or true eczema lesions, together with the clinical response to the autogenous vaccines are thought to substantiate the etiological relation of bacteria to this disease. *Staphylococcus aureus*, according to the author's findings, is the organism always present in eczema, at times mixed with the streptococcus and rarely mixed with the *Staphylococcus albus*. The general condition, food idiosyncrasies, habits, and occupation of each individual patient should be carefully studied in order to eliminate if possible the exciting causes of the dermatitic lesions. Ointments, powders, and other topical applications, though temporary in their effect, are necessary adjuncts to the vaccine treatment to protect the raw skin and help to relieve the patient's discomfort. The presence of the streptococcus should always be kept in mind and when found a separate autogenous vaccine should be prepared therefrom. The use of large doses—6000 million organisms or over—of the autogenous staphylococcus vaccine was found necessary for the successful treatment of this disease.

2. Faradic Stimulation in Psychopathic Subjects.—G. P. Grabfield selected twenty-five cases of manic-depressive insanity at random from the clinic of the Psychopathic Hospital, Boston. He found that the cases in the depressed phase show a decided raising of this threshold to definitely pathological values. This increase in the depressed cases falls to normal with the return to a normal emotional state. The cases in the manic phase show a normal or perhaps slightly lowered value for this threshold. The cases with hallucinations or delusions or both show when averaged a markedly higher threshold than the average of even the depressed cases. The average is obscured by the fact that it contains many nearly normal values obtained in manic cases. These symptoms, however, seem to indicate a more profound derangement of function, as the cases, whether manic or depressed, which showed them yielded the highest values in the group in which these cases fell. The impression that variations in the sensory threshold for faradic stimulation are of central origin (derived from work on normal subjects) seems to be borne out by this group. The suggestion is made that the manic-depressive syndrome may be due to a perversion of function of certain parts of the central nervous system, possibly the thalamic centers, and that, contrary to Kraepelin's view, the symptoms of mania and depression may be due to opposite perversions of function. The determination of the sensory threshold for faradism shows that pathological values are constantly obtained in only about one-third of the cases of dementia precox and hence that this determination is of diagnostic value only in this percentage of cases. The mechanism governing emotional tone in dementia precox appears by this test to be different from that which governs this phenomenon in manic-depressive insanity. The correlation of catatonic symptoms with high threshold values parallels the correlation between these symptoms and post-rolandic cortical lesions. From this it is probable that the "arrival platforms" for faradic stimuli lie in the post-rolandic region. The correlation between somatic delusions and high threshold values is evidence in favor of the suggestion that these delusions are associated with a perversion of the receptor mechanism.

New York Medical Journal.

August 7, 1915.

1. Mouth Hygiene. E. L. Fisk.
2. The Teeth and Their Relation to Health. S. Seilikovitch.
3. Mouth Infections; Their Cause, Treatment, and Systemic Effect. A. H. Merritt.
4. Pyorrhea Alveolaris as a Cause of Systemic Disturbances. A. E. Fossier.
5. Pyorrhea Alveolaris. F. E. Stewart.
6. The Relationship between Dentist and Physician. W. B. Dunning.
7. A Form of Diabetic Coma. J. Rosenbloom.
8. Scopolamine and Morphine in Obstetrics and Surgery. R. T. Gillmore.
9. The Importance of a Rectal Examination. H. A. Bray.
10. Cystitis in Women. L. W. Bremerman.

1. Mouth Hygiene.—E. L. Fisk outlines this subject as follows: (1) Beginning in infancy, a thorough physical examination and survey at regular intervals, in order to detect any possible focus of infection or any physical impairment that may lead to the formation of such a focus. (2) The practice of personal hygiene all along the line, in order that the general resistance to infection may be raised to the highest power. (3) Proper diet in infancy, which means, wherever possible, mother's milk, in order that there may be a regular and healthy development of teeth and jaws. As the child grows older, the cultivation of normal eating habits, especially vigorous use of the jaws by thorough mastication and the eating of hard, resistant, crusty foods every day. (4) The use of fruit in the diet between meals, especially apples, which mechanically cleans the teeth, and which by the action of fruit acids removes the mucin plaques that favor decay. (5) A thorough mechanical cleansing of the teeth with clean water and stiff brush, used with a rotary motion, not forgetting the tongue. (6) Thorough dental cleansing of the teeth at least every six months. (7) If unfortunately dental decay has taken place, care on the part of the dentist thoroughly to treat infected roots, so that a septic focus may not be sealed in by a filling; in all cases of doubt, the use of the *x*-ray, in order to determine the condition of the roots. It is said that few people arrive at maturity without a chronic alveolar abscess. An *x*-ray of the jaws as a starter in mouth hygiene would be a wise precaution for every one. (8) The development of the teeth should be closely watched, and irregularities, interfering with proper contact between upper and lower teeth, corrected or prevented. The earlier this is done, the better for the patient. (9) Bearing in mind that the endamebas are possible factors in pyorrhea, a simple harmless preventive is available in a mouth wash made by adding two drops of fluid extract of ipecac to a half a glass of water, used before retiring. This will not be of any service in well established cases of pyorrhea, but in the earliest stages it may check the condition. (10) When pyorrhea has become fully established, no pains or expense should be spared in curing the condition, as it is a constant menace to life and health. Experience has shown that this disease can be cured by thorough and persistent treatment, if there has not been too much destruction of the tooth sockets. Where the teeth are hopelessly loosened and the sockets destroyed, it is often far better to remove them, just as it

is far better to extract an abscessed tooth rather than endanger the patient's condition by endeavoring to save it. It is better to lose a tooth than to lose a heart or a kidney. On the other hand, the tooth should not be ruthlessly extracted on the first suspicion of trouble. Common sense and a due sense of proportion are necessary in these matters.

5. Pyorrhea Alveolaris.—F. E. Stewart notes that Bass recommends the use of emetine hypodermically or intramuscularly in doses of one fourth to one grain, but states that it has been given by the rectum, also in keratin coated pills by the mouth. He also recommends the employment of the drug locally in the form of a one-half to one per cent. solution, injected by means of a hypodermic syringe deeply into the pyorrhea pockets. Each pocket is left filled with the solution as the needle is withdrawn. Bass recommends rinsing the mouth thoroughly with a solution of fluid extract of ipecac, two or three drops to a half a tumbler of water, which, he believes, protects against reinfection and actually cures the disease in its early stages. He believes that patients can carry out this treatment in many instances. The author advises the following routine treatment. Preceding the use of vaccines, emetine should be employed to destroy the amebas in the gums, dental tissues, and alveolar processes. The solution of emetine hydrochloride, 0.5 per cent. in strength, should be forced down into the pockets with a hypodermic syringe and each pocket left filled with the solution. This treatment should be repeated daily for three or four days. After the second or third injection, the gums should take on a more and more healthy appearance, the teeth should feel firmer, and the gums about them become tighter and harder. It may be unnecessary to employ vaccine treatment, in which case the operative procedures for obliterating the pus pockets may be all that is required in addition to the emetine treatment. But in chronic cases of pyorrhea alveolaris, not only are the tissues infected with bacteria, but in all probability the infected mouth has become a focus of infection to the entire system, in which event vaccine therapy may prove of great value not only in curing the local condition, but also in the restoration of the general health and in raising the resistance of the tissue to a higher plane, thus insuring against reinfection. A stock vaccine may be used, either sensitized or unsensitized, or an autogenous vaccine prepared from the pus pockets may be employed. It is considered good treatment to begin with a stock vaccine either sensitized or unsensitized, the former being preferable on account of the comparative ease with which it is digested and assimilated by the tissues, the freedom from local or general reaction, and its promptitude in stimulating immunity. If an autogenous vaccine is preferred, care should be taken to select an experienced bacteriologist for its preparation. If an unsensitized bacterin is employed, the initial dose advised is 150 million of the mixed bacteria; 250 to 750 million may be given as the initial dose if the sensitized cultures are employed. Subsequent doses are injected at intervals of seven to ten days, gradually increasing or decreasing according to indications. If the reactions are too severe, the doses should be reduced or temporarily discontinued. Every dose should be carefully gauged by the effect obtained from the preceding dose. If no improvement follows the initial dose, subsequent injections should be increased until amounts large enough to produce a mild clinical reaction (demonstrated by symptoms of malaise and possibly aggravation of the local symptoms) are reached. If a marked clinical reaction occurs after a dose, characterized by rising temperature, the next dose should be smaller.

7. A Form of Diabetic Coma Not Due to Acetone Bodies.—J. Rosenbloom studied the three cases of diabetic coma the interpretations of which differed completely from the modern idea of acidosis as the cause of coma. They were all of the severe type, with no tolerance for carbohydrate, and with a restricted protein intake there was no lessening of the glucose output. They were studied for a period which varied from one week to two months. During this time the urine contained a normal amount of ammonia-nitrogen and showed no trace of acetone, diacetic acid, or betaoxybutyric acid. There was no evidence of kidney disease. The urine contained excessive amounts of colloidal nitrogen, neutral sulphur, and aminoacids. Death occurred in typical diabetic coma. It might be held, however, that the acetone bodies were not excreted, but retained. In the last case studied 200 c.c. of blood were taken shortly before death. Only faint traces of acetone, diacetic acid, and betaoxybutyric were found. The nonprotein nitrogen of the blood serum was normal in amount. This case is especially interesting on account of the fact that about fifty hours before death, showers of granular casts were present in the urine. The urine was cloudy, owing to the presence of such an enormous number of casts. This finding has been described in typical acidosis coma. Rosenbloom found that an intravenous injection of 600 c.c. of 6 per cent. sodium bicarbonate produced a marked improvement in the symptoms.

Journal of the American Medical Association.
August 7, 1915

1. Dermatology of the Ancients. H. Fox.
2. Transvaluations. N. H. Pierce.
3. Intestinal Obstruction. A Proteose Intoxication. G. H. Whipple.
4. Prognosis in Heart Disease from the Point of View of Etiology. W. H. Witt.
5. Concerning End-Results of Gall-bladder and Duct Diseases. J. A. Lichty and E. W. Zurhorst.
6. Fascial Tubulization in the Repair of Nerve Defects. E. G. Kirk and D. Lewis.
7. Botulism, an Experimental Study. A Preliminary Report. E. C. Dickson.
8. The Early Diagnosis of Mastoiditis. J. J. Kyle.
9. Idiopathic Mastoid Abscess. V. Dabney.
10. Indications for Mastoid Operations as Shown in One Hundred Cases. C. F. Welty.
11. Vaccination Against Typhoid in the United States Army. W. Lyster.
12. The Official Responsibility of the State in the Tuberculosis Problem. W. C. White.
13. Bacteriotherapy in Typhoid Fever. J. W. Jobling and W. Petersen.
14. Pathological Physiology of Lead Colic. Its Relation to Experimental Therapeutics. A. D. Hirschfelder.
15. The Pineal Gland in Relation to Somatic, Sexual, and Mental Development. Second Paper. C. P. McCord.
16. Duodenal Alimentation. M. H. Gross and I. W. Held.
17. Quinine After Operation. E. Bonnot and A. H. Cleveland.
18. Proteolytic Ferments in Portal Blood. F. H. Falls.
19. Recent Experiences in the Orient with Chenopodium as a Remedy Against Hookworm and Other Intestinal Parasites. V. G. Heiser.
20. Ligation of the Splenic and Gastro-Epiploica Sinistra Arteries in the Surgery of the Spleen. J. C. A. Gerster.
21. Reflex of the Upper Extremity. An Undescribed Sign. R. Moore.
22. Fluoroscopic Bronchoscopy. With Case Reports and One by Dr. Stanton A. Friedberg. E. Fletcher Ingals.
23. A Case of Primary Diphtheria of the Skin. L. A. Emge.
24. Report of a Case of Intussusception. W. C. Gates.

3. Intestinal Obstruction.—G. H. Whipple studied the characteristics of the poison that acts in intestinal obstruction. It can be obtained from a fluid above an intestinal obstruction, from a closed washed loop of small intestine, or from the mucosa of a closed loop or one draining externally through an enterostomy wound. The intoxication varies only in intensity. One can inject this poison into a dog and produce more or less profound intoxication, according to the amount injected. Dogs can be immunized by sublethal doses, but the immunity cannot be carried very high. They can then survive intestinal obstruction or closed loop longer than the control dogs. Filtered, immune organ extracts, presumably containing active enzymes, can destroy the poison in vitro, but the blood of immune animals contains no such enzymes, and is inactive

toward the poison. The absorption of the poison is not from the lumen of the intestine, but from the mucous membrane which forms it and passes it into the blood, while the mucosa itself may seem almost normal. The chemical nature of the poison is not fully determined. Its proteose nature explains why the poison is held back in fine earthen filters, but not by paper filtration. It is not destroyed by digestion with pancreatin for a period of one week, and only with autolysis with intestinal mucosa after months. The author assumes that the intoxication from the closed intestinal loop is due in great measure to the absorption of a primary proteose from the intestinal mucosa. He has not been able to detect the substance in the urine, perhaps because the small amount is fatal, and the flow of urine is inhibited after a large dose. The proteose, too, may be changed in some manner before it is eliminated. Diuresis will help in the elimination, and this explains the good effects of salt infusions in intestinal obstruction.

4. **Prognosis in Heart Disease.**—By W. H. Witt. (See MEDICAL RECORD, July 3, 1915, page 44).

5. **End-Results in Gall-Bladder and Duct Diseases.**—By J. A. Lichty and E. W. Zurhorst. (See MEDICAL RECORD, July 3, 1915, page 43.)

6. **Fascial Tubulization in Repair of Nerve Defects.**—By E. G. Kirk and D. Lewis. (See MEDICAL RECORD, July 3, 1915, page 39.)

7. **Botulism.**—By E. C. Dickson. (See MEDICAL RECORD, July 3, 1915, page 43.)

8. **Early Diagnosis of Mastoiditis.**—J. J. Kyle notes that abnormal temperature should disappear quickly after rupture or puncture of the drum membrane. If it persists, the mastoid is involved. Tenderness over the mastoid is not an infallible sign, though valuable. Pain in some region of the head on the affected side is usually present. The two most valuable signs are pulsating discharge from the middle ear and high temperature. Diagnosis of chronic mastoiditis is more difficult than that of acute. The destruction of bone may be all out of proportion to the clinical signs. The value of the Röntgen rays in the hands of an experienced man is beyond dispute.

15. **The Pineal Gland.**—C. P. McCord has performed a series of experiments in which evidence of the precocity of development usually attributed to pineal deficiency (hypopinealism) has been obtained in animals by supplying an increased amount of pineal substance by feeding or injecting pineal preparations. Such administration of pineal substances led to a more rapid growth of body than normal, and determined an early sexual maturity. The excess in rate of growth was most pronounced (40.9 per cent. excess in eleven weeks) in young animals fed with pineal tissue obtained from young animals. No tendency to gigantism has followed pineal administration. After maximum size was attained, pineal administration appeared to be ineffective. Both males and females responded to the influence of pineal substances in the rate of growth, but the response to the gland substance was more definitely manifested in males.

18. **Proteolytic Ferments in Portal Blood.**—F. H. Falls finds that the portal and peripheral blood of the dog contains a demonstrable increased amount of proteolytic ferment at the height of digestion. 2. This is also true of the portal blood in the dog in the fasting state. 3. Under both the foregoing conditions, the portal blood is relatively richer in ferment than the peripheral blood. 4. The probable source of this ferment is the ferment-rich intestinal contents at the height of digestion.

The Lancet.

July 31, 1915.

1. The Treatment of Wounds in War. Sir W. Watson Cheyne.
2. The Results of the Hypertonic and Permanganate Treatment in 1000 Cases of Cholera; with Remarks on the Value of Alkalies in the Prevention of Uremia and the Role of Atropine. Sir Leonard Rogers.
3. Removal of a Shrapnel Time-fuse from the Left Shoulder. Description of a Splint. A. E. Mortimer Woolf.
4. Persistence of Antibodies in the Blood of Inoculated Persons as Estimated by Agglutination Tests. G. Dreyer and A. C. Inman.
5. The Value of Turpentine as a Hemostatic. G. G. Turner.
6. The Signification of Acetone Bodies in the Urine. B. Derham.

1. **The Treatment of Wounds in War.**—Sir W. Watson Cheyne answers the recent adverse criticisms of the method which he has proposed, namely, the application to wounds of antiseptic pastes and powders following a thorough disinfection of the wounds; and cites reports of favorable results following the use of this method among the English wounded at the Dardanelles.

2. **New Methods in Treatment of Cholera.**—Sir Leonard Rogers states that in 1906 he first commenced giving physiological saline solutions in large amounts intravenously, and the mortality fell from 59 to 51.9 per cent., only to rise again in 1907 (when he was absent on leave) to 59.5 per cent. In 1908 he commenced the use of hypertonic salines intravenously, and the mortality at once fell to 32.6 per cent. On adding large quantities of permanganates by the mouth late in 1909, with a view to destroying the toxins in the bowel by oxidation, a further reduction in the mortality was obtained to 25.0 per cent in 1003 consecutive cases in the course of six years. During the last three years the mortality has been only 23.5 per cent. The author has also obtained favorable results with the routine use of intravenous and subcutaneous injections of alkalies in the prevention and treatment of postcholeraic uremia. He has also followed Brunton's suggestion that atropine should be used in cholera on the ground that it antagonizes the symptoms of muscarine poisoning which resemble to a considerable degree those of cholera. Doses of 1/100 grain were administered morning and evening to adults during the acute stage of the disease with the result that the death rate was reduced from 24 per cent to 10.7 per cent.

5. **Turpentine as a Hemostatic.**—G. G. Turner notes that the principal sphere of turpentine as a hemostatic is in cases of secondary hemorrhage. It has several times been successful when the ligature of one of the main vessels of a limb in continuity or even amputation seemed to be called for. The turpentine should not be applied until the area to be treated has been thoroughly freed of blood clot and débris, and though it is not always necessary to use an anesthetic for this purpose it is usually wiser to do so. When one is dealing with areas in which there are large vessels an attempt must always be made to secure both ends of the vessel in the wound according to the well-established rules for the treatment of secondary hemorrhage, but turpentine is especially valuable in those cases in which no bleeding point can be caught but in which the hemorrhage is nevertheless alarming.

British Medical Journal.

July 31, 1915.

1. Observations on 685 Cases of Poisoning by Noxious Gases Used by the Enemy. J. E. Black, E. T. Glenny, and J. W. McNee. With a Note by Colonel Sir Wilmot P. Herringham.
2. Phlebotomus or Sandfly Fever. C. Birt.
3. Sandfly Fever in Chitral (N. India). G. F. Graham.
4. Sandfly Fever in Peshawar. J. W. Houston.
5. The Bionomics of the Maltese Phlebotomi. P. J. Marett.
6. Notes on the Transport of Cases of Fractured Thigh. C. Max Page.
7. Remarks on the Movement of the Diaphragm in Early Pulmonary Phthisis. S. Walsham and W. Overend.

8. Betanaphthol Poisoning Occurring During the Treatment of Ankylostomiasis. W. B. Orme.
9. A Further Contribution to the Diagnosis of Gout. J. B. Berkart.
10. The Care of the Illegitimate Baby. A. D. Fordyce.

1. **Poisoning by Noxious Gases.**—J. E. Black, E. T. Glenny, and J. W. McNee emphasize certain points in the clinical study of this condition. None of the cases remained in the casualty clearing station for more than five days after the inhalation of the gas. It is thus the acute stages only which are described. On admission the cases were of two chief classes: (1) the acute asphyxial and (2) the subacute. Of the first class almost one-quarter died. This class was characterized by orthopnea and marked cyanosis. The subacute cases, on the other hand, showed a dyspneic condition, never amounting to orthopnea, and were cyanosed to a lesser degree. Treatment of the acute asphyxial cases was unsatisfactory, which is not to be wondered at when considered along with the changes found in the lungs post mortem. The subacute type, however, responded well to treatment, and the cases, although distressed by constant coughing, all admitted the relief gained. The treatment found most satisfactory in such cases was the frequent administration of ammonium carbonate in full doses. The routine treatment evolved from the experience gained was: (1) Abundant supply of air and warmth. (2) An emetic of salt and water if the patient was very cyanosed and had not already vomited, followed by (3) the administration of ammonium carbonate, 15 grains, and wine of ipecac, 15 minims, every 3 hours. (4) Oxygen inhalation in cases of marked cyanosis and dyspnea. (5) Opium in doses of ½ to 1½ grains in restless cases to allay the mental strain. (6) Pituitary extract (1 cubic centimeter) and brandy when the heart threatened to fail.

7. **Movement of Diaphragm in Early Pulmonary Tuberculosis.**—H. Walsham and W. Overend note that the limitation in the descent of the diaphragm frequently occurring in the early stage of pulmonary tuberculosis, which phenomenon is known as Williams's sign, accompanies many other diseases of the lungs and pleura. The effect of this reflex must be a reduction in duration and amplitude of the ordinary inspiratory wave, and its object the attainment of a definite measure of rest and protection for the diseased area of the lung.

9. **The Diagnosis of Gout.**—J. B. Berkart describes a pathological process of frequent occurrence which gives rise to clinical phenomena closely similar to those commonly called a gouty paroxysm, but which is not due to uric acid. The habit of looking for the cause of the painful swelling to the surface of the joint has diverted attention from its other constituents. Yet if the corresponding bone be carefully examined, it will be found that very often take place within it, silently and almost imperceptibly, changes which in their last stages fully account for those symptoms. Such examination discloses in the first metatarsals, and occasionally also in the phalanges, a cystoid degeneration, which starts in the epiphysis, extends to the articular cartilage, and after perforating it allows the discharge of the cystic contents into the joint, thus producing an acute "perforative synovitis." The resulting fistulous openings are generally minute and readily escape detection, as do the cysts themselves so long as they are of small size and concealed by fat marrow. This cystoid degeneration originates from an anomaly of the vascular and osseous systems. Conspicuous among them is the abundance of dilated and thin-walled veins which are here and there studded with emigrated blood corpuscles. There is consequently evidence of a state of chronic congestion under the influence of which the trabeculæ are decalcified and the adjoining fat marrow becomes fibrous. The cystoid degeneration is readily distinguished from gout by the absence of swelling of the regional lymphatic glands. It may, however, become gouty if from a concomitant disease of the kidneys uric acid is retained and accumulates in the blood. The tissues, especially those of an inflammatory or a metaplastic nature, then undergo hyaline degeneration, and favor the deposition of uratic crystals. Such change in the type of the disease is then shown by the accession of the diagnostic element of gout—namely, the enlargement of the regional lymphatic glands, which have also become hyaline.

Berliner klinische Wochenschrift.

June 28, 1915.

Immunotherapy and Serotherapy of Typhoid Fever.—Meyer writes on the new or rather rejuvenated specific treatment of typhoid. We do not yet know how nature cures the latter. It can hardly be through the action of agglutinins alone, for those whose blood clumps the best often perish from the disease, and it can hardly be the bacteriolysins alone, because injection of highly bacteriolytic sera does not alter the course of the disease. The defence of nature must be complex, and this must also be true if improvement follows the injection of dead cultures such as are used for immunization. The author relates his experiences as follows: he gave immunizing injections to 300 healthy subjects who received in all 650 injections. As a rule a local or general reaction, when such developed, was mild. A pronounced general disturbance usually had a special reason. In two cases the patients had already had typhoid. This behavior suggested that in tuberculin inoculations of tuberculous subjects. In a number of other cases the individuals doubtless suffered from latent microbism and true typhoid was lighted up. Subjects with latent tuberculosis and influenza patients give pronounced reactions. In treating established typhoid with dead cultures a control material was necessary, so that another series of patients was treated symptomatically. In both series the disease was of a severe or very severe type and in many cases treatment was begun late. Naturally mild cases were not included in the statistics. The specific action of the cultures was quite apparent, but the mortality was nevertheless nearly 10 per cent gross; although this could be reduced to about 6 per cent net by leaving out hopeless cases. The mortality in the nonspecific series was nearly 20 per cent. gross. In the material as a whole the tendency to heart failure as a result of enormous hardships was very prominent, and all patients therefore received digitalis from the start. In both series the mortality among the early treated was much less than that of the late treated. The specific remedy is unable to manifest itself in the delayed cases. In the inoculated material there was but 5 per cent. of relapses as compared with the normal 13 per cent., and it seems very probable that those inoculated during convalescence have their chance for relapse greatly diminished. This also holds good for sequelæ. Convalescent serum of patients has been shown to possess notable specific virtues in the treatment of typhoid. Alstaedt writes in the same number of the *Wochenschrift* on typhoid immunity and reports attempts at establishing serodiagnostic reactions similar in character to those in use in tuberculosis and other specific infections. He showed that in subjects who in all probability have not been exposed to typhoid the intracutaneous reaction is negative; while if they have gone through the disease even many years before, the reaction remains positive. If either class of these patients is first immunized sensitiveness to this reaction is pronounced.

Insurance Medicine.

Life Insurance Medicine.—Emminghaus, late presiding director of the Gotha Life Insurance Bank, gives a number of his personal reminiscences in the capacity of director in the institution. When he first took charge, the organization of the administrative body had undergone no change since the foundation of the institution. There were usually three physicians in the bureau. Their functions do not seem to have been well defined but they seem occasionally to have submitted reports to the administrative officers of the nature of medical criticism.

At the outset the Bank had so-called "confidential" physicians in certain large cities. As a rule, the family physician made an attest as to the health of the applicant. If there were no family physician, others had to be called upon. As to just how the services of the latter were obtained we are not accurately informed. There was originally considerable difficulty in getting such men to act. Examinations had to be made, and opinions rendered. The chief duties of these examiners were bound up in the heredity, the personal history, etc., of applicants. These were the points which more especially required cleaning up, and involved the sincerity of the applicant.

When the author assumed his responsibilities, each agency was supposed to have its confidential examiner. At this period any ideas that life insurance could have a philanthropic side were out of the question. Since only the "healthy" were insurable, insurance was regarded very largely as a "gamble." That the enterprise could prosper without medical selection was not commonly understood.

From its very outset in Germany the medical man was regarded as an indispensable aid to life insurance. Hence only good risks were insured. Nevertheless, the sound applicant, so-called, might contain an element of hazard; and so it became apparent that within certain limits men not fully sound might be acceptable. Medical techniques were developed to extend the selection to substandard risks, whenever the latter could be brought on a par with standard risks. In this way, a new form of medical specialism was developed, which dealt with a standardization of risks.

This new component led to a wholesale extension of business, as a result of which new agencies, with their confidential examiners, were established. The latter were to be in close touch with the central authorities. In 1886, the author issued a small periodical for the benefit of the confidential examiners (Monatsblätter für die Herren Vertrauensärzte d. Gothaer Leb. Versicherungsbank), which movement in time reached its culmination in the publication of Florshütz's epoch-making work on Life Insurance Medicine. The periodical eventually became the *Blätter der Vertrauenärzte*.

The colossal data accumulated by the Bank were first utilized after the latter had completed its fiftieth year of existence (1829-1878). They were published in 1880 and contained five classes of statistics as follows: 1. Number applied, insured, rejected, lapsed. 2. Deaths. 3. State of insurance at completion of 50-year period. 4. Financial statistics. 5. Statistics of conditions of mortality.

Of especial significance for life insurance are sections 2 and 5, dealing, as they do, with mortality and its circumstances. Two quite different conditions were considered in the sections. The mortality *per se* was indicated in connection with occupation; cause of death; relations between results of medical entrance examination and cause of death; season of year; age and cause of death; duration of insurance; differences between expectation of life and actual mortality. In Section V, other material is introduced, as relation of insurance mortality to total mortality; special tables for sexes; statistics according to artificial age periods, and, in general, statistics based on combinations of the more elementary figures.

By analyzing the data of the five decennia of the fifty years it is readily seen that the mortality from tuberculosis had dwindled in the first two decades, although there had been no drop from 1849 to 1879. Cancer has steadily increased from the very outset. Inflammations of the chest increased three-fold as causes of death between 1829-1878. Apoplexy showed practically no variation during the entire period.

Hence since 1880 it has been possible, by a study of these figures, to secure a much better type of medical selection, although the organization of the medical personnel has undergone hardly any change.—*Blätter für Vertrauensärzte der Lebensversicherung*, March-April, 1915.

Some Court Rulings.—Giving a specified term of credit to an applicant for life insurance for payment of the first premium is held in Connecticut General L. Ins. Co. v. Mullen (C. C. A., 3rd C.) 43 L.R.A.(N.S.) 725, to waive a provision in the policy to the effect that it shall not take effect until the first premium is paid, while the applicant is in the same condition of health as described in the application.

Under an employer's indemnity insurance policy rendering the insurer liable for loss sustained by assured up to a specified sum for injury to a single employee, and providing that, in case the insurer elects to contest the claim, it shall pay in addition the expense of litigation and take charge of the defense at its own cost, the insurer is held in Aetna L. Ins. Co. v. Bowling Green Gaslight Co. (Ky.) 43 L.R.A.(N.S.) 1128, to be liable in case it does take charge of the defense and direct an appeal from an adverse judgment, instead of paying the specified sum and absolving itself, as it might have done, for the damages and interest on appeal and for the court costs, in addition to the principal sum specified and the expenses of the trial.

That as a portion of his treatment, an insured, under direction of his physician, sits out of doors a portion of the time, is held in Metropolitan Plate Glass & C. Ins. Co. v. Hawes (Ky.) 42 L.R.A.(N.S.) 700, not to destroy his rights under a sick benefit policy insuring him against sickness while he is wholly disabled and under the care of a physician for a period during which "he shall be continuously and necessarily confined to the house."

The Growth of Life Insurance.—In spite of the business depression due to the war and other causes in this country, it is stated that there was an increase of 15 per cent. in the volume of life insurance taken out in 1914 over that in 1913.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON PEDIATRICS.

Stated Meeting, Held February 11, 1915.

DR. WALTER LESTER CARR IN THE CHAIR.

Case Presentation.—Dr. HENRY HEIMAN presented an interesting case of a male child, 10 years of age, similar to one shown by Dr. Sara Welt-Kakels at Dr. Jacobi's monthly meeting. The family history of the patient was negative. She had had measles in childhood and had stumbled frequently while walking, since two years of age. The injuries received in these falls produced scars which were humerous on the elbows, knees, forehead, arms, and legs. Eleven days before her admission to the hospital in September she was seized with abdominal cramps, headache, and vomiting, and her temperature rose to 104° F. At the time of her admission to the hospital she had fever, and examination of her cardiac condition showed a systolic murmur at the apex. She had a maculo-papular eruption on portions of the body and on the palms of the hands and the soles of the feet. The lymph nodes were palpable; the extremities weak; knee jerks were absent, and there were no other abnormal reflexes. There was a left inguinal hernia. The blood count showed white blood corpuscles 5,800, polymorphonuclears, 86 per cent., mononuclears 2 per cent., basophiles 1 per cent. The fundi were negative as was also the von Pirquet test. The child was also examined by Dr. Abrahamson of the neurological service of Mount Sinai Hospital who found an internal hydrocephalus, a tendency to pes cavus, facial asymmetry, weakness of the left hand, and a tendency to fall to the left. Dr. Abrahamson thought the case was one of cerebellar diplegia with epileptiform tendency. Dr. Heiman regarded the case as a congenital trophic disturbance with maldevelopment of the tendons, skin, and muscles. When the skin was pulled it was elastic and rubber-like. These cases had been regarded as types of purpura, but had nothing in common with them. In this case there was no familial tendency as was shown in Dr. Welt-Kakels' case.

Dermatitis Bullosa Hereditaria.—Dr. SARA WELT-KAKELS presented the patient to which Dr. Heiman referred. This child showed a condition similar to that of the previous case. The only feature in which the cases differed was in the family history; Dr. Heiman's case showed nothing in the family history in any way connected with the condition, while in Dr. Welt-Kakels' case the father gave a history of hemophilia in his childhood which he had outgrown.

Dr. JOSEPH BYRNE stated that a case with the skin and muscle condition just shown had recently been presented before the Neurological Section. The man had traveled with Barnum and Bailey's circus as the "Boneless Wonder." His skin had the peculiar rubber-like quality referred to. Practice had enabled him to perform some wonderful feats; he could stretch the skin of the upper sternal region so that he could touch the forehead with it. In addition to the abnormal elasticity of the skin this patient exhibited marked hypotonia of the muscles of the legs, arms, and fingers, which enabled him to perform most weird contortions. This man had a defect in speech suggestive of paralysis of the soft palate, though there was no gross paralysis. The deep reflexes were said to be normal, if anything slightly exalted. There was some retardation in mentality. In crossing the knees he exhibited the overaction so frequently seen in tabes and allied conditions. This man had recently undergone a suprapubic cystotomy and there were no indications that he was a hemophiliac. Such a case occurring in a man over forty pointed to an unfavorable prognosis for the patients presented this evening, but perhaps lent support to the favorable prognosis given by Dr. Welt-Kakels as to the hemophilia.

Dr. HENRY HEIMAN said he could not agree with Dr. Welt-Kakels' diagnosis of dermatitis bullosa hereditaria, as this was observed usually on the feet, since they were exposed to friction and irritation causing blebs. He did not believe that any one could make a correct diagnosis at the present time. All that could be said was that these patients had trophic disturbances causing congenital maldevelopment involving the tendons, skin, and muscles.

Cases of Hemophilia, with Remarks on the Value of Blood in the Treatment of Hemorrhagic Diseases.—Dr. EDWARD W. PETERSON presented these cases, the one a boy and the other a girl, each six years of age. Both of these cases seemed to be true hemophilia; both showed severe post-hemorrhagic anemia. In both the hemorrhages recurred and the bleeding was finally overcome by blood from an outside donor, after the blood of the mother in one case and of the father in the other had resulted in only a temporary improvement. In such cases prophylactic doses of serum or blood should be administered every few months as in that way these children might be carried along, and it was well known that if one could tide over the period of puberty the tendency to bleeding decreased and might disappear altogether at maturity. Dr. Peterson quoted from Dr. Hartwell who held that, used with proper discretion in the conditions under consideration, blood transfusion had a real value. He also quoted from Dr. Crile to the effect that blood transfusion was a life-saving procedure when performed in accordance with proper indications; that the transfusion of homologous blood was a procedure analogous to the transplantation of living tissue; that it was followed by a rise in the number of red blood cells and an increase in antibacterial qualities, and that it was indicated in severe hemorrhages of all types, certain anemias unaccompanied by hemorrhage, and certain toxic conditions. It was always indicated when the source of the hemorrhage could not be controlled or removed. The plan followed was to take 20 to 30 c.c. of blood from the donor and at the same time an addition of 100 to 200 c.c. in order to get the serum that they might follow out Welch's method of administering 20 to 40 c.c. of the serum every six hours. If this failed they should resort to a second transfusion of whole blood. It was preferable, as indicated by the cases reported, to have a donor not related to the patient and to use unaltered blood.

Dr. GODFREY R. PISEK said that his personal experience in hemophilia had shown that it was necessary to give the blood injections serially, that was, in small doses at short intervals, particularly in cases that had previously been treated unsuccessfully by other methods; freedom from the repeated bleeding then followed.

Dr. ALFRED F. HESS said he believed they ought to make a distinction between purpura and hemophilia. In hemophilia the striking fact was the lengthened coagulation time of the blood, while in purpura the coagulation time was almost normal. Again, in purpura the platelet count was low; this was not the case in hemophilia. In every case one should examine the blood in reference to these two factors before deciding to which class of cases the one in question belonged. He felt inclined to consider the case of the female child presented by Dr. Peterson as a case of purpura, since hemophilia was exceedingly rare in the female. The other case might also be one of purpura since the diagnoses were not based on a study of the pathological conditions. Dr. Hess said he had recently seen a number of cases of both these conditions and had endeavored to control the bleeding with coagulose, fibrinogen, calcium, and gallic acid, and had finally succeeded with the emboplastic substance extracted from tissue. They had been working on this subject at the Research Laboratory and would be glad of the opportunity to try this preparation. They would be grateful if physicians seeing these cases would either try this themselves or refer the cases to the Laboratory.

Dr. PETERSON in closing the discussion, said he would not attempt to argue the question as to whether the cases were true hemophilia; Dr. Shamburg and Dr. Pisek had seen them and considered them hemophilia. The patients were both in a very critical condition, showing a high degree of anemia. In the girl there had been profuse epistaxis for a year and then purpura as a late symptom, while there could be no question in the case of the boy; almost from infancy he had shown a tendency to hemorrhage which was difficult to control.

The Use of Bismuth Pills in the Fluoroscopic Examination of the Infant's Stomach.—Dr. ALFRED F. HESS related his experience in attempting to measure the circumference of the pylorus by the ingestion of bismuth subnitrate pills coated with keratin, which would not dissolve in the stomach but would dissolve in the intestines. The pills were made in 9, 15, and 21 French scale. He had expected that the small pill would pass through the pylorus first and the larger one second, but he found that the large pill passed first. The No. 15 pill passed first; sometimes the two would pass together, but the smaller one never passed first. He then tried pills made of one-half bismuth and one-half lico-

rice, so that they would float in the stomach contents; here the same thing happened, the larger pill passing through the pylorus first. After ingestion of these pills the fluoroscope was the best instrument for observing them. One could see the pill move along the greater curvature. When the child was placed on the left side the pill would go to the left, and when on the right the pill would gravitate to the right. If the child was turned up-side-down the pill gravitated to the diaphragm. It was found that when the child was on the right side the pill left the stomach quickly; when on the left the pill went slowly. It seemed to the speaker that these observations might be made use of in cases of retention or of pyloric relaxation. Normally the pill left the stomach in from three to four hours; in some instances the time was a little longer. In cases of pylorospasm it required twelve to fourteen hours for the pill to pass the pylorus. Anesthesin had been given for the hypersensitiveness but it did not make much difference. Two centigrams of papaverin administered hypodermatically had proven more effective. In a dozen or more examinations he had found that whereas in pylorospasm the pills required from twelve to fourteen hours ordinarily to leave the stomach, after the administration of papaverin they passed in from three to four hours. Dr. Hess gave a lantern demonstration of radiographs which had been made by Dr. Gottlieb and called special attention to the enormous dilatation of the stomach in some of the cases and to the delay in the passage of the pills through the pylorus.

Dr. CHARLES GOTTLIEB said that the method which Dr. Hess proposed to determine the motility and the outline of the infant's stomach was interesting. It was easy to get the child to take the pills, whereas it had been very difficult to administer bismuth in suspension, and furthermore the children were liable to vomit the milk and spoil the picture. Even if they retained the bismuth so much gas resulted that it interfered with their observations. Dr. Gottlieb said that in his opinion, Dr. Hess had introduced a very useful method for determining the motility and position of the infant's stomach.

Dr. WILLIAM H. STEWART said that he had had no experience with the bismuth pills, but it was well known that babies had a tendency to empty the stomach of a body of large caliber before one of smaller size; this was because the larger body caused the greater irritation. One could not base any clinical observations on this fact, certainly no accurate knowledge of the size of the pylorus could be obtained by this method. It had been his practice to administer the bismuth meal by means of the catheter directly into the stomach; this gave a better opportunity of making accurate observations of the outline and motility of the stomach and he could not see that the proposed method offered any greater advantages.

Dr. GODFREY R. PISEK said that he was interested in Dr. Hess's remarks particularly from the standpoint of determination of motility. He could hardly agree, however, as to the practical application of this method in infants. The fact had been lost sight of that with the administration of a meal there was always distention of the stomach and that with the pill they did not get distention, and hence the conditions were not analogous. In his experience with different fluids and semisolids, the motility of the stomach varied; it also varied with the composition of the food, that was, whether the percentage of fats was high or low. The motility of the stomach also varied when the bismuth was given with water, alone, or in combination with different foods. Dr. Pisek said he merely wished to caution them in this respect. Dr. Hess had not made clear whether the caliber of the pylorus corresponded to that of the duodenal tube, which he understood was what the experiment set out to determine.

Dr. I. SETH HIRSCH said that though the knowledge of the exact size of the pylorus might be of value, still the expulsive power of the stomach had to be reckoned with. Even if there was a slight narrowing of the opening it did not necessarily follow that the stomach could not empty itself within the normal time. It was impossible to find this out with the bismuth pill. These observations made with the bismuth pill were none of them new; all had been made before. It was known that a large body passed through the pylorus faster than a smaller one and that the pylorus might be emptied faster with the patient on the right side. In fact this method was used by every roentgenologist in attempting to fill the duodenum. By the bismuth pills no observations could be made regarding the form, outline, shape, tone, or peristalsis. It was an error to infer from the varied expulsion of foreign bodies, as bismuth pills, that similar conditions occurred after the administration of food. In normal digestion the fluid portions were expelled first and the solid portions later. The conclusion reached regarding the effects of papaverin were not new. If a small dose of papaverin, from 1/50 to 1/75 of a grain, was given to a child with the bismuth meal in whom a previous examination showed a residue in the stomach at the end of four hours which created the suspicion of a pyloric stenosis, then if this stenosis was due to pure spasm, the stomach would be entirely empty four hours after the second meal, plus the drug, while if due to stenosis, the residue would be larger than that found with the first meal. Dr. Hirsch sounded a note of warning against the fallacy of drawing inferences from bismuth tests regarding the digestive time of certain foods in the stomach. Bismuth when suspended in the food showed a tendency to rapid sedimentation, which made the bismuth a foreign body more rapidly expelled than the food in which it was suspended. There was a method suggested by Kaestle of Munich which eliminated this error. Capsules of bismuth were used which were so made that one sank to the bottom and one floated on the surface of the fluid. By a serial roentgen examination of the patient one could determine how rapidly and when the stomach was empty by the observation that the capsules reached the same level and that it was possible to roll them about in the stomach.

Dr. ALFRED F. HESS, in closing the discussion, said that it was rather difficult to answer some of the questions that had been raised, for, whereas Dr. Pisek had doubted whether the same results would hold true where food instead of bismuth was given to the infant, Dr. Hirsch had stated that in adults it was an every day fact that food rapidly left the stomach and entered the duodenum when the patient was placed on the right side. It would seem that in view of Dr. Hirsch's large experience they must accept his statement and that Dr. Pisek's doubts would probably be found to have no substantial basis in fact. Dr. Hess said he hoped he had made it clear that the pills could not be used to determine the diameter of the pylorus, but were of value in the diagnosis of an obstruction at the pyloric orifice and that they showed this much more sharply than when the bismuth was given in milk, part of which frequently remained in the stomach, whereas the other part was seen in the intestines.

Treatment of Toxic Scarlet Fever with the Fresh Blood from Convalescent Patients.—Dr. ABRAHAM ZINGHER presented this paper. He stated that the donors were from three to six weeks convalescent from scarlet fever; in the majority of instances syphilis had been excluded by the Wassermann test and a careful examination was made to exclude tuberculosis. The method which he had employed consisted in inserting a medium sized platinum needle (No. 18 gauge and 1½ inches in length) into the vein of the donor and with a 30 c.c. Record syringe rapidly aspirating from eight to twelve ounces of blood, which was quickly injected into the muscles of the patient. The needle in the donor's vein was not removed, but a steel needle (No. 16 gauge and 1½ inches long was quickly attached to the syringe and the syringe full of blood was rapidly injected. In the meantime an assistant attached a smaller syringe containing some 1 per cent. sodium citrate to the needle in the donor's veins, to keep it free of blood. The large Record syringe should be rinsed out once or twice with the 1 per cent. solution of sodium citrate during the transfer of the blood. In a child a syringeful of blood was injected into each arm (triceps) and one into each thigh (vastus externua). In an adult two such injections could be made into each arm and thigh. If larger quantities of blood were to be injected the gluteal regions, the calves, and the deltoid muscles might be chosen. The injections were painless except for the slight discomfort associated with the entrance of the needle. No local reaction followed and the blood appeared to be rapidly absorbed. Nine patients suffering from severe forms of toxic or sentic diphtheria were treated at the Willard Parker Hospital with amounts of convalescent blood varying from three to eight ounces. In some of the patients there was a striking critical drop in the temperature within from twelve to twenty-four hours after the injection; there was also a distinct improvement in the pulse and general condition of the patient. The delirium in three of the cases cleared up very

rapidly and there was a slight improvement in the exudate on the tonsils and fauces. One patient treated with citrated blood (0.33 per cent. citrate from three convalescent donors showed a distinct improvement in the general condition, but the temperature continued for a few days from a complicating streptococcus exudate. The remaining two patients died from the complicating advanced septic condition. Cultures of the blood in both these cases showed the presence of a streptococcus. One of the two cases had received 2½ ounces, and the other 5 ounces of convalescent blood. It seemed, therefore, that in the later septic cases, where possibly the toxic scarlet fever element had disappeared from the clinical aspect of the case, these medium quantities of convalescent blood had much less action. Gland, joint, and ear lesions were not influenced. Larger quantities of fresh normal blood exerted a distinct beneficial effect on the disease especially when injections of from six to ten ounces of blood were repeated about three times at intervals of three to four days. Dr. Zingher said he hoped to be able to continue the work using moderate quantities of convalescent blood (4 ounces in children and 8 in adults) in the early and toxic cases, and larger and repeated injections of fresh normal blood in the later and septic stages of the disease. The use of citrated convalescent blood (0.33 per cent. sodium citrate) obtained by adding to 2.5 c.c. of a 10 per cent. solution to 75 c.c. of blood) would perhaps be a little more convenient to some and offered, in addition, the advantage of injecting blood from several convalescent donors into one patient. It also enabled one to have a supply of convalescent blood on hand. Such citrated blood could also be shipped to distant places. The effect of the sodium citrate, however, would have to be carefully determined; again, there was a tendency for the blood to deteriorate with time. Reiss and Jungman and R. Koch had used intravenous injections of large quantities of convalescent blood serum (50 to 100 c.c.) in toxic cases of scarlet fever. Their charts showed the same striking critical drop in temperature. But in obtaining serum fully 60 per cent. of the blood was wasted, and the blood could not be had in such abundance even when scarlet fever was most prevalent. They used the blood from those in an early stage of convalescence, from the eighteenth to the twenty-fourth day. It was quite possible that even two to three month convalescents could be used.

Dr. Matthias Nicoll, Jr., said that this idea of treatment was not new, but Dr. Zingher deserved credit for having invented a new technique in the giving of whole blood. The most promising field for its use was in the early toxic stages of the disease. He had not been much impressed, however, thus far in the septic cases of scarlet fever with enlarged glands and discharge from the nose and mouth. In two of the early toxic cases which he had observed the results of this treatment had been striking. The use of citrated blood in the one case he had observed produced little or no apparent effect so that this procedure would seem to be largely restricted to hospital cases in which convalescents could be obtained as donors.

Dr. William H. Park said that in reference to the citrated blood there certainly was no evidence that antibodies were injured by such a small amount for such a period of time. He did not agree with Dr. Nicoll that one-third of one per cent. of sodium citrate prevented the action of the serum. As to the clinical results of this method of treating scarlet fever, his observations agreed with those of Dr. Zingher.

Dr. William Shannon said that he had seen all the cases and was of the opinion that the serum had a decided effect upon the patients, which was indicated not only by a drop in temperature and the character of the pulse, but by the general condition of the patient. The results were less noticeable in the septic than in the toxic cases. In one instance the temperature fell after twenty-four hours but the patient got worse. A second dose of the serum was given and after twenty-four hours the patient showed a decided improvement, and this patient appeared septic. The cases reported did not strike him as being of a particularly toxic type. This plan of treatment was worth a more continued trial.

Dr. Louis Fischer related the case of a child eighteen months of age with diphtheria of the septic type. The child was admitted to the Willard Parker Hospital and treated in the usual way. The child's temperature was 105° F. and pulse 180; later in the afternoon the pulse came down to 156. The case was complicated with suppurative pleurisy. The prognesis seemed hopeless, and as a last resort eight ounces of citrated blood were administered. He had been especially impressed with the facility with which the injection was made into the median basilic vein. Within a few minutes the color of the cheeks improved, the lips and finger nails assumed a pinkish hue, and the cold extremities became warmer. Three-quarters of an hour after the injection the prognosis seemed more hopeful. The simplicity of the technique would adapt this form of treatment to secondary anemias, especially those following malnutrition.

Dr. Abraham Zingher, in concluding the discussion, said the paper was rather for the purpose of presenting a simplified rapid method for the administration of fresh convalescent blood and fresh normal blood than for the purpose of drawing definite conclusions as to the value of such treatment. The results, however, were very encouraging and seemed to justify a continuation of this treatment. The intramuscular injection of fresh whole blood taken from normal individuals would suggest itself also as a convenient and readily applied procedure in the treatment of surgical hemorrhages. Dr. Zingher had treated a case of typhoid fever, complicated by diphtheria, in which there was constant oozing from the nasopharynx after the separation of the membrane. Five ounces of fresh whole blood injected intramuscularly promptly stopped the bleeding, whereas the previous use of horse serum had no effect. He was glad Dr. Peterson endorsed the intramuscular injections of fresh blood in the treatment of hemophilia.

Tracheobronchial Diphtheria and Its Treatment.—Dr. Henry Lowndes Lynah gave this demonstration of his direct method of intubation, in which he used a small bivalve speculum and a small bronchoscope. He then gave a lantern slide exhibition showing direct views of the larynx in diphtheria, and demonstrating that the diphtheritic membrane sometimes spread downward through the trachea and bronchi as well as upward. Such cases of diphtheria had been passing unrecognized, being taken for bronchopneumonia. By this method it was possible to remove the diphtheritic membrane in pieces as well as other foreign bodies that might become lodged in the bronchi. The youngest child that he had intubated by this method was two weeks old.

Dr. William P. Northrup said that Dr. Lynah's demonstration appeared to him to have opened a new chapter in the knowledge of diphtheria and the lesions it occasioned.

Dr. Sidney Yankhauer said that his idea was that where the larynx was involved the laryngoscope could be used; in the intratracheal cases he had used the uterine dilator and passed the stem in that way. The direct laryngoscope was of interest to the pediatrician and he ought to be able to use it as it was the only method that could be used by the physician in which no assistance was required. It could be used in children as young as eight or ten months for the purpose of removing foreign bodies, and there was no other method by which the larynx could be seen in such young children.

Dr. Godfrey R. Pisek said that this work was of direct value to the pediatrician. Dr. Lynah's work should give them an impetus to study this type of cases and should impress upon them the importance of bearing in mind the possibility of tracheal and bronchial diphtheria and thus they might be able to save some cases that otherwise would be fatal. Personally he had seen such cases with physical signs that indicated a blocking sometimes of the right and sometimes of the left bronchus; the collapse was so complete as to simulate fluid. A prompt diagnosis, removal of the mechanical obstruction, and intravenous injections, offered some hope, as Dr. Lynah had been successful in a number of cases.

Dr. William H. Park related the case of an adult, admitted to the Willard Parker hospital from another hospital in which they were unable to decide whether the patient had asthma or diphtheria. They waited eight hours and then gave antitoxin. Death ensued in a short time and it was supposed that the man had died from serum sickness. Autopsy showed a diphtheritic membrane beginning at the larynx and extending down into the bronchi. An examination by Dr. Lynah's method at the general hospital would have revealed the condition at a time when life could have been saved. In the later subacute pneumonias one did not find the diphtheritic membrane.

Dr. Matthias Nicoll, Jr., said Dr. Lynah's work spoke for itself, but he had not done justice to the

value of bronchoscopy as a means of saving life in tracheobronchial diphtheria. Dr. Nicoll said he had seen a number of cases coming to autopsy in which the diphtheritic membrane extended even to the finest bronchi, but he did not recall such a case in which there was not also masked bronchopneumonia.

Dr. Henry Lowndes Lynah said that out of a series of 27 cases of tracheobronchial diphtheria 13 had died and 14 had recovered. Nine of the 13 deaths occurred shortly after admission to the hospital and were beyond help at the time of admission. If they could get these cases during the first two or three days they got very good results. Too much could not be expected from antitoxin in these cases as death was the result of the mechanical obstruction rather than of the diphtheria.

Stated Meeting, Held March 11, 1915.

Dr. Walter Lester Carr in the Chair.

Demonstration of a Simple Syringe Method for the Transfusion of Citrated Blood in Children.—Dr. Abraham Zingher gave this demonstration. (See Medical Record, March 13, 1915, page 440.)

Dr. William H. Park said he had seen Dr. Zingher perform the removal and injection of blood by this method and everything went smoothly and quickly. The method was easy to master and was suitable for those who wished to inject blood in young children.

The Pathology of Tuberculosis in Children.—Dr. F. H. Bartlett read this paper. He presented an analysis of 178 autopsies, at the Babies' Hospital, New York City, in which tuberculous lesions were found. A study of the earlier records of the hospital showed 16.4 per cent. tuberculous cases among 1,131 autopsies. The contrast with adult percentages was very striking, whether one accepted Lubarsch's figures, 69.2 per cent., or those of Naegeli, 93.1 per cent., as the average. The age incidence of this series varied from two and one-half months to five years, 75 per cent.of the subjects being under two years of age. It was interesting to note that in only five cases was the tuberculosis limited to the bronchial lymph nodes alone, and in only one to the mesenteric lymph nodes alone. The writer concluded that in children the primary infection of the lung was the usual mode of infection, since 82 per cent. of their cases were of this type. The absence of tuberculous lesions in the lungs in fourteen cases and the presence of such lesions in the bronchial lymph nodes in seven of these seemed to show that it was possible for the tubercle bacilli to pass through the lungs without localizing there. The largest number of cases were of inhalation origin, as shown by the large percentage of cases in which the pulmonary lesions were the most advanced in the body. The marked tendency to rapid and general dissemination of tuberculous lesions in young infants under one year of age was well shown. In view of this fact the survival of any young infant infected with tuberculosis for more than six months after infection was very remote, while healing of tuberculous lesions in young infants was practically out of the question. In the entire series not a single healed tuberculous lesion was found, and attempts at healing as shown by calcified areas were observed in only five instances in the lungs and thirteen times in the lymph nodes. Only twice was it found in infants less than a year old, and in both these cases the extensive generalization of the tubercles throughout the body gave evidence that the small calcareous areas present did not prevent spreading of the infection. Encapsulation of a tuberculous lesion was not encountered in this series of cases. The predominance of respiratory over deglutition infection was indirect evidence of the quality of the milk supply, though it should not be forgotten that children might carry tubercle bacilli into their mouths by their fingers infected from other sources than their food. The comparative frequency of tuberculous meningitis in young infants was noteworthy as evidence of the very general dissemination of tuberculous lesions in young subjects. In this series of 178 cases the meninges were found to be involved in 96 instances. The younger the infant the greater was the liability to meningeal involvement, or indeed to all forms of dissemination. One infant two and one-half months of age was found to have ten viscera involved in the tuberculous process. There was a smaller proportion of cases of tuberculous meningitis among children who acquired the disease by ingestion than among those who acquired it by inhalation, and this was in keeping with the fact that the cases infected through ingestion showed rather less tendency to generalization than did the respiratory cases. In the infant, tuberculous meningitis was a miliary tuberculosis and tuberculosis of the lungs was a miliary tuberculosis.

The Transmission of Tuberculosis in Childhood.—Dr. William H. Park read this paper, in which he first considered the infection of the fetus during intrauterine life and concluded that the evidence demonstrated that intrauterine infection occurred occasionally, but accounted for only a very small proportion of the tuberculosis of childhood. In most of such cases the mother had an extensive miliary tuberculosis. The conclusion that intrauterine infection never proceeded from the father seemed well founded. A very large amount of information on this subject had been gathered from cattle. Calves born of tuberculous cows were seldom infected when removed at the time of birth from their parents and fed on milk from uninfected cows or on that which had been rendered safe from tuberculosis by heating. The human infant after birth was endangered not only by bacilli from human sources, but from diseased cattle. It had been definitely proven that both types of tubercle bacilli were capable of infecting human beings from infancy through childhood. As was well known, cows only contaminated milk extensively when they had disease of the udder. When lesions in this region were extensive, many millions of tubercle bacilli might pass into each centimeter of milk. Ordinarily, however, only a few hundred bacilli were present in a cubic centimeter. One or two cows with seriously diseased udders were capable of infecting the mixed milk of a whole herd. It had been shown by a number of investigators that even when the udder was apparently normal a few bacilli might be found in the milk. It was possible that the bacilli might enter the milk in indirect ways from infected cattle. At present the raw milk supply of New York City was small in amount and was entirely from tuberculin tested cattle, and these tests, which had been previously made annually, were now made semi-annually. If either annual or semi-annual tests were carried out carefully, and no infected cattle were brought into the herds, few or no tuberculous cattle would be present in the herds, and those would very seldom have any dangerous involvement. During the past year a little less than five per cent. of the cows in the certified herds of Manhattan and Brooklyn had reacted, and on autopsy only about one-half per cent. of these reacting cows had more than a slight localized tuberculosis. None of the cows had any detectable udder tuberculosis. Quite a large number of samples from these herds had been injected into guinea pigs without causing any infection. Although it was impossible to state that the milk from the certified herds under present conditions was absolutely free of tubercle bacilli, still they were so few as to rarely, if ever, cause infection. The only sure method of getting exact facts was to test out the type of bacilli in every infected infant or young child who was fed on raw milk. The Health Department would be glad to do this in any material submitted if the type of milk and other information needed was given. The farms producing Grade A Raw Milk, which were not certified, were probably supplying a milk nearly as free from tubercle bacilli as the certified milk, though the supervision of these farms had not been as thorough as that of the certified ones. It was safe to say that where tubercle bacilli contained in milk were actually heated to 140° F. and held at that temperature for 20 minutes they were destroyed. If any escaped they were too few to infect animals. An investigation of the experiments that seemed to show that some bacilli escaped destruction during pasteurization revealed the fact that the method of testing had allowed bacilli on the surface of the milk to be exposed to a lower degree of heat. The evidence that butter actually transmitted tuberculosis was less direct than in the case of milk. Whether meat from tuberculous cattle had ever transmitted tuberculosis to human beings was still a question of some doubt. When the meat was thoroughly cooked all the tubercle bacilli were certainly killed; when it was rare some might escape. The evidence was clear that the majority of infections came from one human being to another. While bovine infection was most prevalent in early childhood, the human infection increased in amount up to fifteen years of age. It was interesting to note that, as in the case of many other diseases, infants, as a rule, possessed a considerable insusceptibility to tuberculosis. The figures did not bear out Behring's suggestion uttered in 1903 that the origin

of consumption was laid in infancy, remaining latent until something impaired resistance. Nor did their present knowledge agree with his belief that the original tubercle bacilli were usually of the bovine type. In the case of infants and young children the greatest danger lay in being attended by a tuberculous mother or nurse. The avoidance of this direct human contamination could probably only be thoroughly maintained by the entire removal of the infant or child from contact with tuberculous persons. The danger could, however, be greatly lessened if all possible precautions were taken, but probably these could never be so thorough as to eliminate danger. In some investigations that he had carried out, Dr. Park found to a striking degree that the children of tuberculous parents were more infected with clinical tuberculosis than those living in families where no tuberculosis existed. This was in accord with the results obtained by many. The interesting question as to whether the infection producing the later manifestations took place in adults or was the development of earlier infection had not yet been decided. If in this country adults did not become infected, it must be because they had developed and retained immunity through having an earlier infection or because they were naturally immune. They were certainly not yet in a position to be willing to subject children to infection with tubercle bacilli of either the human or bovine type in order that they have conferred on them a partial or possible immunity. This most interesting question of whether there was any way to safely protect from serious infection would undoubtedly be subjected to much study in the next few years.

The Recognition of the Fact and the Estimation of the Danger of Bovine Tuberculosis.—Dr. HENRY L. COIT of Newark, N. J., presented this communication, in which he stated that he had had no practical experience with or experimental knowledge of bovine tuberculosis. Many physicians were latterly making diagnoses of bovine tuberculosis in a loose and thoughtless manner. If there was a lymphadenitis, an exudative peritonitis, or a bone lesion, the infection was assumed to be of the bovine type. This drift was unwise and unwarranted. The tuberculous cow, possibly potential for danger, always had been and still was in the herds giving out milk supply, but to what extent she was a menace to the health of the child, or whether this danger was negligible, they were only just beginning to determine. The finding of a large number of tuberculous reactors in a well-guarded herd was a grave problem for the Medical Milk Commission, and had accentuated interest in the medical control of milk intended for clinical purposes, and not only the profession but the public had been awakened to its importance. It was not just that the discovery of reactors in a supervised herd should disturb the confidence of the people in the system of supervision of the certified milk supply, because all herds when tested and retested at some time showed their respective percentage of reactors. The Milk Commission, through its system of safeguarding the milk, had imposed sixty-five requirements upon the dairyman, only one of which in the present instance was called into question. For two years past many animals which did not react to the test before purchase did react in a few months in a well-guarded herd. This was presumptive evidence that they might have been rendered immune to the test by the surreptitious use of tuberculin before they were offered for sale. The Bureau of Animal Industry had estimated that at least 20 to 30 per cent. of all dairy cows in the United States were tuberculous. In view of this fact, the real difficulty was that they could not enforce upon breeders and dealers in cows sold for dairy purposes the unfailing duty of burning a branding mark in the hides of animals, whenever, upon the injection of tuberculin, they were found to be reactors. With this provision of law bovine tuberculosis could be efficiently and quickly stamped out as was contagious pluero-pneumonia a few years ago by the United States Government. Dr. Coit related the history of the attempt to gain the cooperation of the United States Bureau of Animal Industry in applying the tuberculin tests, which ended in failure. The Government refused to grant this help to an organized philanthropy like the Milk Commission, though spending thousands of dollars every year in testing the cattle of private parties. The desultory testing of herds by the Government conferred but one-half the benefit which would be accomplished were such testing done in conjunction with the Milk Commission. The speaker said he had no confidence in legislation or in the press as a means of solving the problems involved. To meet the fact of bovine tuberculosis required: (1) Effective organization of the controlling agency which should consist of non-political commissions with legislative authority, including in their membership medical, veterinary, and sanitary authorities of recognized ability, their work to be financed by State funds. The Medical Milk Commission was the pioneer in this field. (2) The fact should be met by dependable inspection and tuberculinization of the herds used for milking purposes by men of the grade of teachers in the veterinary schools, men of unassailable character. (3) It should be met by the invariable use of reliable tuberculin, such as that made in the laboratories of universities, or in State or Federal experiment stations. (4) It should be met by instituting the custom among high grade dairymen of breeding their own stock and thus avoid the danger of replenishing their herds from miscellaneous lots of cattle not free from tuberculosis. (5) The fact of bovine tuberculosis must be met by the systematic tests of all animals before purchase, and retests at stated intervals, with the segregation of all cows which showed any suspicion of reaction. The technique of the United States Bureau of Animal Industry should be followed in making the tests, with the filing of a report of all tests and retests with the authority in charge of the work. Dr. Coit expressed the opinion that while he did not minimize the importance of bovine infection in young children or the great importance of having the milk herds absolutely free from reactors, yet he believed in the improbability of the frequent presence of live tubercle bacilli in milk from well-guarded herds in which good dairy hygiene was practised. The probability of transfer of bovine tuberculosis through milk, under present conditions, was very small. The medical profession and the public were menaced by a bacillus far more vicious and virulent than the tubercle bacillus. Its name was "Commercialism." The wonder was that the public and a part of the medical profession were so gullible and could not interpret these trade practices or recognize their true character.

The Care of the Tuberculous Child.—Dr. I. OGDEN WOODRUFF presented this communication. He called attention to the change that had come over their ideas of tuberculosis in childhood during the last ten or fifteen years. Formerly tuberculosis in childhood was looked upon as a disease seen but little outside of a hospital and one in which the discussion of treatment was of a value more academic than practical, but more recently attention had been drawn to the prevalence and frequency of tuberculosis in childhood. The author concerned himself more particularly with the consideration of cases of the early and hopeful type and with prophylactic measures. The most important preliminary step was the making of an accurate diagnosis and here familiarity with tuberculosis as seen in the adult was of little value in aiding one to detect the disease in the child. When it came to treatment they pinned their faith on the same trio which were the mainstays in the adult, rest, fresh air, and superalimentation. Rest should be particularly emphasized. It was the impression of the speaker that it was not generally given the attention it deserved in children. The fact that the nutrition of the child did not suffer to a serious extent in early tuberculosis, and readily responded when the amount of food was increased and the appetite stimulated by change in environment, the absence of fever by mouth temperature in early and even moderately advanced cases, and the appearance of rapid improvement, tended to throw one off his guard as to the importance of rest. In the child the pulse was particularly susceptible, and it was his custom to use it as a guide to the amount of exercise in which a child might with safety indulge. The pulse and temperature should be noted before exercise and one hour afterward, and the work graduated according to its effect. The child should be kept mentally satisfied with quiet occupations. Schooling in the fresh air might be permitted for three hours daily. For cases in the quiescent or apparently arrested stage postural and breathing exercises exerted a marked benefit. From the climatic standpoint the one particularly bad combination was heat and humidity. As to diet, high caloric foods were indicated until the weight was normal or slightly above it. At the Bellevue Day Camp it was found impracticable to work out a diet on a scientific basis and the author was not at all convinced of the necessity of planning such a diet, since a wide variation must be made for individual cases. A diet high in fat and proteid

seemed most suitable. Digestive disturbances were less likely to occur if superalimentation was brought about slowly. Constipation should be avoided; at the Day Camp they had found digestive disturbances much less frequent since adopting as a routine measure the administration of a dose of castor oil once each week. Care in regard to forced feeding must be exercised during hot weather and the forced feeding should be avoided altogether on days of extreme heat and humidity. In the pulmonary cases he had used tuberculin only in those cases which did not tend to improve as they should under ordinary remedial measures, and he could not say that he had seen any remarkable results. Usually he had employed old tuberculin, in some cases bouillon filtrate. His initial dose was one-hundred millionth of a gram, and in some cases one-tenth of that amount. Doses were given twice a week, but only to children who could be kept under close observation. For three or four years he had been employing a scale of increase of 25 per cent., which gave ten doses to a bottle, the way tuberculin solutions were usually prepared. In cases of cervical gland tuberculosis he was distinctly enthusiastic over the use of tuberculin. After discussing the different opinions as to the desirability of operating in cases of tuberculous gland involvement, he stated that in all cases of tuberculous adenitis in which surgical measures were resorted to, great care should be exercised if caseation was present to avoid flooding the exposed tissues with tuberculous poison, thus setting up an intense tuberculin reaction which might light up an active focus elsewhere in the body. Pneumothorax should be of value in some cases in children as it was in adults. Among minor remedial measures the hygiene of the mouth, nose, and throat was important. Adenoids should be removed when the disease was quiescent or apparently arrested; hypertrophic tonsils should be removed at a later date as they required longer anesthesia. There was, too, a great tendency to allow children with tuberculosis to return to their normal habits and environments, simply because their general condition was good, though the signs in their chests were still well marked. Dr. Woodruff said he was opposed to the administrative management which permitted tuberculous children in an active or quiescent state to attend school in ordinary classrooms, if they had no tubercle bacilli in their sputum. Such children should be in the fresh air classes, should sleep constantly with the window open, or out of doors, if practicable. They should be discharged on probation, returning once a month for examination; if they continued to improve this period could be gradually lengthened. These children should be carefully guarded against measles, whooping cough, and colds. In speaking of prophylaxis, the author said he was inclined to agree with McCleave, who said that of the strife against tuberculosis in adults much of the effort and money was wasted until it was directed to basic preventive work among children. Prophylactic measures were twofold: (1) to prevent the entrance of infection, and (2) with infection once present, to localize it and to prevent its extension and development, so that a child once infected might be brought up to adolescence with the greatest possible resistance against the disease. With the child in a family where one or more members were infected with tuberculosis, the attempt should be made to prevent too intimate contact with the infected member or members of the family. The need of sanitary furnishings and methods of cleaning in such a home should be emphasized, together with the advisability of sending such children to a different environment or to preventoria at intervals, and educating them in cleanliness and hygiene. In children thus exposed attention to nutrition, to the correction of various physical defects, and to special hygienic care of the nose and throat should be emphasized. They should be seen by their physician at least once in six months, and should have a cutaneous test on their first examination; thereafter they should be tested every four or six months. The care of children who reacted to the tuberculin test was a serious problem in municipal work.

Dr. L. Emmett Holt said he was interested in what Dr. Coit had said regarding the prevention of tuberculosis among cattle. That contact played an important part in the dissemination of the disease was even more true of cattle than of human beings as contact was closer. Dr. Coit had spoken of the cows that were "plugged" with tuberculin by dealers when they were sold. Under existing circumstances it seemed almost impossible to keep tuberculosis out of a herd so long as dairymen continued to introduce new animals into the herd at frequent intervals. In this connection the importance of dairy farms breeding their own cattle for the purpose of replenishing their herds should be emphasized. This was especially important in view of the fact that cows were so often tuberculous though appearing to be in good condition. This was also true of many children with tuberculous lesions; if digestion and assimilation were good, they might steadily gain in weight, but at the same time the disease might be progressive. Dr. Holt asked Dr. Woodruff to tell them what was the relative success obtained in New York with the open air and open window classes.

Dr. Robert Langley Porter of San Francisco, Cal., said that such a discussion as this should not take place without attention being called to the fact there were conditions in which there were non-tuberculous lesions of the lungs in young children. It was interesting in connection with what had been said of bovine tuberculosis to observe that in California it was said that 33 per cent. of the cattle were tuberculous, yet there the cattle were not housed as in the East but lived in the open, and yet infection took place as readily as when the cattle were kept in stables. In spite of the large percentage of infected cattle there was no correspondingly large percentage of infections among children under fourteen years of age. The estimate was that from 7 to 9 per cent. of the tuberculous infection in children was of the bovine type. He felt that the great danger was in the transmission of the infection from one human being to another. There were two points to be emphasized: First, the necessity of minimizing the danger of infection through human contact and especially from carriers so often found in the home. Such carriers were frequently the grandparents, who complained of asthma, winter cold, etc., but who nearly always had tuberculosis. The second point was that they should not assume a child to be tuberculous when such was not the case.

Dr. Charles R. L. Putnam said that for years they had been examining the mesenteric glands to find out how common, relatively, tuberculosis was in the mesenteric lymph-nodes and the lungs. They had found that the lungs might be badly affected and yet the child be free from tuberculous peritonitis, and this apparently showed that the tubercle bacilli could enter and pass through the mesenteric glands without producing permanent lesions of the mesentery or intestine. The infection might be transmitted to the meninges and yet the peritoneum remain unaffected.

Dr. Maurice Fishberg said that he was surprised that in a discussion on bovine tuberculosis in children the problems of immunity were not touched upon. Recent experimental investigations had shown conclusively that reinfection was difficult or even impossible in tuberculosis. Clinically it appeared that the human being was also immune to reinfection with tubercle bacilli. This was evident from the fact no physicians, nurses, or orderlies in hospitals for consumptives had ever been known to be infected with the disease. Similarly marital infection was a negligible factor in the dissemination of phthisis. The reason for this curious phenomenon was that everybody had been infected with tuberculosis before reaching adolescence, immaterial whether phthisis developed or not. Dr. Fishberg pointed out that in children between the ages of three and twelve years of age pulmonary tuberculosis of the types seen in adults was very rare Authorities were in agreement on this subject. Tracheobronchial adenitis was quite common at this period, but this was not phthisis. It had recently been suggested that tuberculosis in children, especially of the glands, was due in a large proportion of cases to the bovine type of tubercle bacilli, and that this bovine infection was not followed by phthisis immediately or in later life. Indeed, some had ventured to assert that bovine infection during the first decennium of life was an important immunizing agent, preventing reinfection with bacilli of the human type. This was a fascinating subject and sufficiently important for investigation. He suggested that Dr. Park, who had facilities and opportunities, should undertake it. With reference to Dr. Bartlett's statement that a large proportion of infections studied at the Babies' Hospital seemed to be due to inhalation, this was not in agreement with the modern view of infection of infants. A large proportion of these infants were partly or altogether brought up on cow's milk, and it might have been bovine infection by ingestion. Even if the bacilli were brought to the child's mouth with the inspired air they might be swallowed. At autopsy it was

exceedingly difficult to say which was the primary lesion. The hypothesis of infection through the inhalation of dried sputum had of late received some severe shocks and it was doubtful if it would hold out against the test of recent research.

Dr. F. H. BARTLETT said, in reference to this question of the inhalation and ingestion origin of tuberculosis that after finding the primary lesion in the lungs and bronchial lymph-nodes in 134 of the 178 cases it would be a far cry to assume that the bacilli passed through the intestines to the bronchi. They had found the primary lesion in the mesenteric lymph-nodes in only seventeen instances, and it seemed fair to attribute these to ingestion. The difficulty lay in proving which was the oldest focus in the body; but assuming that in the 134 cases the primary focus was in the lungs and bronchial lymph-nodes he believed that the bacilli must have gained entrance there by inhalation rather than by ingestion.

Dr. WILLIAM H. PARK said he was surprised at Dr. Fishberg's statement in reference to marital infection with tuberculosis. Several investigators of this subject had found reason to believe that infection did at times take place. It seemed to him that they all must have seen instances where one member of a family after another fell a victim to the disease while caring for one of their number who was suffering from tuberculosis. It might of course be argued that the care and mental depression attendant on such an experience might bring out an early infection that had been dormant. It seemed to him that Dr. Coit was extreme in his requirement that only those having the standing of a professor in veterinary medicine should be permitted to take temperatures; the physician was in the habit of allowing the nurse to take temperatures. Of course the men who took temperatures should be well trained and honest. While infection with the bovine bacilli was possible it seemed equally clear that the great majority of infections in man were transmitted from one human being to another. In cases of fatal bovine infection in which there was a general tuberculosis there was as a rule no way of determining the type of bacilli causing the lesions; the bovine type was exactly like the human in extent and appearance. In cattle the tuberculin test would reveal either type of infection, but as a matter of fact one never found human tuberculosis in cattle unless the cattle were experimentally inoculated with the human tubercle bacilli.

Dr. HENRY L. COIT said that he had it from a veterinary practitioner that the rank and file of veterinarians were not high grade in ability or reliability. He believed that as a proper safeguard to the milk supply they should employ, as he had stated, men of the grade of professor in a veterinary school so that they could make sure of having men of good character and absolute reliability.

Dr. I. OGDEN WOODRUFF, in closing the discussion, said that he thought the relative value of the open-air and open-window classes was a question of climate and equipment and of the amount of money that could be spent on equipment. In New York the open-window classes were conducted in rooms in which the windows were pivoted on two sides of the room and the air was practically the same as the outside air, or just enough heat was supplied to give a temperature of 40° F. He thought this arrangement had certain advantages over the open-air classes because of the excessive humidity and high winds in this climate, and because with the present equipment supplied by the city the children were too cold out of doors. In some private schools the children were entirely out of doors and did well, but they were better protected against cold by warm clothing. Another point to be considered was that the open-air arrangement, while sometimes too cold in winter, was too hot in summer unless a double roof or one so constructed as to afford proper protection against the sun was provided. With the present equipment, Dr. Woodruff said, he greatly preferred the open-window plan.

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THIRD ANNUAL REPORT OF THE PSYCHOPATHIC DEPARTMENT. Boston State Hospital for the year ending Nov. 30, 1914. Published by Wright & Potter Printing Co., 32 Derne Street, Boston, Mass.; 39 pages.

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COOPERATION IN THE TREATMENT OF NERVOUS MALADIES.*

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POSTULATE: Diseases of the nervous system are proverbially complex and difficult to limit or cure. Disappointment is expressed by candid neurologists in the efficacy of remedial measures which appear especially defective in protracted and disabling conditions. This ineffectiveness is less real than apparent; our resources were never before so many or so potent if rightly selected, combined, and supplied. Among the laity an erroneous notion still prevails, viz., that one chosen adviser should be qualified to personally minister to their maladies. This personal intimacy and reliance is precious, but no more capable of radical results here than in other fields of endeavor. The domain of human restitution has long outgrown such primitive methods.

"Nervous diseases," so-called, may be divided into two groups: one, the smaller, includes diseases of the brain, spinal cord, nerves, and directly correlated pathological processes; also another, much larger, viz., diseases of heterogenous origin in which neuropathic and psychopathic phenomena occur as dominant clinical features. Among the latter are manifold disorders in which disease processes are negligible, except as a background for psychoneurotic manifestations. It is this variegated group which forms the most promising field for clinical endeavor since it constitutes the majority, certainly of the more complex and puzzling cases which apply to both neurologists and general practitioners. The proportion of failures here is so great as to constitute a just ground for dissatisfaction with the (apparent) resources of neurology. The problem is to evaluate and determine the effects of these diseases and disorders upon the particular individual; to limit them and to restore him or her to that degree of health of which each is capable. Serious structural affections of the brain and nerves, organopathies, neuropathies, and especially their effects, are notoriously difficult to modify or control; only rarely can they be cured. Few men, even though they be wonders of neuropathological acumen, are capable of becoming experts also in the use of many varied and highly specialized agencies for repair or to successfully qualify as masters in all departments of therapeutics. For them it would seem a large enough demand on time and capacities to diagnose and to efficiently supervise treatment. The domain of nervous disease *per se*, neuropathies and degenerative processes, is enough to keep one man amply employed. They are of gloomy outlook, but advancing resources afford much hope; they need not remain unrelievable. Nervous disorders, dissociation of neurones or personalities, psychopathies in their kaleidoscopic mutabilities are capable also of taxing the resources of any individual. To do them justice, cooperations are needed to yield the combined physical and psychical key.

The whole group of emotive disorders to which the inadequate term "hysteria" is still the popular but misleading designation, constitute a volume in themselves. These are the most numerous, constituting in their milder degrees a majority of most clienteles. (And how helpless are many of those who assume to cure them. Here arise the tragedies in medical experience.) The principles of therapy for this multitude are much alike. There are many common denominators, equivalent principles of action, convertible procedures. They require similar rescue methods and especially reconstructive measures making for both psychic and physical disentanglement, uplift and restitution. Simple as the ingredients may be, special artists are demanded to produce the best fulfillments. Any one man who assumes the responsibility of treating from start to finish all the phases of these metonymic disabilities accepts too large an order. To attempt alone to do one's duty by each and all is bewilderingly perplexing, especially with only unskilled, selfmade or halfmade experts, nurses, clinical assistants. By doing so one invites failure, blunders; may meet well merited blame. Worse than all, many entirely curable persons are thus made to become irremediable derelicts. Among these are often exceptionally valuable citizens brought to a standstill by overstrain and the giving away of weakened tissues, of disorganization of psyche or of substance.

Many conditions encountered among nervous diseases, disorders, and their effects, being generic to other kinds of disability, require similar reconstructive measures. From them all emerge factors stimulating diagnostic skill and rousing therapeutic resourcefulness. These problems range all the way from conditions originating in developmental errors, aggravated by disabling circumstances through acute, subacute, and chronic diseases to degenerative and disintegrative processes. They involve also static or other gross structures, the sense organs, vegetative and reproductive, cardiovascular, renal, and eliminative organs, also the great governing mechanisms, the adrenal system, all in addition to those of the nervous system from which the more graphic features may be derived.

Strange manifestations often occur through vasomotor vagaries, autonomic complexities, plus and minus vagotonies, and sympathectonies. Then

* Read by title at the meeting of the A. M. A., June 19, 1915, Section on Nervous and Mental Diseases.

beyond and behind all these are hyper- and hypotonies of the ductless (endocrinous) glands. All these must be reckoned with before we get down to the levels of structural or other alterations in the brain, spinal cord or nerves and their particularized effects.* To be sure there are innumerable kinds and degrees of neuro- and psychopathic tendencies, all harking back etiologically to familiar origins with bizarre settings. The reason why better results are not achieved are, among others, that interest in neuropathological problems is still exhibited overmuch in scholastic or strictly scientific research and less in the alleviation of distressing or disabling byeffects or residua. Also myriad extravagances in healing methods are exalted by unreliable enthusiasts which excite more suspicion or condemnation than they deserve.

The mind of the scientific investigator is by nature and training skeptical; it tends to esteem dissent as wiser than expectation or hope. His aim is, and should be, to unravel the tangled skein of obscure causes by relentlessly pursuing elusive origins through mazes of complex often inexplicable phenomena and reach the efficient source; to map out structural relationships, associated and interdependent insignia and always to reject phantasmagoria. Such training is the antithesis of hopeful conservation, of optimistic reconstruction.

The *fons et origo* of healing forces, of remedial efficiency, of therapeutic certitude, is hopefulness with a parabolic curve toward optimism. To overcome morbid agencies, psychic or physical, the efficient agency must possess, in addition to reconstructive energetics and restorative capabilities, a large measure of promise which needs to be presented in its most impressive manner. There is needed an atmosphere of confident expectancy. This may well be subjected to special modifications in full accord with tact and diplomatic adaptations to individual makeup, peculiarities, previous history, social plane, mental, moral, and even religious training. The status of physical development demands careful investigation, especially disturbing effects of previous somatic insults, not alone residua of disease, of nutritive defects, but also the circulatory status. Cardiovascular tone, or loss of tone is oftentimes the one factor most demanding restitution.

In this article I allude briefly to certain departments of therapy which seem worthy of special mention, since having helped me, they seem to deserve further elaboration. These are cooperation with the dental surgeon, the hemadenologist, and the reconstructive hygienist. As illustration of the latter, reference will be made to cerebral palsies. Last of all is given a sketch of S. Weir Mitchell as a specialist in cooperation.

Cooperation with the dental surgeon: The significance of certain dental lesions, especially the insidious nonsensory variety, also of impactions, has been shown to be often vital in affecting nerves and brain. Not only are effects obvious and direct through pain causing exhaustion, lowered resistance, and the like; by infections bearing heavily on general or local health, but especially by reflex effects through subconscious or nonsensory peripheral irritation. The subject deserves openminded consideration. Since brought to my attention by the late Henry S. Upson (Professor of Nervous and Mental Disease in the Western Reserve University) it has afforded me the solution of many vexatious problems. If authoritative statement is needed from popular idols let me cite Charles H. Mayo, who remarked at a medical meeting in Chicago recently: "The next great step in medical progress in the line of prevention should be made by dentists. The question is will they make it?" I would assert with emphasis "Will physicians cooperate?"

Anyone will doubtless concede the despotism of the aching tooth, the acute abscess, the humiliating pyorrhea alveolaris, but when the profoundly momentous, subtle, long-continued reflex perturbation induced by steady pressure exerted on a nerve terminal, the slowly accumulating excitation of an impaction, is brought to the foreground of attention, too often it is disallowed or even ridiculed. Only briefest reference can be made here and now to this cardinal domain of cooperative effort. It is true little will be found as yet in medical literature. A surprising mass of testimony is available in dental literature in the form of case reports, *x*-ray details, pathological findings, and the like. All this now needs correlation, association, and should be reduced to sequences and determinations. While the instances wherein this factor has been proven paramount are few, it deserves full consideration in connection with any baffling or seriously retrograding state. Personally I have had many vivid experiences, in which the apparent dental cause being removed, there eventuated extraordinary and unexpected betterments, notably in the psyche. In others the gain was decided; in yet others no decision could be reached as to which factor was dominant. Too often little or no relief was thereby obtained, none the less an operation was fully justified as would be any other *dernier resort*. Evidence as to the etiological bearing of dental irritation is not yet massive, except in the rich findings, case citations, etc., in dental and roentgenological literature, which the Upson Foundation will now afford means for collecting and digesting. As a clinical resource it promises much in the face of otherwise hopeless neuro- or psychogenic miseries. It is my opinion, affirmed with increasing confidence, that no neurologist does his full duty by certain kinds of cases till an *x*-ray plate is made of all the teeth wherever suspicion is aroused as to possibilities of dental irritation being a causal factor in disorganization of psyche or substance. Psychoses due to irritation by impactions are said by Upson to differ in no notable particular from those due to abscess. Critical study of suppurative processes shows that not only the quantity of the absorbed pus, but likewise its situation as an irritant as well as its neuronic associations is a determining factor in somatic or psychic integrity. An abscess is commonly pacific. It may cease to be so by reason of subsiding degrees of suffering, and by compensations. The pain grows less, or awareness is obtunded, till it sinks below the threshold of consciousness, yet continues to exert irritation, inducing deeply acting, farreaching effects.

Briefly, the short route recommendation is to

*Smith Ely Jelliffe said in his presidential address: "It had seemed feasible to regard the nervous system, speaking broadly as operating at three levels: through the course of ages these had been built up, not sharply delimited, but gradually and imperceptibly merging the one into the other. These familiar levels he would speak of as the vegetative, the sensorimotor, and the psychical levels respectively, and would use the terms, vegetative neurology, sensorimotor neurology, and psychical neurology, not as indicating three different kinds of neurology, but rather working at different functional levels, no one of which can be neglected.

remove the tooth causing any marked impaction or any recognizable evidence of alveolar abscess. To be sure few dental surgeons will or can be induced to accept this view, they being trained to save the tooth whenever possible. There are appropriate dental relief procedures, radical in character which surgeons are now capable of supplying if they will. The results of pus removal must emphatically be complete and thorough, or the neurogenic abnormality will persist, and valuable time and remediabilities will be lost. Insanities may and do result. A life may be blighted to save a tooth as I well know. Intances could be cited when indomitable persistence over a period of time was required to achieve the emancipation.

Hemadenology as an adjunct to neurology and psychiatry: The new and comprehensive specialty, hemadenology, proposed by Sajous, the science of the blood glands, has so expanded as to afford the essential explanation of many obscure psysiological processes, anomalies, and diseases. By its aid also it is possible to elucidate the complex effects of disordered states, grouped clinically among diseases of the nerves, displaying characteristic phenomena neurotic and psychic, which arise in the deeper levels of growth forces and manifest secondary effects on brain or nerve structures. Since this clinical domain has been shown to offer such efficient means of solving hitherto insoluble problems, neurologists do well to familiarize themselves with the essential principles and apply them in daily work. To do so presents difficulties for those whose time and strength is already fully occupied along familiar and otherwise expanding lines. Hence for the present, best results can only come by the cooperation of that small group giving special attention to hemadenologic investigations.*

Correlationships these studies exert on neurologic and psychopathologic problems are, among others, these: The field of the internal secretions may now be regarded as all-embracing. Whether the thyroid, the adrenals, the pituitary or any other of the ductless glands can be regarded as definitely involved, in a given instance, phenomena often appear only comprehensible by studying them from this standpoint of origin or departure. For example, on general nutrition, as in obesity of hypothyroidism, hypopituitarism, or hyperadrenalism; also on skeletal structures, vascular system and musculature as in acromegaly or gigantism, both being of pituitary origin. Gout, atheroma, glycosuria, and many closely associated disorders which form the basis of neurogenic disorders are now known to be intimately related to disturbances in the adrenal system. So also of vulnerability to infections, and, in particular, the more obdurate effects and complications of infections are traceable to acute diseases of these glands.

This brings us to the whole subject of immunology. Developmental anomalies are to be similarly explained. Notably the vast army of backward minded, the psychic aberrancies, eccentricities and defects. Anomalies in some instances which exhibit stigmata point directly to impairment through heredity or environmental influences to acquired lesions of the ductless glands. So in infantilism, characterized by persistence of childish characteristics, but with it dwarfism or gross mental defect; also obesity with femininism; also certain grave sociological problems, the evildoer, the fool, the delinquent, the petty criminal. Some of these find their origin in loss of balance in the ductless glandular activities. These are often to be benefited, moreover, sometimes cured, by eliciting the associations in, equipoise of the blood glands, by production of hormones, insuring normal metabolism in all structures, particularly those of the central nervous system. Insanity, too, in some of its phases is similarly explainable and remediable, notably dementia precox, constituting as it does about one-fourth of the inmates of all asylums, with treble that number at large. This deplorable disease has been differentiated into certain forms based upon aberrancies in the ductless glands by Ludlum and Corson White, and they have succeeded in ameliorating some varieties by organotherapy.†

Psychasthenic and neurasthenic phenomena are oftentimes traceable to the same developmental and metabolic defects. This is true, too, of certain acquired phychoses and neuroses, post febrile and post operative. "In psychopathic affections the disturbance consists in the formation of nonadaptive associations of central neuron-systems with receptors which normally do not have as their terminal response the particular motor and glandular reactions." (Boris Sidis.) Not to be forgotten, too, are the baffling borderline conditions where individuals, apparently in full health, exhibit inexplicable peculiarities, "idiosyncrasies," susceptibilities, emotionalisms, imbalances in self-control, in judgment and impulsions or even in anomalies of structure, as in features. Among these are the larval or mild forms of hypothyroidism, of dyspituitarism or of hypoadrenalism. Few problems are more difficult of solution than those dependent on anomalies of the thymus, a subject as yet obscure but becoming revealed to the specialist in hemadenology. Finally to be mentioned are the trouble makers, the reproductive organs, sex energies, impulsions, and all that they imply. Clinically, both in direction and correction they belong in part to the domain of the ductless glands.

Reconstructive Personal Hygiene: Including regulation of items of conduct particularized for definite needs, whereby latent powers can be rendered available, inherent energetics brought to the front to meet exigencies of the individual in overcoming difficulties, in restitution of function, chiefly along the sensorimotor levels.‡

Postulate: Enormous potentialities reside in training voluntary movements with the purpose of readjusting static and also other structures (Kinesitherapy), hence making for mechanical easements of local pressures interfering with function, also expediting local and general nutrition, hence for restoration of local disabilities. Note the significance of errors of posture, the economic advantage of recovering impaired degrees of attitude of

*For example: Exceptional opportunities have been mine to learn something of the subject by a close personal association with the masterful contributor to this fertile field of endeavor, Dr. Sajous, who has taken pains to teach me, supplying first hand information of his many discoveries, inferences, and conclusions. With perhaps no greater defects of intelligent apperception than the average clinician, I find it necessary to frankly refer most problems to his acumen and experience. I have thus been able to make some efficient clinical deductions and apply remedies with unexpected success.

†Ludlum, S. D. N., and Corson White, E. P.: "The Thymus and the Pituitary in Dementia Precox," *Amer. Jour. Insanity*, April, 1915.

‡A mere catalog of headings only is offered. Most of them have been or are being elaborated by the author.

mobility, pliancy, flexibility, elasticity, *e.g.* in the thorax, the spinal column and accessory structures; also of tone in supporting structures, abdominal walls, compensatory action of diaphragm, and the like. By such measures stagnation is relieved in viscera, especially in the lower abdominal quadrants, activation of circulation, lymph propulsion, venous blood, nerve impulses, also reaction times and other factors of thigmotropic readjustment bearing on biochemical and also psychomotor and sensorimotor competence. Note also the corollary (akinesitherapy) rest treatment, abundantly elaborated from Hilton to Weir Mitchell, Playfair, and modern phthisiotherapists. Note also passive movements or chiefly passive and moderately cooperative movements which demand the personal attention of the physician or at least his critical supervision and particularized direction. This measure has not begun to receive the scientific scrutiny it deserves, as can only be known by one who has labored faithfully in the field and compared effects. Among the conditions in which judicious passive, stretching, torsion, or hand applied movements are capable of large and increasingly beneficent consequences are: resultants of poliomyelitis, cerebral palsies, tabes, some paraplegias, effects of some cord-lesions, some stages of neuritis and some of paralysis of special nerves, of most neuralgias (notably when fibromyositis is present), in tics, spasms, most valuable in paralysis agitans (see three papers by the author). Occasionally in acroparesthesia and in paralysis of plumbism. Also in some of the disabling and distressful phenomena of premature ageing, of degenerative processes, in arthropathies, in cardiovascular changes, in impairment of sensorimotor integrity, notably of the ear, eye, and nasopharynx; disabilities of the neuromuscular mechanisms, and particularly of the gastrointestinal tract, flatulence and minor shocks, intestinal stasis, adhesions, kinks, angulations, also enteroptosis, nephroptosis, local tonic spasms or relaxations, of abdominal parietes.

The whole splanchnic blood vessel system which, when markedly depressed or stagnated contributes largely to the effects, if not the causes of, neurasthenic, psychasthenic phenomena are alleviated by hand pressure and lifting of the subdermal structures, training of the abdominal parietes, diaphragm, thorax, and correlated semi-voluntary structures. Also "the great skin heart," the surface blood vessels, so often assumed to be normal in a given case of nervous disease yet in reality disordered, are vastly benefited by subdermal traction, the full equivalent of "passive hyperemia," and often constitutes the key to progress.*

As an example of kinesitherapy let me cite: Cooperation in treating the effects of cerebral palsies. Factors in cerebral palsies, causes and conditions to be reckoned with are: (1) Primary damage to motor centers and areas of brain, and (2) to subsidiary centers; the problem and phenomena vary with age and condition of life, stage of evolution in development and in growth forces, producing alterations in structures upon which primary and secondary effects are wrought. (3) Limitation of motor capacity and coordinate efficiency due to: (a) original damage, partial or complete; (b) depreciation in motor impulse and in encouragement to energizing from, or discouragement to, effort, hence formation of habits of inactivity, indifference, cessation of effort, hence increasing incapacity; (c) local spasms, contractures, rigidities, impairments of tissue elasticity, mobility and pliancy; (d) concurrent myopathic disabilities, connective tissue and aponeurotic changes, fibromyositis.

Motivation becomes impaired all along the line from primary impulse to precision in execution. Whether there exists an unusual weakness or fatigability may be in doubt; certainly impulse to energize is diminished probably because of long disuse and discouragement. Hence the motor cells involved in the brain need awakening and stimulating by conscious motor impulsions. The question then presents: how far can primary effects be overcome? (1) By mechanical and other stimulation, by volition, domination by one's self or by extraneous domination, and (2) also by passive effects wrought by electricity. (Many cases will be found to have received ample electrical treatment from the first.) (3) By passive movements, stretching, torsion, and specifically guided motor training.

The late S. Weir Mitchell was a marvel of proficiency in curing patients. Those associated with him professionally, usually endeavor to appropriate and apply his methods. To those of his assistants having experience with other neurological clinicians illuminating contrasts are afforded. In my opinion the chief instrumentality of his amazing successes was his prompt and cordial cooperation with experts in correlated lines, and himself not attempting to do it all. The distinguishing characteristic of Dr. Weir Mitchell was his radiant energy and his clear-sighted recognition of the value of joint action. He so stimulated the zeal of his adjutants as to get the best out of them not only in diagnosis but in treatment. Thus an efficient coalition was constantly at work. He uniformly said and did the judicious thing to create and maintain team work. In leadership he was wisdom personified in plan, in strategy, in shifting the point of approach, in creating useful surprises, in persistent effort, thus achieving the most economic and permanent results.

The patient was taught and insensibly assumed his or her share in the campaign. In my long years of association it always seemed his tactful management surpassed in curative efficacy all other measures. His remedies were generally of the simplest, most rational, well chosen, and above all, consistently applied and over sufficient periods of time. He uniformly depended upon the united efforts of all collaborators, conferring on them a measure of responsibility by deferring to their judgment, making them sharers in the credit for successful endeavor. Thus not only were sidelights supplied on obscure problems, but no force was lost in the transmission and concentration of beneficent energetics. He conferred an element of partnership on nurses, masseurs, clinical and laboratory assistants of various degrees; on specialists whom he freely consulted, highly esteeming the findings of experts in the sense organs, in surgery, gynecology, orthopedics, electricity, massage, remedial exercises to an extent then unheard of, and even now unsurpassed. As newer sources of evidence came to the front he eagerly welcomed them. He was among the very first to realize the significance of

*I have repeatedly been able to afford unexpected relief to a host of obstinate disorders by giving adequate attention to the skin, loosening the adherent subdermal structures, rich in nerve, blood and lymph supply, which thus can be freed from stagnation, and the whole organism benefited. See paper by author, "Cardiovascular Renal Regulation," Internat. Clinic, Vol. 1-24, Series 1914.

"the pathology of the living" as now furnished by modern surgeons after removing concealing tissues, and then seeing, touching, and readjusting the parts below.

Thus was assembled a complete group of precise observations, reliable findings, and candid opinions. Each ally was put upon his mettle by the flattering openmindedness of the "chief." Mature judgments were thereby formed consonant with the facts at issue. Doubtless most master clinicians now aim to do most of these things. Then we constituted a unique confraternity. Every one of us who enjoyed his confidence strove to surpass ourselves in winning his approval and in contributing to desired results. There were times when so large and varied was the company of sufferers seeking his help that omissions must have occurred, even blunders, had he not harmonized our best efforts. So devoted were we to his personal interests that our vigilance and loyalty filled in many gaps and added materially to the success of the economic régime.

Dr. Mitchell was pre-eminent in penetration, in a knowledge of mankind on all social planes and conditions of life, in subtle appreciation of niceties of difference in mental and moral make-up, in those factors which contribute to peculiarities in belief, fears, hopes, ambitions, and in domestic tangles. Above all, he had vision, instinctive awareness of complexes and of the essential needs of any invalided human being. He was well versed not only in physical but also in mental and moral pathology. He also became an adept in unusual remedial agencies which many neurologists even now regard as beneath their attention or confidence. For example, he himself had learned to apply massage, various manipulative measures, and hence was quick to determine the capabilities of masseurs and judge the quality of their work. He could and did teach precisely what he wished done for a particular condition.

Many neurologists declare there is little or no real value in massage. Thus they either unfairly belittle it or are incapable of appreciating its efficiency, or directing its use. Of course, no efficient results can follow such half-hearted measures. He was also a master in the art of using heat and cold, balneotherapy, wet packs, drip sheets and the like, showing shrewdness and originality in modifying and adapting all such physicodynamic measures to meet varying conditions. So also of a host of other remedial agencies which are too often either omitted for lack of knowledge of the principles or unfamiliarity with or unaware of the nature of effects to be expected. To nurses he supplied a new and liberal course of instruction in their art; a special group of experts were thus evolved. So likewise of his clinical assistants. We entered a novel and fascinating school of resourcefulness and art. Upon us devolved a new and varied line of duties scarcely hinted at in the schools.

We were kept busy in an ever-improving yet simplified system of reconstructive hygienic measures the purpose of which was to raise the vital index and the psyche of an individual to a higher plane than it had ever reached before; to render latent powers available; not alone to remove urgent disabilities. In short, we were grounded in the fundamental principle of therapy, viz.: to render the best kinds and qualities of joint service in our power to a sick human being.

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A RATIONAL METHOD OF TREATING LOBAR PNEUMONIA.

WITH A REPORT OF ONE HUNDRED AND THIRTY-THREE CONSECUTIVE HOSPITAL CASES IN WHICH IT WAS USED

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In papers read before the Kings County Medical Society on April 15, 1913,* and the Greater New York Medical Association on March 16, 1914,† the writer reported consecutive series of twenty-nine and fifty-four hospital cases, respectively, of lobar pneumonia treated by the method which is described in this paper. That series has now, May 1, 1915, reached 133 cases, and the results observed seem of sufficient interest to warrant a further report.

Distinctive Features of the Method of Treatment.—1. The ground is cleared by a recognition of the following facts: First, that attempts hitherto made along the line of specific chemotherapy in lobar pneumonia have invariably proved failures, as they have in all other diseases of strictly bacterial origin, and that the probability of the eventual discovery of a successful drug specific for this disease is too slight to encourage further experimentation along this line. Second, that while a serum or vaccine treatment for lobar pneumonia may be hoped for and looked for, no effective treatment of this character which is practically available has yet appeared. Third, that Nature has devised a method of treating this disease which by itself can cure a large proportion of cases, and that any method devised by the physician, in order to be rational, must be subordinate to Nature's method.

2. A particular, specified diet is given, which is modified in definite ways to meet special indications. This diet is limited in quantities of protein and fuel to somewhat less than the minimum health rations, it is fluid, it is easy of digestion, it supplies salts needed by the body, and it is non-putrefactive.

3. Evacuations of the bowels are not artificially induced as a rule, although in exceptional cases laxatives of a mild character are given.

4. Agents to stimulate the heart are given according to a definite plan, which is flexible in prescribed ways to meet particular indications.

5. The treatment of symptoms is exceedingly conservative; care is taken while attempting to relieve symptoms, to avoid using agents which might increase in other directions the difficulties which beset the patient; and many of the therapeutic procedures for the alleviation or modification of symptoms which are commonly employed are not used.

How the Diet Is Given.—The diet is given according to three regular prescriptions, which are subject to definite modifications to suit particular conditions. The first prescription is for the active period of the disease, and the second and third for the convalescent period.

Prescription 1.—To be taken during the febrile period and for two or three days after defervescence.

8 A. M.—Give 7.5 ounces of a two to one mixture

*E. E. Cornwall: "Observations and Suggestions Regarding Lobar Pneumonia," Medical Record, Aug. 2, 1913.

†E. E. Cornwall: "Lobar Pneumonia, Fifty-four Cases Treated by a Special Method," *N. Y. Medical Journal*, May 30, 1914.

of milk and barley water to which has been added 5 grains of sodium chloride.

8:30 A. M.—10 grains of calcium chloride dissolved in 5 ounces of water.

10 A. M.—7.5 ounces of the milk and barley water mixture.

11 A. M.—7.5 ounces of orangeade made with the strained juice of one orange, one ounce of milk sugar, and water.

12 M.—7.5 ounces of the milk and barley water mixture.

12:30 P. M.—10 grains of calcium chloride as before.

2 P. M.—7.5 ounces of the milk and barley water mixture.

3 P. M.—7.5 ounces of the orangeade.

4 P. M.—7.5 ounces of the milk and barley water mixture.

4:30 P. M.—10 grains of calcium chloride as before.

6 P. M.—7.5 ounces of the milk and barley water mixture.

8 P. M.—7.5 ounces of the milk and barley water mixture.

8:30 P. M.—10 grains of calcium chloride as before.

10 P. M.—7.5 ounces of the orangeade.

Administer everything through a tube, without raising the patient's head.

Modifications of Prescription 1.—A. Substitute for any or all of the milk and barley water feedings any of the following: Peptonized milk diluted with one-third barley water or plain water, buttermilk, lactacidized milk, or one of the predigested cereal foods dissolved in water.

B. Substitute in place of all the milk and barley water feedings any of the following: barley water alone, rice water alone, or water alone.

C. The same as modification B, with omission of the orangeade.

D. The same as prescription 1 or any of its modifications with omission of the calcium chloride.

Prescription 2.—To be taken on the third day after defervescence in uncomplicated cases. The same as prescription 1 or prescription 1-A with substitution of 6 ounces of moist cooked cereal and 3 ounces of milk, an equal quantity of boiled rice and milk, and two slices of milk toast, for three of the milk and barley water feedings respectively, with omission of the calcium chloride.

Prescription 3.—To be taken on the sixth day after defervescence in uncomplicated cases. Breakfast: 6 ounces of moist cooked cereal with butter, cream, or milk; two slices of toast and butter with one poached egg or two ounces of cream cheese or pot cheese; an orange, grapefruit, baked apple, or peach; a glass of any of the above mentioned milk preparations or of milk diluted with one-half weak tea. 10:30 A. M.—A glass of any of the above mentioned milk preparations or predigested cereal food preparations.

Dinner: 7 ounces of milk soup, viz., cream of corn, celery, potato, carrot, oyster plant, spinach, or green pea, or a glass of any of the above mentioned milk preparations; two slices of old bread or toast and butter; any of the following vegetables: potato, carrot, spinach, string beans, celery, oyster plant, or green peas; lettuce or raw cabbage with olive oil and lemon juice; 2 ounces of cream cheese or pot cheese or one and a half ounces of American or Edam cheese; 6 ounces of maccaroni, spaghetti, or boiled rice with butter, milk, or grated cheese; fruit as at breakfast. 4 P. M.—A glass of any of the above mentioned milk preparations.

Supper: A bowl of bread or rice and milk, or any of the above mentioned cereal preparations; a baked apple.

Give water as desired.

Prescription 1 supplies about 38 grams of protein and fuel of the value of about 1,200 calories; 35 grains of sodium chloride, and 40 grains of calcium chloride in addition to the salts in the articles of food given; and 95 ounces of water. It serves as a standard diet for the febrile period, and a maximum diet except as regards water, which may be given freely as desired. In all the prescriptions the addition of cane sugar or spices is forbidden.

How the Bowels Are Managed.—The dangers which threaten from the bowels in lobar pneumonia are chiefly those due to the absorption of intestinal toxins, to abdominal distention, and to reflex nervous disturbances. Of the toxemias which come from the intestines the most important are those produced by the activity of the bacteria of putrefaction and other more or less habitual residents of the gut, and the specific toxemia due to the absorption of the endogenous poisons of the swallowed pneumococci which multiplied and died in the alimentary canal. These toxemias can be greatly lessened in amount by avoiding the ingestion of culture media favorable to the growth of the bacteria which produce them, and by including in the diet articles which encourage lactic acid fermentation; and the dietetic regulations above described, which constitute an integral part of this method of treatment, are arranged with close regard to that point. This plan of diet also constitutes a safeguard against abdominal distention. It also lessens to a considerable extent the third danger, viz., that from disturbing nervous reflexes of abdominal origin; but that danger requires a further safeguard. Evacuations of the bowels, particularly those which are artificially induced, seem capable of exciting nervous reflexes which can seriously disturb the heart when that organ is on the verge of exhaustion. In lobar pneumonia the heart is often in such an unstable condition that a very slight disturbance of it is sufficient to determine a fatal issue. Here is found an indication to avoid unnecessary catharsis, to say nothing of the violent purgation which is so commonly practised as a routine procedure in the treatment of this disease. We are fortunately able to withhold cathartics in this disease during its active period when the above described diet is given, because that diet leaves very little residue and discourages injurious bacterial activity.

In the management of the bowels according to this method of treatment the following rules are observed: If the bowels have moved satisfactorily within twenty-four hours before coming under observation no attempt to move them artificially is made unless some special indication appears. If more than twenty-four hours have elapsed since the last movement and the disease is in an early stage and the heart is in good condition a simple or soapsuds enema is given, or a dose of castor oil, or other mild vegetable cathartic (never a saline). If the disease is in a later stage, that is, on or after the fourth day, or if there are signs of heart strain, no evacuation is induced, even if a longer period than twenty-four hours has elapsed since the last movement, except in some, not all, cases with tympanites, which may call for enemas. On the second

day after defervescence, if the bowels do not move spontaneously, an enema is usually given, and thereafter laxatives are given as required.

How the Heart Is Stimulated.—In young or middle-aged adults with originally healthy hearts stimulation is usually delayed until signs of heart strain appear, which is usually not later than the fourth day. The first stimulant given is strychnine sulphate, in doses of one-sixtieth of a grain three times a day or every four hours. If the pulse becomes unduly rapid or the right ventricle shows signs of dilatation, tincture of strophanthus is also given, in doses of one and a half minims every four hours. If the signs of cardiac strain become pronounced, the dose of strophanthus is increased to two and a half minims and the dose of strychnine to one-thirtieth of a grain, and perhaps citrate of caffeine in two grain doses every four hours is added. More than this amount of stimulation is seldom required in patients treated according to this method, but if it should seem to be required digitalin in doses of one-hundredth to one-fiftieth of a grain is given hypodermically every four hours, and perhaps spirits of ammonia in doses of one-half a dram every one or two hours is added. When more stimulation than that afforded by the strychnine, strophanthus, and caffeine is required the prognosis is usually bad. In the very small proportion of cases which show a gastric or intestinal idiosyncrasy in respect to strophanthus that drug should be omitted and caffeine substituted as the second stimulant. In the aged, in alcoholics, and in patients with pre-existing heart disease stimulation is usually required from the beginning. In the aged and in alcoholics whiskey or brandy is usually given in small doses throughout the disease. In infants and young children heart stimulants are almost never given, even though the pulse may be very rapid.

How Special Symptoms Are Treated.—In the treatment of symptoms according to this method the general rule is to do as little as possible. Some symptoms, however, are entitled to alleviation by medical art and should receive it.

When pain, cough, restlessness, or insomnia harrass the patient and deprive him of necessary sleep, they are relieved by the application of hot poultices to the chest and perhaps by the administration of morphine or codeine in small doses, but the opiates are given only in the early stages of the disease, for they are absolutely contraindicated in the later stages and in any stage if there is much respiratory embarrassment. Restlessness at the time of the crisis is usually considered an indication for more heart stimulation.

Diarrhea is treated by restriction of the diet to barley water. Vomiting is treated by stopping all food for a while, and perhaps, if in an early stage of the disease, by small doses of morphine.

Tympanites, which is of rare occurrence in cases treated according to this method, calls for reduction of the diet to barley water and orange juice alone, to barley water alone, or to water alone, and if it is severe, it may call for a simple enema or one of soapsuds or fel bovis, and perhaps the introduction of the rectal tube.

Some Things Which Are Not Done.—An important feature of this method of treatment is the negative feature, which consists in not doing certain things which are very generally done, and which even have the sanction of good authority. Among the avoided procedures are the following:

Calomel and magnesium sulphate are never given in this disease, nor any saline or drastic cathartic, nor any cathartic at all except in certain particular conditions. Letting the bowels alone after having safeguarded the patient by dietetic regulation from the dangers that might come to him from retention of the bowel contents, has already been mentioned as a special feature of this method of treatment, but the routine use of calomel and magnesium sulphate and of excessive purgation in the treatment of this disease is so widespread, that the writer refers to the subject again to emphasize its importance.

Antipyretic drugs or procedures are not used. There seems to be good reason to believe that fever in pneumonia is a conservative process on the part of Nature, and exists for a constructive purpose, and it is a matter of general observation that the cases with a considerable elevation of temperature are apt to do better than those with but little fever.

No drug duretics are used. Water, however, is given in reasonable amount.

Expectorant drugs are not used. The futility or worse of giving expectorants in pneumonia would seem to be obvious.

Digitalis is never given by mouth, although it is, rarely, allowed by hypodermic injection.

While fresh air is insisted on, cold drafts are not permitted to blow on the patient when his temperature is normal or nearly so.

Drugs for an alleged intestinal antiseptic effect are never used. The intestinal flora are controlled more safely and more effectively, it is believed, by regulation of the diet.

The various drugs which have been recommended for an alleged specific or quasi specific effect, such as creosote carbonate, salicylic acid, quinine, urea and quinine hydrochloride, urotropin and camphor, are ignored.

Statistical Report.—This series of 133 hospital cases is a continuous one, and includes all of the cases diagnosticated as primary lobar pneumonia (of which a few may have complicated the grip) which were treated by the writer in the Williamsburgh and Norwegian Hospitals between January 1, 1913, and May 1, 1915; 102 occurring in the Norwegian Hospital and 31 in the Williamsburgh Hospital. The series being continuous and not selected, includes cases which were poor subjects for treatment, cases which came into the hospital late in the disease, cases which had been neglected or even maltreated, and cases which were moribund when first seen.

Ages.—Twenty-one were under 5 years, eleven between 5 and 15, thirty-four between 15 and 25, twenty-eight between 25 and 35, nineteen between 35 and 45, fifteen between 45 and 60, and five over 60.

Lobes Involved.—The right lower lobe only was involved in 49 cases, the left lower lobe only in 47 cases, the right upper lobe only in 11 cases, the right middle lobe only in 6 cases, the left upper lobe only in 4 cases, both lower lobes in 6 cases, both left lobes in 6 cases, the right lower and right middle lobe in 3 cases, and the right upper and right middle lobe in one case.

Maximum Temperatures.—In nine cases the temperature rose to 106° F. or higher, in twenty-three cases to between 105° F. and 106° F., in forty-five cases to between 104° F. and 105° F., in thirty-two cases to between 103° F. and 104° F., in thirteen cases to between 102° F. and 103°

F., in nine cases to between 101° F. and 102° F., and in two cases it did not rise above 101° F.

Maximum pulse rates.—In three cases the pulse rate rose to 180 or more, in four cases to between 170 and 180, in thirteen cases to between 160 and 170, in eight cases to between 150 and 160, in eighteen cases to between 140 and 150, in thirty cases to between 130 and 140, in twenty-six cases to between 120 and 130, in sixteen cases to between 110 and 120, and in fifteen cases it did not rise above 110.

Maximum Respiration Rates.—In ten cases the respiration rate rose to 70 or more, in seventeen cases to between 60 and 70, in twenty-three cases to between 50 and 60, in forty-nine cases to between 40 and 50, in twenty-nine to between 30 and 40, and in five cases it did not rise above 30.

Minimum Blood Pressures.—In sixty-four of the cases which recovered, examinations of the blood pressure were made one or more times. In one of these sixty-four observed cases the systolic blood pressure was found at 70 mm. Hg., in one case at 85, in five cases at 90, in seven cases at 95, in twelve cases at 100, in nine cases at between 100 and 110, in seventeen cases at between 110 and 120, in five cases at between 120 and 130, and in seven cases at over 130. In forty-nine of these cases the systolic blood pressure fell below the pulse rate, yet all recovered. These observations throw doubt on Gibson's assertion that when the systolic blood pressure, in millimeters of mercury, falls below the pulse rate, the prognosis is bad.

Leucocytosis.—In thirty-five consecutive cases of this series, which were treated in the Norwegian Hospital during the first quarter of the present year, 1915, leucocyte counts were made, and in all the cases except two a leucocytosis of over 10,000 was found. The average count was 18,000.

Defervescence.—Defervescence took place by crisis in sixty-four cases and by lysis in thirty-nine cases. There was delayed resolution in eleven cases. Four cases came under observation at the time of defervescence without a previous history being obtained. Four cases were followed by empyema before defervescence. Eleven cases died before defervesence. The average duration of the fever in the sixty-four cases which defervesced by crisis was 7.8 days, and in the thirty-nine which defervesced by lysis, 8.8 days.

Complications.—Pleurisy with effusion was noted in one case, pericarditis with effusion in one case, acute endocarditis in one case, empyema in five cases, delirium tremens in three cases, abscess of the lung in one case, and delayed resolution in eleven cases and abscess of the lung in one case.

Mortality.—Fourteen of this series of one hundred and thirty-three cases died, giving a mortality of 10.5 per cent.

The Fatal Cases.—Case I.—Boy, 11; died the day after defervescence, of what cause was not ascertained.

Case II.—Man, 49; heavy drinker; entered the hospital in the fifth day of the disease with a badly dilated right ventricle and a systolic blood pressure which remained mostly between 80 and 90 until shortly before his death, which took place six days after admission, when it rose suddenly to 120, probably from asphyxiation. In this case influenza apparently preceded the onset of the pneumonia.

Case III.—Woman, 49; entered the hospital in the fourth day of the disease with two lobes involved, a badly dilated right heart, a blood pressure of 90 systolic and 70 diastolic, a pulse rate of 160, and extensive pulmonary edema; she died in thirty-six hours.

Case IV.—Man, 58; walked around for three days after his initial chill, and entered the hospital with a badly dilated right ventricle, extensive pulmonary edema, and a blood pressure of 70 systolic and 50 diastolic; he died in twenty-one hours.

Case V.—Man, 19; was removed to the hospital from a ship in the harbor in poor condition.

Case VI.—Man, 28; had delirium tremens.

Case VII.—Man, 50.

Case VIII.—Man, 41; walked into the hospital in the fifth day of the disease; had delirium tremens.

Case IX.—Woman, 38; entered the hospital in the sixth day of the disease with a failing heart and extensive pulmonary edema; she died in five hours. This patient was reported to have taken a large dose of magnesium sulphate the day before she entered the hospital.

Case X.—Man, 44; walked into the hospital in the fifth day of the disease; had delirium tremens.

Case XI.—Man, 57; died shortly after the crisis. At the time of the crisis he was given, without the writer's knowledge or approval, one sixth of a grain of morphine and an enema.

Case XII.—Man, 51; came into the hospital in a moribund condition, and died on the second day; had been a vagrant, sleeping in open sheds.

Case XIII.—Man, 18; died on the twenty-ninth day after admission, having had a persistent consolidation of the lung and a continuous fever. A clinical diagnosis of tubercular pneumonia was made in this case, but it lacked confirmation by a pathological examination.

Case XIV.—Woman, 29; entered the hospital in the ninth day of the disease; had delayed resolution; evidences of abscess of the lung appeared, and she died on the forty-seventh day after admission. The discharge from the lungs showed streptococci and staphylococci.

Besides the fourteen fatal cases above mentioned, there were two in this series which died after apparent recovery from the pneumonia and from other causes. One of them underwent an operation for empyema and died of general sepsis after thirty-three days, and the other, after defervescing regularly and remaining without fever for more than a week, suddenly developed symptoms of cerebral congestion and died twenty-eight days after admission.

Suggestive Observations.—From the observations made on this series of cases of lobar pneumonia treated by the method described, no positive conclusions are drawn, because the number of cases is comparatively small and because the disease is one which varies much in its clinical manifestations and in the type and virulency of its pathogenic microorganism. Some of these, however, were suggestive, notably the following:

1. Toxemic symptoms were rare.

2. Tympanites was almost unknown except in patients who entered the hospital with it.

3. Constipation was well borne. Some of the patients went without a movement of the bowels for five, six, seven, and even eight days, and showed no unfavorable symptoms on that account. In many of the cases the constipation was spontaneously relieved.

4. Thirty-two of the cases showed a temperature of 105° F., or higher, but only four of the deaths occurred among that thirty-two.

5. The systolic blood pressure fell below the pulse rate in seventy-five per cent. of the cases which recovered and in which blood pressure examinations were made.

6. The pulse rate in forty-six of the cases, more than one-third, reached 140 or more, and in seventy-six it reached 130 or more; and in many of these cases the rapid pulse persisted for a considerable time, and the myocardial endurance seemed, in general, to be greater than that observed in former experiences with pneumonia treated by other methods.

1218 Pacific Street.

THE RESPONSIBILITY OF THE STATE IN THE TUBERCULOSIS MOVEMENT.*

By EDWARD O. OTIS, M.D.,

BOSTON.

I THINK we are all agreed that the efficient prevention and control of tuberculosis in the State is beyond the power and means of private instrumentality. In one section of the State, as in a large city, for example, a complete and intensive campaign against the disease may be instituted, while in another section but little may be done, or only spasmodically done if dependent upon private and local action. To combat the disease most successfully and economically throughout the State there should be a general, comprehensive, uniform plan of procedure directed by one central administrative body, whether it be the State Health Department or a board of trustees appointed for the special purpose.

There are five principal lines of attack in the tuberculosis campaign which I believe the State can best direct, aided more or less by private endeavor in local communities.

First. Education, which the State Health Departments have been doing to a greater or less degree for several years; by literature, traveling tuberculosis exhibitions, lectures, etc. Private tuberculosis associations can render much assistance in this direction; indeed, it seems to me that the educational propaganda is one of the main functions of such associations. In the State of Massachusetts, tuberculosis is required by law to be taught in all the secondary schools.

Second. Compulsory notification by physicians and householders, and the free examination of sputum in the State laboratory. So far as I know, nearly if not quite all the States now require the one and do the other, although many of the large cities in the country were in advance of the State in the requirement and the service.

Third. Tuberculosis dispensaries, which are either established directly by the State, as in Pennsylvania, or by the various communities under State supervision. In the State of Massachusetts each city or town of 10,000 inhabitants or over is required by law to maintain such a dispensary which must be approved by the Health Department of the State.

Fourth. State sanatoria for curable cases. In Massachusetts there are four such sanatoria, one of 350 beds and three of 150 beds each; and in one there is a children's department. Each patient is required to pay $4 a week, or, if he is unable to do this, the State collects the amount from the city or town from which the patient comes.

Fifth. Consumptive hospitals for advanced indigent cases. Such hospitals, in my opinion, should be local so that the patient may be near his home and friends. In Massachusetts the law provides that cities shall establish and maintain tuberculosis hospitals, which must be approved by the State Department of Health. The law also provides that towns may, and, upon the request of the State Board of Health shall, establish such hospitals. For every patient received at these hospitals the State grants a subvention of $5. Failure to comply with this law is punishable by a very considerable fine. The State Sanatoria are under the direction and control of a board of trustees appointed by the Governor, and the consumptive hospitals and dispensaries are under the general supervision of the State Health Board.

For all its tuberculosis work the State of Massachusetts is spending annually somewhat over a million dollars; and the private expenditures for the same purpose amount to over $300,000 yearly. There is now but little difficulty in obtaining from the Legislature this large yearly appropriation for the extended tuberculosis work the State has undertaken. Education has done its work. The people recognize the economic necessity of effective tuberculosis prevention and control and are willing to pay the cost.

I think we all would agree that these five lines of attack are fundamental in comprehensively dealing with the tuberculosis problem, and that they can best be effected with a continuity of purpose under State authority and control. The State has power to command and enforce obedience; and one directing body can most effectively coordinate and systematize the various kinds of tuberculosis work. Moreover, the State is in the position to obtain the requisite means when it has once awakened to the importance of the problem as an economic measure.

The special methods which the State would employ in carrying out this work will naturally differ under differing conditions. Large cities, for example, can generally be left to themselves to efficiently deal with their local tuberculosis problem, as New York and Boston and others are doing. In the agricultural States certain sections, as counties, can unite in providing accommodations in consumptive hospitals for their advanced cases. In sparsely settled areas there might be some method of medical inspection by a visiting physician, in place of a dispensary.

Each State must work out its own method of conducting its campaign, keeping in view the cardinal objects to be attained: Education; opportunity for the examination of suspected cases, and provision for active cases of the disease, either in the curable or advanced stage; in any case, it is essential that there should be a State administrative body to direct and supervise the work, and with ample power to enforce its decrees. When the people of the State once recognize the extreme importance of controlling tuberculosis, both as an economic as well as a health measure, sufficient appropriations for the purpose will be forthcoming; they will realize that public "health is purchasable" and pays a good rate of interest.

381 BEACON STREET.

* Part of a discussion at the meeting of the National Association for the Study and Prevention of Tuberculosis, Seattle, June 14, 1915.

ANALYSIS OF A CLAUSTROPHOBIA.*

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THE conception that sexual traumata during childhood may *per se* in later life become the etiological factor in the development of a psychneurosis has been abandoned, but it is gradually becoming firmly established that the resistances which they engender at the time of their occurrence are often prolonged and remain dynamically operative throughout life. The individual's reaction to such occurrences corre-

*Read before the Section on Neurology and Psychiatry, N. Y. Academy of Medicine, April 13, 1915.

sponds to the speculations which may have been long previously engrossing his attention and when in adult life he faces a similar situation, unless the resistances have been successfully overcome in the course of the evolution of his personality, he may develop a neurosis as an unconscious solution of his difficulties.

That the situation which confronts him bears any resemblance to the one encountered years previously is, of course, not recognized by him. However, not infrequently it happens that we conceive the impression of having seen a thing or having been in a certain situation at some antecedent time, without being able to verify this impression by recalling the exact circumstance to memory. Grasset, in 1904,* explained this phenomenon of "deja vu" on the basis that some antecedent impression had been unconsciously received, but only became conscious under the impetus of the new and similar situation. Freud, from analytic studies, especially in attempting to explain the very frequent circumstance of patient's remarking that "I have already told you this before," though it is the first time that the subject has been mentioned during the course of an analytic treatment, arrived at a like conclusion.

From similar reasoning it is probable that when a person reacts to a certain situation with a very strong affect which he cannot explain, examples of which occur daily and find expression in such utterances as "I don't know what there is about this or that place but there is something which I don't (or do) like," that this too, is a reproduction of an affect which really belongs to something else previously experienced but which is displaced into the present and which the person cannot identify as connected with the subject before him.

The case which I am about to present is reported not primarily on account of the successful therapeutic issue of the analytic treatment, but to show how the resistances of childhood persisted throughout the patient's life and unconsciously dominated it, and how the affect of an early experience reappeared in a similar situation when the patient for all his twenty-five years had not advanced far beyond his psychosexual attitude at five or six.

The patient, a stationary engineer, an American of Irish parentage, aged twenty-seven when he first consulted me in March, 1912, complained at the time of nervousness for the preceding five years and a fear of three years' duration which developed whenever he entered a crowd or felt himself surrounded. Inasmuch as his work as a stationary engineer in subway construction necessitated his entering a shaft, after a long struggle he was forced to cease work on account of his obsessive fear, and for four months prior to the undertaking of treatment had remained idle. In writing of his trouble at the time he stated that he had "remained at home, slept a great part of the day, or lounged about in a half-sleepy fashion and put in awful days, because he did not know what was the matter with him." The apathy and indifference in the early days of the treatment raised the question in my mind as to the possibility of an incipient dementia precox, but the continuous and appreciative insight subsequently dispelled this consideration.

*Grasset: *Journal de psychologie norm. et pathologique*, I., 1904, cited by Freud Über Fausse Reconnaissance, *Zeitschrift für Arztliche Psychoanalyse*, Vol. 2, No. 1.

His own statement of the onset of his difficulty, written in April, 1912, is as follows: "About three years ago, while at the American Theatre, I became startled when the performance was half over. My first impulse was to leave and go home, but I resisted this feeling and remained. It annoyed me very much, for I could not understand the reason for feeling so. At first I thought it was from smoking—or from coffee. A few months before, while at work, which required heavy lifting, I was afraid that I would rupture myself and had the same 'startled feeling.' It passed away."

Of course the patient had on other occasions visited music halls and the theater, where he approved or disliked the performance according with the general standard of criticism which we all employ, *i.e.* whether it harmonizes or clashes with our own mental attitude. On the particular evening when the patient reacted so intensely, the presentation to the average person in the audience probably did not vary from the customary routine of the cheaper grade of vaudeville, and the patient himself could discover no satisfactory reason for his affect. The usual explanations, smoking, hard work, etc., to which he attempted to ascribe his peculiar sensations, fell away one by one as being inadequate.

From the analytic point of view there must have been some individual significance in the circumstances which revived some of the patient's earlier problems. So, too, his fear originating at the time must have been a defense against something (or its equivalent) which the patient desired and yet felt unable to undertake because of conflicting and counteracting tendencies.

Let us first review the situation in which the patient found himself when his neurosis became urgent and also his life history.

One might readily state that he typified the more intelligent class of American workman—capable, reliable and skillful, with a comprehensive grasp upon general and strictly personal problems. He was residing at home with the family which consisted of father, several sisters and one brother. As the family, all of whom were adult workers, contented themselves with a scale of living corresponding to their income and were thoroughly comfortable, no material difficulties existed. The patient's own earning capacity up to the onset of his illness quite sufficed for all his individual needs. On the other hand, at the time that the neurosis developed, he was seriously contemplating becoming definitely engaged to a Miss B., one of his sister's friends with whom he had been well acquainted for some time.

The patient, who was born into a workingman's family as the sixth child, spent his early days in a small village in New York State, where he completed a common school education at fifteen years, after which he entered his present trade. As a boy he showed proficiency at school in history, spelling, and memory work, was well liked by his comrades, and active in outdoor sports.

Very brief conversations soon disclosed the strong influence which the Catholic Church had exerted almost from infancy upon the patient's emotional and moral life. So far as I could judge, it has been the most powerful single factor, with the exception of an early developing mother love, with which it is indeed closely connected. Outside of her numerous household duties, the mother's only interest centered in the church, priests, and the morality which the church represents.

The attachment for the mother soon assumed the form of an attempt to please her by imitating her devotion to Catholicism and reverence of the priest. Very early it led to the following little symptomatic habit: One day an old man in the village was casually singled out by the mother as being a very "good, pious man." The only tangible characteristic about this old man which to the six-year-old boy's mind seemed to distinguish him from other and perhaps less praiseworthy mortals, was his habit of sauntering slowly along the road with his head slightly bowed and his hands clasped behind his back. Then, in the hope of obtaining recognition and praise from his mother, the little fellow would pace solemnly up and down the front porch for hours at a time in the decrepit attitude he had observed in the old man, and it was a source of no small, though secret, disappointment to him that the mother never discovered the significance of his efforts.

The first confessional, to which the patient was taken at the age of six, so impressed and awed him that he wept for an hour after leaving the church. Early religious instruction, especially the ten commandments, which were among the earliest knowledge acquired at the Sunday School he attended, confused and mystified him. The adultery commandment, which he inferred in some vague way to be connected with sex, especially puzzled him, as, for that matter, it does practically every child.

The precocity which the patient showed in his religious and intellectual life found the usual early expression in the sexual field, as exemplified by two incidents which the patient recalled in the course of associations to his dreams, which so often reverted to the scenes of his childhood, and which practically embody the gist of his neurosis.

His boon companion from the age of six to twelve was one Jimmy, a mischievous youngster, who acted as leader and instigator in all their youthful escapades. Jimmy's aggressiveness and activity to the patient represented an independence, manliness, and heroism, which he sought to imitate and exceed. When Jimmy began to extend his education of the patient to sexual matters, informing him that he had had coitus with a certain neighbor's daughter, a child of six, the patient, not wishing to be excelled by Jimmy in manliness, in spite of the conflict of such an action with his already deeply imbued moral sense, led the girl into the woods where he intended to assault her. Just as he was about to begin the act, to which the child made no resistance, the thought that he heard someone coming caused him to hurriedly abandon the attempt.

A short time after this, under Jimmy's tutelage, the two boys took another little girl to a room where she posed nude before them. While they were being thus entertained, the patient, much conscience stricken and fearing discovery, again thought he heard someone approaching, and fled.

The patient's subsequent sexual life consisted of a series of struggles between his cravings and his religious ideals. From the age of eight he became overscrupulous in all his dealings with his friends and in his attention to school work.

At about the age of ten he became convinced from comparison of his penis with that of the other boys at the swimming pool that it was too small. Later the appearance of frequent and prolonged erections and emissions, which he regarded as supernatural visitations, further tormented him. They also tended to intensify his curiosity, but this he roundly refused to satisfy, and walked righteously away from the back-yard fence conferences which his companions held, notwithstanding an ardent desire to participate in them.

A period of unusually frequent masturbation began at 15 years and continued until 24. The act was accompanied by elaborate fancies of coitus with many different girls and women, most often in the woods, where the patient loved to allow his reveries to wander. The practice continually caused him great remorse from its religious and moral aspect, and at the same time awakened grave fears for his physical and mental health, based upon knowledge gleaned from literature of advertising physicians. On the other hand, he could have had frequent opportunity for intercourse out of wedlock, had he desired it, with several girls of his acquaintance.

When, at the age of 15, the patient left his native village for the city, where he had secured a position, for some time he commuted daily, and on these trips, a certain large, rough-mannered man, in coming through the train would, in passing down the aisle, make a playful attempt to seize the patient's genitals. Although the patient claims that he became alarmed lest this man should discover that his penis was small, curiously enough he made no effort to avoid a repetition of the alleged annoyance. In fact, although he did not smoke, he took a seat each day in the smoking compartment through which this man was wont to pass in departing from the train, and what is more noteworthy, he made no attempt to leave his seat until the man had passed him.

Although the patient left his home at seventeen to locate in New York City, the family did not join him here until some years later, and the patient describes the arrival of his mother in the city as the happiest day of his life.

A short time thereafter the mother was stricken with a hemiplegia, which the patient was informed by the physician in charge, to be due to a disease of the brain. This immediately gave rise to the thought that he would become insane, for he reasoned that as both insanity and hemiplegia were diseases of the brain and his mother suffered from one of these diseases, and that, as, on the other hand, insanity was reputed to be transmissible, he would suffer from insanity, a brain disease, on the grounds of inheritance. This naturally increased his already severe mental distress and his mother's death a short time after the stroke, before which she did exhibit some of the minor mental disturbances which sometimes accompany cerebral hemorrhage, perturbed him more than ever, and the neurosis soon assumed its active form.

Analysis.—When a patient comes complaining of a morbid fear it may safely be assumed that the fear represents symbolically some sort of a protective measure which is double in its function. In the first place it represents a protection against an unconscious wish and has a positive aspect in that it tends to the maintenance of a condition or situation where consciousness is most easily satisfied. In its negative phase, it represents the negative of an unconscious wish to indulge in something actual or symbolically substituted or represented, which the patient would like to do or experience, but which is impossible for him because it interferes with his conscious desires. Unless there be some

desire, there can be no pathological fear. Let us take as an example a man who fears that he may steal. Unless he had some unconscious desire to steal or do something which stealing represents, he would feel in no danger at the idea of stealing. The man who develops such a fear cannot admit to his consciousness that he should harbor such unworthy thoughts.

On such a basis, a fear of closed places must represent the negative of an unconscious wish; that is, the patient desired to enter closed places, but wished for the sake of conscious qualms to be protected against such an eventuality. The clues of its origin are found in the history and corroborated by the fancies. It arose at a time when the patient was considering entering the bonds of matrimony, it supplemented and to a measure supplanted a fear of impotency.

In his description of the onset of the claustraphobia, the patient recalls having once previously experienced the "startled feeling" when he thought that he had ruptured himself. Now to him, as to many other persons who are ignorant of the cause of hernia, rupture is intimately associated with ideas of sexual disorders. I recall having spoken with the captain of one of the famous university football elevens, who had ruptured himself, but had failed to report it to the trainer of the team because he believed it to be a disreputable sexual malady. To our patient rupture meant impotency and the startled feeling at the time of the strain to which he refers, may have had an associated significance with the one which occurred at the theater.

In studying a fear of impotency, such as existed in this case, it is not sufficient for the psychoanalytic investigator to attribute it to the most convenient etiology, that is, excessive masturbation, without examining the content of the masturbation fantasies, to determine whence the fear of impotence arose and what it means to the person entertaining it.

From associations to his dreams were uncovered the two childhood experiences, already mentioned, with the hallucinatory warning of "somebody coming," which served to interrupt he patient in his transgressions. Such an hallucination seems best interpreted as a censor of the unconscious, protecting the patient from the fulfilment of a strong desire to demonstrate his potency—in other words it reinforces the more powerful force, the primal tendency to remain unsullied. So, too, we may theoretically explain the repetition of the phenomenon on the occasion of his second temptation—in the closed room when the little girl posed.

The patient's fear of impotence which he developed at the age of puberty, when most of his companions were beginning to indulge in intercourse—a rather common practice in many of the rural districts—may now be regarded in a new light. It, too, is a defensive reaction against an unconscious wish to be impotent. The fear of impotency, which makes him afraid to test his potency, is a product of his wavering position in regard to physical chastity and tends to reinforce his faith in his religious and moral scruples.

A similar interpretation is accountable for the patient's tolerance of the sexual episode in the train for so many months—a thing which so far as his conscious reaction went, aroused his resentment and indignation. The practice of the rough-mannered man, which he abetted, unconsciously afforded him pleasure by reminding him of the diminutive size of his penis, which in turn fortified him, by the assumption of a physical disability, against the temptations of the city, which were magnified in his mind by his removal from the restraint of his mother's environment.

The period of overscrupulosity in home and school duties, which the patient mentions, may be regarded as compensatory for his apostasy to the religious tenets in regard to his sexual practices.

By analogous reasoning a fear of closed places must represent a desire to enter some type of closed place, an idea which is not compatible with a stronger wish to remain in the open. In other words, the fulfillment of the patient's urgent desires to be where his conscience tells him he should not be, that is, indulging in sexual relations, is resisted and prevented by the fear. Thus it is supplementary to the fear of impotency and furnishes the same type of protection—namely, to keep the patient chaste, pious, priestlike, faithful to ideals of his recently deceased mother.

Symbolically, on the other hand, it expresses his desire to avoid another form of binding or enclosing condition, namely, marriage, and reinforces the final results of the longstanding protective fear of impotence. It furthermore typifies the patient's unconscious desire to cling to satisfying polygamous fancies rather than face the actuality of his uncertain adaptability to a monogamous union.

What explanation can be found, however, for the origin of the claustrophobia in the theater at the time when it occurred? Of course, his own impending engagement and the death of his mother would furnish two palpable factors for the need of additional support to keep the patient free from any alliance involving sexual indulgence. However, something infinitely more potent must have existed in the theatrical presentation which responded to earlier affects of the patient to satisfactorily account for the fear. Closer investigation disclosed the fact that the feeling originated during a posing act by Maud Odell, "the English beauty," in which the actress appeared in fleshings in a woodland scene. Thus the patient found himself enclosed in an orchestra row and confronted with a pictorial combination of the two scenes of his childhood transgressions—so oft repeated and embellished in the fancies of adult years—and an unconscious identification occurred with a repetition of the desire to escape from the situation.

The fear would thus represent the same type of protective measure as did the hallucinatory warning of "somebody coming" at the infantile period when the patient's resistances were first aroused. Its extension and displacement to other spheres than the theater is a common and readily comprehensible phenomenon. It has been my experience that when one fear accompanies another, as in this case the fear of impotency and the claustraphobia, they are apt to be merely diversified expressions of the same general unconscious trend.

The unconscious passive homosexual component, which the patient's psychosexual attitude represents, has not been emphasized in this presentation, though its existence seems quite obvious.

As the psychoanalysis of any patient progresses, in a case where factors which have had their effect in the production of the neurosis are still operative, *e.g.* in this case, the inflence of Catholicism upon the mental habitude of the patient, a clash between these interests and his altered conception becomes inevitable. When the equation is a per-

sonal one with some member of the patient's household or family, who harbors a complementary attachment to the patient, the condition becomes one of the most difficult of the many problems which the analyst encounters. So in this instance, where we were led into a province which the Catholic Church regards as its own, and for which it partially provides by the confessional, and where the priest still exerted a strong control over the patient, some reactionary opposition might have been expected from this source. However, when the nature of our conversations began to arouse the scruples of the patient, he consulted the priest, who in this instance as on two other occasions in my experience, where psychoanalysis and Catholicism seemed antagonistic, supported the physician, eliminating a source of resistance which might have prolonged the treatment for many months.

In this connection, in drawing the distinction between mental catharsis (with which the psychoanalytic movement had its origin) and a psychoanalysis, I might mention that practically all the peccadillos of the patient, if such they may be termed, had been confessed and forgiven from time to time after their occurrence. The reason why the solace from this quarter was transient and unsatisfactory is almost self-evident, for the patient himself did not realize where the defect lay and could not confess what was unknown to him.

When it became clear to the patient that his neurosis represented a defense reaction elaborated as the solution of his psychosexual difficulties and the symptoms had disappeared, I was interested to know how he would solve the actualities which confronted him. On the whole, I am inclined to adhere to that faction of the psychoanalytic school which contents itself with the presentation of unconscious influences to the patient's consciousness and allows him to select whatever course he considers best.

Three solutions of his situation were open to the patient, all compatible with peace of mind. I believe that it is entirely consistent with mental health for an adult to cling to an infantile ideal, provided that he is entirely conscious of the nature of his adjustment, and also believe that a person may remain sexually abstinent physically without being inevitably doomed to become subject to an anxiety neurosis. Thus the patient might remain loyal to his childhood chastity conceptions, with a mastery of his sex cravings, or indulge sexually outside of wedlock, or marry.

A recent interview with the patient, whom I had not seen since March, 1913, when the treatment begun in April, 1912, was concluded, showed that he had an excellent grasp of the factors figuring in the development of his neurosis and that he had arranged his life, as one might have been inclined to infer from the foregoing analysis, by adherence to his original concept toward chastity. He has neither married nor indulged, but being entirely conscious of his adjustment, is without conflict, and since his discharge as cured in March, 1913, has been working steadily and contentedly far underground in the subway shaft.

249 West Seventy-fourth Street.

The Horse as a Meningococcus Carrier.—Loreto Mazzetti isolated the meningococcus from the nasal mucosa of horses during an epidemic of meningitis last January and February, among the troops garrisoned at Capua. He calls attention to the horse as a possible meningitis carrier.—*Riforma Medica.*

THE FALLACY OF EUGENICS.

By A. L. SWEET, M.D.,
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The term Eugenics, which meets our eye so frequently in these days, is derived from a Greek word meaning "well-born," and those who are interested in the movement are laboring to establish such racial conditions as will assure to every human child the priceless privilege of being well born. That every infant should have this fortune no reasonable individual will deny, but to the thoughtful student there are so many difficulties in the way of its accomplishment, that he may well turn away in discouragement. But granting that the kindly fates have presided at his birth, what manner of man will he be as his life-history unfolds through the pregnant years? We may assume that although the infants of the race (if equally well born) start with equal equipment for the struggle, as they rush from the starting point, their characters will be infinitely varied. Some will grow into poets, statesmen, and philanthropists—the most glorious assets of their country—while others will recruit the ranks of the vicious and criminal; while others still will be the nonentities—the cumberers of the earth.

What eugenics is concerned with is the question—what were the determining factors that shaped these lives? Were they the racial qualities of their ancestors that propelled them irresistibly in a given direction, or were they molded by their surroundings after they were ushered into this life. Samuel G. Smith, an influential writer upon social subjects, says that there are three principal factors in the life of every human being, viz., Heredity, Social Relationship (by which he probably means environment), and Personal Choice, and it is necessary to consider what each of these contribute to the individual ego. Heredity will probably suggest itself first to most minds and occupy the largest place in any discussion of this kind, but heredity may mean all things and it may mean nothing. Of course there is nothing (except perhaps acquired ability) which may not be handed down from one generation to another, but what individual characteristics *will* be transmitted, no man can predict. Even in the animal world, where the breeder may control conditions at his will, he frequently finds himself baffled and disappointed. There is a very interesting thing in connection with horses. The breeders have learned that although the sire may be absolutely perfect in every way, he may not be able to impress himself upon the next generation. He lacks the quality which they call "prepotency," and lacking that he is worthless in the stud. It would seem to be an unquestioned fact that the continual breeding from the fastest individuals would bring racers, but even here numerous disappointments await the breeder; on the other hand there sometimes come results unexpected and unaccountable that bring gratification in their train. The following instance came under my own observation. A few miles from where I lived on Long Island there was a man who had a barren farm on the Sound. He made a race course by clearing away the boulders, etc., and used to amuse himself by speeding some of the colts that he raised. Everybody ridiculed him, but one of his colts indicated very early that he was different from the rest, and soon developed a marvelous speed. He was the famous "Rarus," one of the finest horses ever raised in this country, and for which Robert Bonner paid a princely sum. His sire was raised on the farm,

and the dam was one of the old-fashioned, speckled, grey mares. Where did he come from? I am unable to recall any instance where a great man has been succeeded by a posterity at all equal to himself; on the other hand there are many instances where there have issued from sources most unlikely to produce anything of the kind, men who by their intellect and genius have enriched the world and become the symbols of their age. Shakespeare's father was a wool-factor, Burns' a peasant, Carlyle's a stonemason, Lincoln's a humble and inefficient man. One would expect that from the union of the Brownings something almost superhuman would emerge, but nothing of the kind happened. Of course every child born into the world has, in the direct line of his ancestors, virtuous and vicious antecedents. What shall determine his character? To my mind one of the saddest things about this whole subject of heredity is that, however virtuous and intelligent the immediate parents may be, their offspring may show all the diabolical instincts of some far away vicious ancestor. This is a matter of common observation. I have in mind several instances of this kind where boys born under the most favorable circumstances betrayed vicious instincts as soon as they were able to manifest any individuality at all. Before leaving the subject of heredity I will submit a comparison which is generally quoted by the apostles of heredity; it is that of the infamous Jukes family and that of Jonathan Edwards the distinguished American clergyman, not one of whose family was ever convicted of crime and most of whom have occupied positions of honor and trust.

Max Jukes (born 1720); 1,200 descendants identified: 300 in the poorhouse, 300 died in childhood, 440 viciously diseased, 400 physical wrecks, 50 notorious prostitutes, 7 murderers, 60 habitual thieves —averaged 12 years in jail.

Jonathan Edwards (born 1703); 1,394 descendants identified: 295 college graduates, 1 Vice-President, 3 United States Senators, 12 college presidents, 65 college professors, 60 physicians, 100 clergymen, 75 army and navy officers, 60 prominent authors, 100 lawyers, 30 judges, 80 public office-holders.

This is certainly a startling and seemingly absolutely conclusive exhibit, but when we look behind these figures, and see in imagination the setting of these two families, much of its significance will disappear. The woman, whose name was Jukes, was a dissolute and shameless character, living in the slums of London, and the man who was associated with her was of the same character as herself. When children came they were reared in an atmosphere of depravity—where purity and virtue were absolutely unknown. They probably never emerged from the underworld in which they were born, except to be taken to the nearest gaol for some crime. What possible chance was there for them to attain to a virtuous life? On the other hand the Edwards parents were exemplars of the human virtues—singularly so—and the children were born into an atmosphere of Christian courtesy, piety, and all graciousness. They were as ignorant of vice as the other family of virtue.

I wish here to give a brief quotation from Buckley, the great English scientist, although it is rather out of its proper place: "We often hear of hereditary talents, hereditary virtues, and hereditary vices; but whoever will critically examine the evidence will see that we have no proof of their existence. The way in which they are commonly proved, is in the highest degree illogical, the usual course being for writers to collect instances of some mental peculiarity found in parent and child and then conclude that the peculiarity was bequeathed. By this mode of reasoning we might demonstrate any proposition, since in all large fields of inquiry there are a sufficient number of empirical circumstances to make a plausible case in favor of whatever view a man chooses to advocate. But this is not the way in which truth is discovered; and we ought to inquire not only how many cases there are of hereditary talents, etc., but also how many there are of such qualities not being hereditary. In the biological field no discovery has yet been made of any certain law of inheritance even in the smallest matter of physique and appearance. An athlete does not always have athletic sons, but he often has none at all, and so with other matters. As to the greater matters of intelligence and virility *nothing whatever is known.* What is the process by which man has evolved so far, and what has the experience and observation of thousands of years taught us? What is that method? It is called falling in love. What is this mysterious something which brings young people together? Why does the man pick out one woman for his mate, and why does she respond to his call? Is it not nature's method to get what she wants—children? Love is life, love makes the world, love keeps it—only to love shall it be given in the future. It is the soul of art, of music, of literature. The Eugenist would banish all this—he would have a commission or board and select according to his ideas two individuals and mate them as one would poultry—no word of love here—love that is the motive power of the world. It is the purifying and regenerating power. Even those whom the Eugenist calls degenerates would stand a better chance of having intelligent children than the best mated eugenic couple."

It has been well said that every child is a member of the whole community, and his future will be determined to some extent by his surroundings, and there are as radical differences in communities as in individuals. I have in mind a village where there are more college graduates than in many a place much larger, and the whole atmosphere is in the direction of culture and education. Now it is perfectly evident that in a community like that the trend of a boy's mind would be in the direction of the higher and better things. Of course the deepest impress upon his nature comes from the home, but his civic surroundings will not be without influence. He comes into the world without knowledge or character, but as soon as his eyes are open his education begins, and every thing which he comes in contact with furnishes something toward it. It is difficult to imagine that if Shakespeare or Carlyle, or Cromwell—all of humble origin to be sure—had been born in the slums of a great city, they would have fulfilled their destiny. Since this matter of environment has claimed the attention of reformers thousands of children have been taken out of the slums of the cities and placed in comfortable Christian homes, and they have developed as favorably as children born under more favorable conditions. The eugenist aspires to the perfect child and believes that the rest may be left to his environment, but I think I have shown that nothing can be predicated in regard to his future. A writer in the *Outlook* expresses himself somewhat pessimistically along this line: "The blood of the noble, the wise, the beautiful, the good,

the base, and the cruel flows in the veins of us all, and who shall determine in advance which of our millions of ancestors will be repeated in any of us? Whether the story that Dr. Johnson, on seeing a thief riding to Tyburn, said 'There, but for the grace of God, goes Samuel Johnson!' be apocryphal or not, the sentiment is sound and the assumption pregnant with meaning. The environment is nothing and everything. It cannot bring out qualities that are not there, but all that is there, good or bad, will respond to its call. The surroundings of man, moral and material, which we may understand if we will, are far worthier of our consideration than the germ-plasm of which we know little, and perhaps even that little wrongly."

Conceding the dignity and importance of the work of the eugenist, how is it to be accomplished? Some of them, like others in the State, think that legislation might avail, but there are many reasons why that would not succeed. It has been tried in some States—two, I think—and the immediate result was to diminish the number of marriages, a result which would work infinite harm. But there are other results, people would evade the law by secret marriages, and consequently would eliminate children. Even if a pair were found to be physically competent, there might be other reasons why they should not marry. The only way to improve the breed of babies is to improve the fathers and mothers. The mothers are pretty good now and always have been, and that has been the salvation of the race. They are the conservators of the home. There are thousands of homes in this country where children are being reared to become good citizens, where the father has hardly more responsibility than the cat that purrs upon the hearth. Of course let us have fathers as good as we can, but it is *vital* that we have good mothers. We may philosophize as much as we like, but the fact remains that the good or evil destiny of a nation will depend upon the character of the mothers. There are many conditions which are developing at the present time which must unsex and unhome our mothers and sisters. The struggle for political prominence and the widespread entrance into industrial pursuits must destroy in some degree the taste for the simple and quiet joys of domestic life. There is an atmosphere about a modest, true woman, subtle and sweet, which no one can define—but which we all feel. Life in the store, or shop, or office does not seem to be the best preparation for home life. The following from an article by Dr. Maud Glasgow in the MEDICAL RECORD expresses better than I can the thought in my mind:

"Considered from this aspect, the wholesale employment of women is an unmitigated evil. It goes without saying that if women refuse to bear and bring up healthy children they will not fulfil their physiological duty, and the nation must suffer. Woman's participation in industrial occupations has during the past decade effected great transformations, which have not tended to the advantage of her productive and reproductive strength. In short, industrial and professional work, to a great extent, unfit a woman for motherhood and domestic life, as is plainly shown by the unwillingness of the present generation of women to undertake the duties of motherhood and home. In addition it is distinctly against the interests of the race, mentally and physically, that a mother should engage in outside work. Infants should be breast-fed, which is impossible if the mother is working away from home. When young they should be constantly under the eye of the mother for the sake of their physical, mental, and moral health, and if this is not done they, and ultimately the race, will suffer harm. At the present time a lamentable waste of women is going on, and the matter requires immediate attention. The fact must be recognized that the rôle of woman has changed, that this change is not for the better—at least, not from a medical point of view—and while allowing that the old state of affairs has gone, never to return, at the same time steps should be taken to endeavor to deal with existing conditions in such a manner that the race will suffer as little as possible. A necessary movement in this direction is to find out exactly how matters stand by initiating measures for the compilation and publication of national and international statistics relating to the participation of women in industrial prusuits."

Is there then no place for eugenics in the world? Yes, but it is simpler to call it common sense. The animal breeder has learned that the only way by which he can improve his stock is the tireless selection of the best specimens to breed from. The same laws apply to the human family. The constant union of individuals in approximately perfect physical and mental condition would by the nature of things constantly improve the race. But, as Professor Buckly says, you cannot mate human beings as you would poultry. As soon as you attempt to dictate to human beings to whom they should unite themselves, you encounter the strongest and most imperious characteristic of their nature—love has no use for eugenics. I agree with the eugenist that the diseased, the vicious, the imbecile should be eliminated and not allowed to perpetuate their kind. The Great Apostle to the Gentiles was the first eugenist, and one of his sayings is the most comprehensive that ever fell from the lips of man, "Know ye not that your body is the temple of the Holy Ghost?" If every one realized the significance of these words and acted upon them as if they applied to himself, many of the social problems would be solved and the rising generation lifted up into an atmosphere of purity and self-denial.

CHRONIC APPENDICITIS—ITS RELATION TO CARDIO- AND OTHER NEURO-SPASM.

By T. A. KENEFICK, M.D.,

NEW YORK.

THE early advance in medical knowledge of appendicitis gave enthusiasm to surgeons to perfect their technique and taught physicians to recognize at least its acute form and to promptly summon surgical advice and assistance. We are not shrewd enough, however, in detecting cases in their subtle form and chronicity through the veritable chaos of symptom-complex, and also from a lack of a refined technique in palpating the abdomen.

With a negative history and absence of local symptoms we can be easily misled, when proper digital pressure would disclose a quick and vigorous response to pain almost pathognomonic. Resembling an explosive bomb it may lie in the pelvis quietly prepared for a sudden and often fatal attack, this state of chronicity being questioned and often ridiculed if suggested as being the cause of remote nervous symptoms, especially when the pathway of nerve communication is not clearly understood.

Holding an inflamed appendix responsible for disturbance or even reversal of certain functions may appear as a stretch of the imagination, but a mental physiological picture of the apparatus in motion will help to interpret a rather complicated phenomena.

As we already know there are involuntary muscles performing special functions in the economy, of which peristalsis of the esophagus and that of the stomach are typical examples, depending upon a central force for their power, speed, and rhythmical action. We must also bear in mind the fact that the cells of the cerebrospinal system, as a result of their metabolic interchange originate and distribute an element or physicochemical current to these muscles, in fact to all organs, secretory and otherwise, for their physical motion and even chemical balance. Emanating from the common stock of the universe, this force is transplanted and inherent in various degrees in man, responding to our physical laws of supply and demand during tissue waste and structural repair, supplying also a sympathetic service between these organic functions and their varied secretions. Muscles deficient in glycogen appeal through afferent impulses through the suprarenal glands to the storehouse in the liver. Damaged tissues from operation or trauma also send impulses to the vasomotor center so constant and active as to produce finally a state of protoplasmic exhaustion technically termed shock.

The deep and mysterious functions of ductless glands and their wonderful power for good when properly prescribed also testify to this element in our bodies, the presence of which in health we are absolutely unconscious. The purpose here, however, is to show the generation of similar impulses from a local irritation in chronic appendicitis, along paths independent of the spinal system, to involuntary functions causing spasm and even reversal of their normal action, and to show also that these phenomena can occur anywhere along the course of this particular branch of the nervous system from such a local irritation.

These spasms, owing to the method by which they are produced, may rightly be termed "traction spasm," as the following reports of cases illustrate:

Case I.—M. O., male, American, age 50, came with a diagnosis of "false angina," described by the patient as seizures with a sense of suffocation, fear of impending death, and exhaustion. They came without warning, frequently independent of diet, and also of physical or mental exercise, but never when lying down. Family history excellent. Past history negative. Lives a simple life in a small-sized city. Physical examination negative, including nervous system and kidneys, but deep pressure directly over the appendix region brought out intense pain which manipulation could radiate in different directions. Chronic appendicitis was diagnosed as the cause of traction spasm in a limited area of the upper bronchi. Roentgenograph confirmed the findings in the appendix and operation to prove the nerve connection was advised, but declined.

Case II.—Female, age 45, Russian, married. Patient from a New York City Clinic, kindly referred for verification of the spasm theory. Complained of esophageal spasm during deglutition. Bland fluids would sometimes reach the stomach, but slightly irritating fluids or a bolus caused a spasm with which reversal of muscular action and ejection of contents occurred. Physical examination was negative with the exception of an excessively tender appendix. Diagnosis: chronic appendicitis with esophageal traction spasm. Operation was advised offering a chance of relief, but declined. Roentgenograph confirmed the diagnosis of chronic appendicitis.

The following is Dr. A. J. Quimby's interesting report: "Parts examined: Esophagus and appendix. There is interference at the cardiac end of the esophagus which is intermittent. Opposite the eighth rib posteriorly there is a sack projecting to the right posteriorly from the esophagus about 3 cm. long and 2 cm. wide. Appendix small, distorted and kinked."

The development of a sac or diverticulum by pressure or bougie manipulation is not unusual in these cases.

Case III.—Miss P., aged 22, single. Family history negative. Healthy up to two years ago, when persistent vomiting began directly after taking food. Three months after she had two separate attacks of acute appendicitis within two months. She was taken to a hospital where each attack subsided. The vomiting continued with great loss of flesh and strength. Within a month an exploratory incision was made for examination of the stomach but nothing abnormal was found. The appendix was "felt" and reported unusually long but was not removed. After recovery from the operation she was exhibited as a rare case of "tetany of the stomach." Psychotherapy was advised and practised without relief. Four Roentgenographs were made with a negative report in all. She was referred to me at this point for physical examination and verification of the spasm theory. I found her underfed and thin but otherwise healthy, with the exception of the characteristic sharp pain on deep pressure over the appendix. A diagnosis of chronic appendicitis was made and given as a possible cause of the spasm which reversed the normal peristaltic action of the esophagus and stomach. A roentgenograph confirmed the diagnosis of chronic appendicitis. Appendectomy was advised with the hope of relieving the irritation and indirectly the traction spasm. Life was so miserable for the patient that in this instance it was accepted.

April 15 a thickened and diseased appendix six inches long was found coiled and attached along the posterior wall of the cecum and removed. She made an excellent recovery from the operation, had the usual vomiting following ether, but since then, a period of two months, she has retained all food, gained in health, strength and weight, and to all appearances can safely be said to have regained her former normal condition.

This irritation or traction spasm originates at some particular attachment of the appendix to a branch of the mesenteric plexus and reaches the musculature of the stomach by way of the mesenteric and celiac plexus as follows A. Hepatic plexus and plexus gastroduodenalis to pylorus. B. Plexus gastroepiploica dextra to pylorus and region of lesser curvature. C. Plexus gastrolienalis to fundus and region of greater curvature. Afferent impulses in general pass from an inflamed appendix to the mesenteric ganglia, suprarenal ganglia, vagus to medulla and cortex independent of the spinal centers.

I am indebted for physiological proof to Prof. Russell Burton Opitz of Columbia, who had, when I consulted him, just completed a series of animal experimentation on this same subject. Curiously enough, we had both been working independently, one on the animal and the other on the clinical side, so that, when a scientific explanation was needed, I was cheerfully given the physiological proof and the route of the message in these particularly interesting cases. I am indebted also to Dr. A. J. Quimby for roentgenographs and interesting reports, to Dr. John J. McGrath for his services in the case operated upon, and to Dr. Hofheimer of the Mt. Sinai Clinic for the opportunity of clinical investigation.

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Intestinal Hemorrhage in Typhoid Fever in Childhood.—Bonaba in reporting a fatal case of this condition in a child twelve years of age alludes to its extreme rarity, his being the first that occurred in a series of 240 cases of typhoid fever in his hospital pediatric service since 1908.—*La Pediatria Española.*

CHEMICAL AND PATHOLOGICAL OBSERVATIONS IN A CASE OF MERCURY POISONING.

By MAX KAHN, M.D., Ph.D.,
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AND
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THERE has recently appeared a paper by Rosenbloom[1] in which attention is again called to the distribution of mercury in the tissues after bichloride of mercury poisoning. While a number of such analyses[2] have appeared in the literature, none of them (except the one of Rosenbloom) has been complete, and most of them were unaccompanied by any pathological reports.

The patient, a Greek, took from 25 to 50 gms. of bichloride of mercury with the intent of committing suicide. He had all the symptoms of acute mercurialism, and promptly went into a condition of shock and finally coma. The Anderson operation[3] was performed, and the large bowel washed with gallons of saline solution. These washings were collected and analyzed for mercury. It will be seen from the figures that very much mercury was recovered in this way, and it will also be observed that the severe colitis which is so prevalent in this condition was in this case almost entirely absent, a state of affairs which we should ascribe to the method of irrigation of the large intestine used.

The autopsy revealed the following lesions (Dr. Andrews):

The *body* is that of a large, well developed and muscular white youth. Rigor mortis is marked. No markings are present on the body. The *subcutaneous fat* is present in small amount; the tissues are dry: the muscles are dark colored and very firm. The *abdomen:* The peritoneum is smooth and shining, but considerably congested, especially the visceral part. The organs are normally placed. A cecostomy has been performed and the cecum drawn up to the abdominal wall and stitched to the parietes, with a rubber tube extending into the bowel. A small amount of dark colored fluid is present in the peritoneal cavity. The *thorax:* The left pleural cavity is free of adhesions, while the right has a few on the lateral and posterior part of the lung surface. No fluid is present in either cavity. The *heart:* The pericardial sac is smooth and shining, and a few cubic centimeters of fluid is present. The heart muscle is soft and flabby. No clotted blood is present in either cavity. The valves are smooth and pliable. Tangential section shows the muscle fibers swollen and the musculature of a brick red color. The base of the aorta is smooth. The *lungs:* The left lung is voluminous, heavy, and boggy and deeply pigmented. Numerous subserous hemorrhages are scattered over the surface, especially prominent in the lower lobe. Palpation reveals no nodules in the lung substance. Section of the lower lobe shows a deeply congested and slightly edematous lung substance, with small hemorrhages scattered here and there. The upper lobe shows more edema and less congestion; considerable pigment is present. The right lung is similar in all respects to the left except that the hemorrhages are more pronounced. The bronchi are deeply congested and filled with frothy fluid. Peribronchial glands are not enlarged. The *spleen* is slightly enlarged and very soft. Quite a few adhesions bind it to the under surface of the diaphragm. Section shows an increase in the splenic pulp in which the Malpighian bodies are easily recognized. A small amount of tissue can be scraped away with the knife. The cut surface is dark red in color mottled with a few hemorrhages. The *kidneys:* The left kidney is surrounded by a small amount of fat. The organ is very soft and dark colored. The capsule strips easily, leaving a smooth surface. Section shows a deeply congested kidney substance in which the striations are easily recognized and the glomeruli appear as shining red dots. The pyramids are light colored. The pelvis shows a few petechial hemorrhages. The right kidney is similar in all respects to the left. Microscopical examination of the kidneys shows a marked tubular nephritis with congestion of the glomeruli. The *ureters* are normal. The *liver* is dark brownish red in color. The cut surface shows a swollen liver substance in which the lobulations are partially obliterated. The central part of the lobule has a dark color while the periphery is of a lighter tint. Considerable congestion is present. The *gall bladder* is normal in size and contains some dark colored syrupy bile; the ducts are free. The adrenals are normal in size and rather soft. The normal markings are clearly defined. The *pancreas* is rather soft; the lobulations are practically destroyed. It is grayish red in color with hemorrhages showing throughout. The *stomach* contains some grayish colored fluid material. The mucosa is thrown into slight folds. In the fundus considerable desquamation of epithelium has taken place exposing the deeper capillaries. The mucosa has a dark grayish color throughout, but there are no ulcers. The musculature is soft and pliable. The *intestines:* The duodenum shows numerous hemorrhages in the mucosa, mostly petechial but some are quite large. The lymphoid tissue is quite prominent. The upper part of the jejunum likewise shows hemorrhages mostly prominent on the rugi. These diminish lower down. The contents of the small intestine are fluid and consist of considerable mucus mixed with a small amount of debris. The mucosa of the large intestine is smooth. Considerable desquamation of epithelium has taken place. A few petechial hemorrhages are present. In the sigmoid and the upper part of the rectum definite ulceration has taken place. These are very small—about 3 mm. in diameter. The mucosa otherwise is quite smooth. The contents are similar to those of the small intestine. The *urinary bladder* appears quite normal. The *prostate* is normal. The throat organs were not removed, and only a portion of the *thyroid* was taken out. This portion is very firm and looks quite normal. The *brain:* The meninges are congested. The brain substance is considerably swollen, and the convolutions are flattened. No fluid is present. Section of the brain shows some congestion, otherwise it is apparently normal.

The blood findings in this case are very interesting. The patient had a polycythemia of 7,570,000. The white blood cells were 27,100, and the hemoglobin (Sahli) was 137 per cent. These figures were almost constant during the few days that the patient survived after partaking of the poison.

The organs and tissues were analyzed for mercury by the method of Ludwig,[4] and the figures are in terms of mercury bichloride (Dr. Kahn):

Tissue	$HgCl_2$ in Mgs. in 100 Gms. Tissue	$HgCl_2$ in Mgs. in Entire Organ	Wt. or Vol. of Organ or Material		Remarks
Breast bone	None				
Rib	Traces				With some muscle.
Psoas	Traces				
Pectoralis	Traces				
Skin	None				With fat.
Hair	None				
Nails	None				
Diaphragm	Traces				
Heart	1.2	4.2	345	gm.	
Lungs	1.9	29.64	1560	gm.	
Spleen	8.4	23.1	272	gm.	
Liver	19.3	303.01	1575	gm.	
Gall-bladder	Traces		18	gm.	
Bile	9.2	3.4	37	c.c.	
Kidneys	13.7	39.74	290	gm.	
Adrenals	4.2	1.05	24	gm.	
Bladder	Traces		110	gm.	No urine.
Prostate	Traces		74	gm.	
Testicles	2.1	1.2	60	gm.	
Thyroid	5.3	1.04	18	gm.	
Stomach	Traces		330	gm.	
Stomach contents	Traces		178	gm.	
Intestines	8.4	81.48	970	gm.	
Intestine contents	7.5	37.5	506	gm.	
Pancreas	2.9	2.7	95	gm.	
Brain	3.7	59.9	1620	gm.	
Pituitary	None	.....	1.2	gm.	
Blood	2.2	..	...		
Urine	203.3*	.			
Vomitus	95.3†				
Drainage I	2725.5	..	42,150	gm.	
Drainage II	82.7	..	40,400	gm.	

*Five specimens of urine were collected and analyzed. Specimen 1 contained 42.7 mg.; specimen 2, 20.4 mg.; specimen, 3 75.7 mg.; specimen 4, 53.8 mg.; specimen 5 10.9 mg.

†Three vomitus collections amounting to a total of 855 gms. were analyzed.

The largest amount of mercury was found in the irrigation fluid, a fact which would seem to indicate that some colonic washing should be resorted to in every case. Of the organs, the liver seems to contain the most of the mercury deposited.

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CESAREAN SECTION

By CHAS. F. KIVLIN, M.D.,

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CESAREAN section has long since passed the doubtful stage, and is now one of the most useful procedures that we have for dealing with the complications of labor. What its usefulness and benefits are will be unfolded as we describe the complications where cesarean section might be indicated. Judd[1] says: "In considering the best method of delivery to pursue in any atypical case of labor we should select a method which offers the least danger to the health and life of the mother and yet the greatest safety for the child." I know of no law in surgery that is quite so broad in view and which leaves so little to contradict. To those of you who differ with me in this line of surgical procedure I give you this law of Judd's as solace, that we may not go on indefinitely discussing a subject that has so many ways around, and each way having its coterie to advance the arguments of merit of his way to the detriment of the other.

As to the indications for cesarean section, as they are so well known to you, I believe it to be a waste of time to enumerate or illustrate, except possibly in a limited exception, which will be undertaken when dealing with treatment. Let me deviate from my topic for a moment to pay my respects to high forceps operation, and you can believe me that I have the most profound respect for this most dangerous and laborious operation in the domain of surgery. I speak of it to say that there never has been a high forceps operation in which cesarean section would not have been a safer procedure. I will give you verbatim what Asa B. Davis has to say concerning some of the phases of cesarean section. "In many of these women the indications are present and are positive from the beginning of labor or before. This could be appreciated, and they should be operated upon while the mother and child are yet in good condition. It should be more generally recognized that delay is dangerous, that delivery by high forceps or difficult version even in hospital surroundings and in the hands of the skillful and experienced obstetricians is among the most dangerous operations known to surgery. Even under these conditions the results are too often deplorable. Many of us know to our sorrow what the results are in the hands of the unskilled and in unfavorable surroundings. The children are apt to be born dead, or they are severely injured. The mothers who survive (there are many who do not) are made invalids for the rest of their lives in too many instances; yet prior to the birth of the child they had the right to look forward to a strong and healthful existence. A homicide occurs in a community, possibly two vicious lives are involved; one of these is already disposed of; the police, legal machinery, the press, and public opinion are at once set in motion to save or destroy the other life; time, public treasure, and legal skill are employed without stint, a knowledge of the crime is spread to the limits of the country. Yet the loss of life, the destruction of homes, permanent disability, and the sacrifice of the innocent at the time of birth is greater, we believe, than that due to homicide. It goes on quietly and is accepted without much complaint, because it always has been and now is. In the presence of appendicitis the medical and lay public are educated to such a degree that the practitioner who allows this condition to drift on unduly, and if he is not a surgeon does not seek surgical council and prompt operation when necessary, surely and justly lays himself liable to unfavorable criticism. We ask that some such condition shall be obtained regarding difficult obstetric cases. To some extent death and injury must ever be associated with childbirth. It is our duty to reduce this death rate and injury to the minimum. This calls for better obstetric teaching, a greater willingness to break away from the old methods which have been found wanting, a willingness on the part of those of us who have not been adequately trained to recognize our limitations, and to remember that time and vaginal interference, or the absence of such interference, are very important factors in determining what the outcome of a difficult labor shall be. Abdominal cesarean section is in no sense a cure-all in obstetrics. It is a very valuable agent, and its timely employment will do much to reduce the mortality and morbidity of which we complain, as is now occurring in obstetric practice."

G. M. Boyd[2] says: "The length of labor which the patient can undergo with safety will depend upon the case under study, whether she is old or young, sthenic or anemic, primaparous or multiparous, and can only be determined upon by the attendant, for some women bear labor with little constitutional disturbance and reach the second stage still in good condition, while others show signs of exhaustion early in labor. If it were possible to predetermine the method of delivery in all cases, then this expectant course of treatment would not be necessary. We do not feel that this is possible in the borderline cases. We must study each patient individually, and to maintain a low mortality great care and judgment must be exercised."

Rongy[3] says that "a close study of statistics of cesarean section of various operators compels us to assume that cases brought to the hospital with a history of a long and tedious labor, who were frequently examined or delivery by forceps attempted are supposedly infected, and therefore abdominal section should not be the operation of choice. In such cases pubiotomy becomes the operation of necessity, for it adds very little danger to the mother and saves the child. Pubiotomy is not an operation of election. Cesarean section and publitomy never compete. In cases where cesarean section is indicated pubiotomy is contraindicated, and vice versa."

Ed. P. Davis[4] says: "We are especially interested in the application of delivery by abdominal section to placenta prævia and separation of the normally implanted placenta. Placenta prævia, to my mind, is an ectopic pregnancy, quite as dangerous as tubal or other intra-abdominal pregnancy and to be treated by surgical means only. As experience increases in this direction, we find that the results are more satisfactory than by any other method of treatment.

Such cases are as much hospital cases as tubal and other extra-uterine gestations, and in hospital treatment by section, gives excellent results. Personally, I have had thirteen abdominal deliveries for placenta prævia and placental separation, with the recovery of all the mothers. All of these were suffering from the results of hemorrhage and three of them were apparently dying and greatly exsanguinated."

Barton C. Hirst[5] says: "I am not, however, arguing so much for the adoption of the extra-peritonal section in infected cases, as for its deliberate selection as the best of the operations in clean cases. I prefer the operation that I have done with success in several instances, that is the delivery of the uterus through a long abdominal incision, scrupulously padding off, the evacuation of the womb, its supravaginal amputation, a careful suture of the stump, and a suture of the parietal peritoneum around the stump well below the line of suture in it, finally, gauze drainage of the pit formed by the retraction of the stump."

Collin Foulkrod[6] says: "Those of us who have patients in hospital surroundings with few exceptions lean toward operative delivery for several reasons. The placental site is left absolutely undisturbed. The hemorrhage is therefore much less than by any method of vaginal delivery. The shock of operation is no greater, especially in primaparæ with no attempt at labor. This is a conservative expression. It is perhaps less. The child is given every chance to live. The mother, if she recovers, is left in much better physical condition. The danger of infection in unhandled cases is certainly much less by section and free drainage.

Reuben Peterson:[7] "Since the cause of eclampsia is still unknown, its treatment must of necessity be empirical. Only through the analysis of a large number of cases can the value of any particular treatment be correctly estimated. In a large series of cases of eclampsia, prompt delivery gave a maternal mortality of 15.9 per cent. as compared with a mortality of 28.9 per cent. where the delivery was long delayed. Where the uterus is emptied immediately after or very soon after the onset of the first convulsion the maternal mortality is still lower. While in a large group of cases the maternal mortaity is 5 per cent. in favor of conservative treatment and spontaneous labor in cases occurring before 1900, between 1900 and 1912, on account of better and more prompt obstetric surgery, the figures are reversed and show that the maternal mortality is lower by 4 per cent. after the radical opposed to the conservative treatment of the complication. Therefore the treatment of ante-partum eclampsia should consist in emptying the uterus as quickly as possible after the onset of the first convulsion. The operative procedure which will empty the uterus the quickest with minimum trauma and shock to the eclamptic mother and child should be selected."

The same author says again:[8] "There will be little or no discussion as to abdominal cesarean section being indicated in cases of contracted pelvis with eclampsia as a complication. Even the opponents of the oeprative treatment of eclampsia will concede that the test of labor, while indicated in borderline cases of contracted pelvis has no place in eclampsia. Medical treatment with the hope that the uterus will be emptied spontaneously presupposes that labor will be short and easy, not prolonged and difficult as is usually the case in borderline cases of contracted pelvis. Abdominal cesarean section is distinctly contraindicated in eclampsia when attempts at delivery from below have been made or when it be suspected that many vaginal examinations have been made without aseptic precautions. Under these conditions manual dilation or vaginal cesarean section are preferable procedures. Far better results would follow perforations of the child and extraction, if there be a contracted pelvis and the woman septic, than by extraction from above through an abdominal incision."

I am a believer in the lower route for cesarean section; that is by an incision between the umbilicus and the pubes and the intra-abdominal type. All that is necessary and essential should be attended to, so that the abdominal contents shall not be soiled, or soiled as little as possible. The more pains we put into execution the safer we are from any untoward sequelæ, in fact we should take the same precautions that we would if we were dealing with an infected or a pus case, and if we are dealing with a pregnant uterus with this idea in mind we will have dealt with the condition on the best surgical basis possible.

Asa B. Davis is an ardent advocate of the upper zone for his cesarean work. He is without question an authority on cesarean section and his advice should be given a great deal of logical respect, but I can not follow him because I believe that the lower route has no disadvantages that are not inherent in the upper route, and it has the additional advantage if one desires to do more than the section, as for instance the removal of the uterus, one is in the best possible position to do so; as a matter of fact it would only be a safe procedure to remove the uterus if at the time it could be determined that this organ was infected. And it also is a positive indication in many cesarean sections, which makes it a doubly hazardous operation, for in addition to the shock, there is danger from the weakened condition resulting from the absorption previous to the operation. Some operators attempt to lessen the force of the infecting agent by previously washing out the uterus. I personally cannot see any advantage in so doing, as I believe that it is impossible to wash away an infection in any place, and the attempt to wash out a pregnant uterus with its many places for foci of infection is futile, as it is utterly impossible to localize the infection. If the fact of infection can be determined before operation, then one may have recourse to one of the stock vaccines. The stimulating effect of the agent, no matter what the antibody is, upon the general system is advantageous. If the infecting agent or agents can be isolated, and there is time to make an autogenous vaccine, the result will be all the more pronounced.

A small or comparatively small incision should be made, but at the same time it should be large enough to permit of rapid and easy work. The abdomen is opened with one sweep of the knife and an incision is made in the anterior portion of the uterus from the fundus down, this incision being large enough to permit delivery of the child. The child is delivered, the cord clamped, tied, and cut, and the placenta and membranes are delivered at the same time. A dose of ergotin and pituitrin is then given. The uterus contracting, the clots are removed and the incision is closed with a continuous chromicized catgut. Starting from the lower angle the suture pierces all the coats of the uterus except the endometrium, and is continuous right up to the top. When the upper angle is reached and sewed, the

same suture is continued down but including only the serous layer so as to cover over the rough edges of the cut surface of the uterus. This suture is continued down again to the lower angle of the incision and is tied with the opposite end of the suture which has been left long for that purpose; this leaves the uterus as smooth as one could ask for, with little or no surface that might become adherent to any surrounding structures. The abdomen is then closed without any buried knots.

In the operation of cesarean section, we have three distinct methods, each having its advantages. We have the intra-abdominal route, the extraperitoneal route, and the vaginal route, each of which has its distinctive advantages which should be weighed in the individual case rather than to be bound to one distinct method. The man who will consider his case logically, deliberate upon which method will be the safer for the mother and the child, and adopt the method suitable to the particular case and the one which insures the greatest amount of certainty of a successful outcome, will have done his duty to his patient no matter what the outcome of the case may be.

Medical men in their great desire to save the mother often lose sight of the fact that the child, even though unborn, has some rights which must be respected. We should look upon this problem with a great deal of deliberation in which sentiment should play no part, either as to the family or one's own personal benefit. By saying this I do not mean that the mother has no rights, but I still persist in the belief that the child has rights which must be respected. As to the sacrifice of the mother or the child, that is a stupendous problem which every man will have to decide for himself. I have my own convictions on this subject and I trust that I shall never be placed in this most unenviable position where I should have to decide.

In the infected or suspicious cases it would be far better surgery to do an extraperitoneal cesarean section, or if not contraindicated, to do a vaginal cesarean section. Otherwise everything being equal, I would rather do an intra-abdominal section owing to the fact that it can be done so much more quickly, and also that the mortality would not be any greater. In women of forty or older who are having their first baby, the chances being that there could not be another child in any event, I believe it would be safer for the mother and child and would also shorten the period of convalescence if cesarean section were performed.

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The Prodromal Rash in Measles.—H. Koch has been able to detect this rash in five out of twenty-one cases of measles closely studied from the very beginning of the incubation period. The eruption consisted of brownish-red ill-defined and fugitive macules, chiefly visible on the face. They appear coincidentally with or after the appearance of Koplik's spots.—*Zeitschrift für Kinderheilkunde.*

Medicolegal Notes.

Unlawful Granting of Degree—Doctor of Chiropractic.—A corporation styled the New England College of Chiropractic was convicted of granting a degree without authority and contrary to the Massachusetts statute. The certificate which it issued stated that "A. H. Flower, M.D., having satisfactorily completed the prescribed courses of study in the New England College of Chiropractic, passed the examinations and met all other requirements for graduation, has been declared a doctor of chiropractic." This certificate was signed by seven persons, all of whom wrote after their names the letters "D.C.," five also adding letters indicative of well-recognized degrees, such as B.S., M.D., DD.S. Flower, called as a witness by the commonwealth, after stating that the degree of Doctor of Medicine had been conferred upon him by another institution, to the question, "Have you a degree of Doctor of Chiropractic?" replied, "Yes, that is what it claims, I believe." He further testified that the New England College of Chiropractic conferred that degree on him and that at the same time the degree was conferred upon perhaps a dozen other persons, the ceremony being similar to any college or high-school graduation upon a commencement day. Officers and members of the faculty of the defendant testified in substance that the letters "D.C." stood for Doctor of Chiropractic, but that it was not a degree. It was not contended that the defendant was authorized by any special or general act of the Legislature to confer degrees. It was held that the evidence of Dr. Flower, if believed, warranted a finding by the jury that Doctor of Chiropractic was treated as a degree. The Massachusetts statute, R. L., Chap. 208, Sec. 75, provides that "whoever, without the authority of a special act of the General Court granting the power to give degrees, offers or grants degrees as a school, college, or as a private individual . . . shall be punished." The obvious purposes of the provision, the court said, was "to suppress the kind of deceit which arises from the pretence of power to grant academic degrees, and to protect the public from the evils likely to flow from that variety of misrepresentation and imposition. The earlier part of the section deals with the simulated possession of educational distinctions, including college degrees. The section as a whole is an effort to punish the issuing and holding of sham degrees from colleges and other educational institutions. It aims to insure to the people of the commonwealth freedom from deception when dealing with those who put forward professions of educational achievement such as ordinarily is accompanied by a collegiate degree from an institution authorized to grant it and to make certain that those who use such symbols have had the opportunity of being trained according to prevailing standards in some school of recognized standing, under teachers of reputation for learning (Wright vs. Lanckton, 19 Pick. (Mass.), 288, 291). The statute should be interpreted in the light of its design to effectuate its purpose so far as the words used, reasonably construed, permit of this result. Considered historically according to present practice there are three general grades of such degrees, namely, Bachelor, Master and Doctor, although by some institutions intermediate distinctions are granted. In common speech, as well as in university parlance, 'Doctor' as a prefix to a person's name signifies an academic distinction founded upon having received a degree. . . . It is not to be assumed that the statute was intended to relate only to such degrees as were in use at the time it was enacted. It is comprehensive in its terms and may include whatever properly may be described as a degree at any time. . . . The ordinary diploma of public or private schools, simply certifying to the completion of a course of study, does not contravene the statute. But when a title like 'Doctor,' commonly associated with unusual skill acquired by academic or professional study in schools or colleges, is conferred either separately or associated with other words, the statute is violated. The conferring of a title made up of the word 'Doctor' and a word relating to the healing art may be found to be the granting of a degree, within the meaning of the statute. The word 'Doctor' in connection with an unusual and high-sounding word would be quite as likely to impose upon the ignorant and credulous as the false use of the conventional Doctor of Medicine. As thus construed the word 'degree' is used with a consistent meaning throughout the section. The conviction was sustained.—Commonwealth vs. New England College of Chiropractic, Inc., Massachusetts Supreme Court, 108 N. E. 895.

MEDICAL RECORD.

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THE PHYSIOLOGY OF LACTATION.

A SUBJECT of considerable theoretical as well as practical interest is that of the laws governing the secretion of milk. There has arisen within recent years a vague conception that the activity of the mammary gland is under the controlling influence of a hormone emanating from the ovaries or uterus. This idea would seem to harmonize with the observation that the mammary glands undergo a rapid growth at puberty and during pregnancy and attain their greatest functional development after delivery. The action of a hormone alone cannot account for the persistence of lactation which depends upon the act of sucking or of nursing at periodical intervals. Either of these external stimuli excites the functional activity of the mammary glands through the agency of a reflex nervous mechanism.

W. L. Gaines (*American Journal of Physiology*, August 1, 1915) has made an important contribution to this subject. He quotes the observation made by Marshall in the case of the Bohemian pygopagous twins, Rosa-Josepha, one of whom became pregnant, and in both of whom the breasts underwent development during the pregnancy and functioned following delivery. This observation would speak in favor of a hormone exciting the activity of the mammary glands, and so would the experiments of Lane-Claypon and Starling who produced a development of the mammary glands in a virgin rabbit by injecting into it extracts of rabbit fetus. On the other hand, Knoepfelmacher injected blood serum from a pregnant goat into a non-lactating goat without observing any effect upon the mammary function of the latter. Similar negative results were obtained by Gaines with the use of defibrinated blood. He found, however, that the transfusion of blood from a pregnant goat into a lactating one temporarily inhibits milk secretion. This phenomenon is apparently explained by the theory advanced by Lane-Claypon and Starling that the developing fetus passes into the maternal blood a substance which favors the growth of the mammary gland but inhibits its secretory activity. The removal of the inhibitor at delivery allows the gland to function in its natural capacity. Transfusion of blood from a heavy-milking goat into a low-milking one fails to accelerate milk secretion. Niklas, however, found that extract of placenta evokes a production of milk in virgins and mothers, and Lederer and Pribram found a greatly increased secretion of milk upon the intravenous injection of placental extract.

How can one explain the various contradictions noted in the above experiments? Gaines believes in the presence of a specific hormone which excites the remarkable growth of the mammary gland during pregnancy, but believes also that this hypothetical substance is not present in large or potent quantities in the blood of the pregnant animal or that the mammary gland of the pregnant female is for some reason more susceptible to its influence than the gland of the non-pregnant female. While admitting that the increased growth of the mammary gland is due to a hormone, Gaines finds that there is evidence that lactation is not excited by a hormone. This evidence includes the above-cited experiment with blood transfusion and the fact that one gland may cease lactating before the other.

It is found that pituitary extract has an effect on the muscular tissue of the active mammary gland, causing a constriction of the milk ducts and alveoli with a consequent expression of milk. This action of pituitrin occurs also in the case of the excised gland, being therefore independent of the blood supply, and produces a flow of milk dependent entirely upon the amount of milk present in the gland. The nonlactating gland is not sensitive to pituitary extract. A similar reflex contraction of the gland musculature is produced by nursing, milking, and the insertion of a cannula in the teat, and results in an expression of milk. Milking is a stronger excitant than the cannula; nursing is stronger than milking, and the direct action of pituitary extract in some cases is stronger than nursing. The thermal and mechanical effects of nursing provide the stimulus for the reflex that results in the expression of milk from the gland. This reflex may be inhibited by anesthesia and may be profoundly modified by the psychic state of the mother.

Other important facts revealed in the researches conducted by Gaines are that the internal capacity of the mammary gland of the goat is greater than the volume of milk drawn at one time; that the udder shrinks in volume during milking to nearly the same extent as the amount of milk withdrawn, and that practically all of the latter is present as such in the gland at the beginning of milking.

FINLAY AND THE YELLOW FEVER MOSQUITO.

DR. CHARLES JOHN FINLAY, who died at his home in Havana on August 20 at the age of 82 years, was a graduate of the Jefferson Medical College, Philadelphia, in 1855. He began practice in Havana almost immediately after graduation and soon became especially interested in the study of yellow fever, then endemic in Havana as in most of the other cities of tropical America. After many years of investigation he was led to believe that a certain species of mosquito which was shown later to be *Stegomyia calopus* was instrumental in the spread of yellow fever. His first publication of this theory was in a paper read in Spanish before the Royal Academy of Havana in 1881. In 1886 he published

another paper in the *American Journal of the Medical Sciences* in which he accurately described the yellow fever mosquito and traced its relation to epidemics of the disease. "So far as my information goes," he said, "this disease appears incapable of propagation wherever tropical mosquitos do not or are not likely to exist, ceasing to be epidemic at the same limits of temperature and altitude which are incompatible with the functional activity of those insects; while, on the other hand, it spreads readily wherever they abound. From these considerations, taken in connection with my successful attempts in producing experimental yellow fever by means of the mosquito's sting, it is to be inferred that these insects are the habitual agents of its transmission." In a paper published in the MEDICAL RECORD, May 27, 1899, before the U. S. Army Commission had taken up the work which proved the correctness of Finlay's theory beyond the possibility of denial, he thus foreshadowed the measures necessary to exterminate the disease and prevent its recurrence. "Why should not the houses in yellow fever countries be provided with mosquito-blinds, such as are used in the United States as a matter of comfort, while here it might be a question of life or death? The mosquito larvæ might be destroyed in swamps, pools, privies, sinks, street sewers, and other stagnant waters in which they are bred, by a methodical use of potassium permanganate or other such substances, in order to lessen the abundance of mosquitos; but the most essential point must be to prevent those insects from reaching yellow fever patients."

When the United States troops occupied Havana Finlay urged the claims of his theory upon the medical chiefs and finally persuaded them to appoint a commission to put it to the test. It withstood the test and was accepted as a fact by the sanitary authorities with which result the world knows. Making a practical application of this doctrine and perfecting the measures outlined by Finlay in his MEDICAL RECORD article, the genius of Gorgas converted the two notorious pestholes, Havana and Panama, into health resorts.

As we wrote some years ago, in reviewing Finlay's work, this is all ancient history, but for that very reason it is in danger of being forgotten. Even such a master of medical history as Osler forgot it in an address on the transmission of disease through the agency of blood-sucking insects, which he delivered before the London School of Tropical Medicine five years ago. In this address he omitted all mention of Finlay's work and only when he was reminded of it by a letter from Guiteras of Havana in the *Lancet* did he apparently recall the great part which this pioneer had taken in the establishment of the mosquito doctrine. No one would belittle the brilliant experimental work of Reed and his associates or the practical application of the results made by Gorgas, but in the interest of truth and as a matter of pure justice to the originator of the theory, credit and full credit should be given to Finlay. Reed himself was the last to refuse such credit and he acknowledged freely the debt which mankind owed this acute observer. In an article on "The Propagation of Yellow Fever," published in the MEDICAL RECORD, August 10, 1901, Major Reed generously said: "To Dr. C. J. Finlay of Havana must be given full credit, however, for the theory of the propagation of yellow fever by means of the mosquito, which he proposed in a paper read before the Royal Academy in that city on August 14, 1881. From that date to the present time, Finlay has made a number of valuable contributions to the origin and mode of transmission and the prevention of yellow fever."

In common with all Americans we are proud of the achievement of Reed and his associates and of Gorgas, for without their labors yellow fever would in all probability still be the curse of Havana, and the Panama Canal would be still the mosquito breeding ditch abandoned by the French twenty-five years ago; but it may be doubted whether their work would even yet have been done—it certainly would not have been done so soon—had not the way been pointed out by Charles J. Finlay.

HOUSING AND TUBERCULOSIS.

TUBERCULOSIS is initiated, developed, and spread by more than one cause, but none is more potent than that of housing. The highest death rates from the disease exist in the poorest localities and in such localities the denizens are massed together the most closely and generally the hygenic conditions are the worst.

Dr. Maxwell Williamson, medical officer of health for Edinburgh, in the presidential address delivered by him at the Edinburgh Congress of the Royal Institute of Public Health last year and published in the *British Journal of Tuberculosis*, July, 1915, pointed out that the number of cases of tuberculous disease increased in proportion as the house accommodations became limited. Further, the number of cases of the disease increased in proportion to the number of the smallest class of house. The key to the situation lies unquestionably in the housing question. If statistics prove anything, they prove absolutely that the disease originates and thrives in direct proportion to the unsatisfactory nature of the house and its surroundings, and they prove furthermore that an improvement of these conditions is invariably followed, as by the law of cause and effect, by an immediate fall in the tuberculosis rate.

Williamson summarizes as follows: (1) Pulmonary tuberculosis is a disease which in 70 or 80 per cent. of cases occurs in houses of three rooms and under; the number of cases is larger in two-roomed houses than in three; larger in houses of one room than in two; and the number of cases of tuberculous disease increases almost in direct proportion to the number of small houses, in any district or ward of a city; (2) Since the year 1882 the number of deaths from tuberculosis has shown a rapid and steady decrease, and a like statement applies to the general death rate from other forms of infectious disease; (3) The decrease has been taking place quite apart from and irrespective of any special effort to deal with the condition other than the preventive measures

which have been carried out in the ordinary march of public health administration; (4) The establishment of sanatoria and dispensaries, while useful aid in carrying on a general crusade against this form of disease, is not of itself likely to be attended by markedly beneficial results in the absence of other definite preventive measures; (5) Preventive measures center largely in the housing question, and, irrespective of cost, there is an urgent need, in the light of our present-day knowledge, of dealing more effectively than has heretofore been the case with congested areas, containing dense foci of population, and unsanitary dwellings.

HEALTH CONDITIONS IN CHINA.

The fecundity of the teeming millions of China must be marvelous to keep pace with the decimation of the population by disease, famine, and flood, for the death rate there is believed to be higher than in any other spot on the globe. This is according to the China Medical Commission of the Rockefeller Foundation, which publishes its findings in the *Bulletin of the Johns Hopkins Hospital* for June. The personnel of the commission consisted of President Judson of the University of Chicago, R. S. Green, the United States Consul at Hankow, and Dr. Francis W. Peabody of Boston.

The reasons for this fearful mortality are not far to seek. Medical practice in China is just emerging from the mists of medievalism. Anatomy and pathology are *terræ incognitæ* to the Celestial physicians owing to the fact that dissections and autopsies have been permitted there only since November 22, 1913. The knowledge of surgery among the native practitioners, as may be imagined, is extremely rudimentary. Of course, there are some Chinese medical men who have been trained in the western schools, but these are as a rule to be found in the treaty ports or in the service of the mission hospitals, which latter, by the way, are the only institutions worthy of the name of hospital in the country. The native hospitals, such as they are, are poorly managed and the members of their medical and nursing staffs are as a rule inefficient.

The most common diseases in China are smallpox, tuberculosis, leprosy, hookworm disease, and syphilis. Vaccination is almost unknown, so that a Chinaman expects to have smallpox; in fact, we might almost say he would be disappointed if he did not have it. These Orientals accept whatever destiny apportions them in the way of illnesses in the same fatalistic spirit in which they accept loss of fortune or death. It is perhaps needless to say that the armamentarium of the Chinese physician is not well stocked. Vaccines and antitoxins, serums and coal-tar products he wots not of. His remedies are decoctions from herbs, assisted by the burning of joss sticks and the simple faith of the patient. It is reported that patent medicines, largely of American manufacture, have now a large sale in China, but it is not known what color peril they are termed there.

The Central Control of State Charitable and Penal Institutions.

It has been proposed recently to establish a board of control for State institutions, including prisons, charitable institutions, and hospitals for the insane. Those who favor this scheme do so on the assumptions that (1) with many institutions in different groups there must be confusion, mismanagement, and extravagance, and (2) economy of construction and operation would be secured by combining all of these institutions into one group under one management. The arguments against this plan are well set forth in a brief submitted to the New York Constitutional Convention by the State Charities Aid Association. In order to prove their case, it is argued in this brief the proponents of the board of control must show: (1) That the present plan does not operate efficiently. (2) That it does not operate economically. (3) That further economies could be obtained without sacrificing the real efficiency of the institution. (4) That the plan proposed has been successful where it has been tried. Judged by these four tests the opponents of the scheme are of the opinion that such a drastic change is undesirable and for the following reasons: (1) The present State hospitals for the insane are operating at an extremely low rate per capita cost, lower than any other institutions of the same type on record. (2) They are operating with such extraordinary efficiency that they have established standards for practically the whole country. (3) The study of Henry C. Wright proves that the central purchasing for all institutions not only does not obtain lower prices for food, but that the prices under the plan are higher than where the central purchasing does not prevail. (4) In many of the eighteen States where the board of control has been established, it has been proved to be a device for injecting politics into the management of the institution. The standards of care in most of them have actually deteriorated, and movements are under way in many of them for a change of the system.

Fraenkel's Histological Test for Typhus Fever.

Eugen Fraenkel discovered over a year ago the important and almost unique fact that typhus fever may be diagnosticated by making serial sections of excised roseolæ and looking for small nodular inflammatory foci in the cutaneous arteries. Certain degenerative changes are also present. These finds, however, are not constant, *i.e.* are not present in all roseolæ, hence their absence cannot mean that the disease is not typhus. It is therefore necessary to make sections of a large number of spots, which consumes valuable time, so that only in very exceptional cases of possible sporadic outbreak will this diagnostic resource be indicated. At a session of the Hamburg Medical Society last winter Fahr related the case of a patient who was seized with a severe angina. On the sixth day a roseola appeared and one day later the patient died. Eight nodules, six of which were excised postmortem, were subjected to serial section. In one of these the Fraenkel finds were present. In discussion Rumpel stated that typhus not rarely begins with severe angina, a fact not to be found in textbooks. Whenever a subject arrives from a typhus region with the picture of septic angina one should always, it was said, suspect typhus.

The Comparative Hemostatic Power of Various Tissues.

Within recent years considerable practical use has been made of the discovery that bits of living tissue when applied as grafts to accidental or surgical wounds, particularly of the parenchymatous organs, act as efficient hemostatics. The tissues most commonly employed for this purpose are subcutaneous or subperitoneal connective tissue, aponeurotic fascia, muscle, and omental tissue. Luigi Torraca contributes to *Lo Sperimentale*, July 14, 1915, the results of an important study with reference to the comparative hemostatic power in vitro of the above tissues. He finds that the coagulating action of these tissues varies among them and even in the same tissue according to the region from which this tissue is derived. The hemostatic power is greatest in omental tissue and least in aponeurotic tissue, while muscle and adipose tissue occupy an intermediate place. The differences, however, are so slight as to be of little value from a practical viewpoint. For surgical purposes all the tissues usually employed for their hemostatic virtue may be regarded as of equal power in this respect.

News of the Week.

Death Rate of New York.—During the week ending August 14 the number of deaths in New York City was 1,322, giving a death rate of 11.88, as compared with 13.30 for the corresponding week of last year. The death rate for the first thirty-three weeks of 1915 was 13.75 as compared with 14.19 for the corresponding period of 1914.

Abandonment of Fumigation.—In December of last year the Health Department of this city discontinued the practice of fumigation of premises after the occurrence of a case of infectious disease in all the boroughs except Brooklyn, where it was maintained for the purpose of control. As to the results of the experiment, the Board reports that in the Borough of Manhattan, 193 later cases occurred among 3,451 primary cases of diphtheria. Of these, 171, or 4.9 per cent., would not have been affected by fumigation, and 22, or 0.6 per cent., might have been so affected. In Brooklyn, where fumigation was performed, there were 138 later cases among 2,907 original cases. Of these, 110, or 3.8, would not have been affected by fumigation, and 28, or 0.9 per cent., might have been so affected. In other words, there were half again as many later cases in Brooklyn, where fumigation was done, as in Manhattan, where it was not done. Fumigation will now be abandoned in Brooklyn as well as in the other boroughs and in place of it insistance will be laid on thorough cleaning, opening up to fresh air and sunshine, and renovation of the premises by painting, papering, and kalsomining.

Committee of American Physicians for the Aid of the Belgian Profession.—Dr. F. F. Simpson, treasurer, 7048 Jenkins Arcade Building, Pittsburgh, Pa., reports the receipt of the following contributions for the week ending August 21, 1915:

Dr. G. N. Kreider, Springfield, Ill.	$5.00
Dr. Hugh A. Cuthbertson, Chicago, Ill.	10.00
Total	$15.00
Total receipts	$7,804.84
Total disbursements	7,310.04
Balance	$494 80

Proposed Abolition of the Death Penalty.—The following amendment has been offered to a proposal before the New York State Constitutional Convention for the total abolition of the death penalty: "On a conviction for a crime now punishable by death, the jury may, by its verdict, impose either the death penalty or life imprisonment and in the latter event no pardon or commutation shall be granted unless the innocence of the prisoner convicted is legally established." It is stated that twenty-seven States now have this method of reaching the crime of murder, while fourteen States have the straight death penalty, and in seven States the death penalty has been abolished altogether.

Physician to the King a Spy.—According to a report from Sofia, Dr. Gruetzel, who had been personal physician to King Ferdinand of Bulgaria for twelve years, has been found to be acting as a spy for the German government and has accordingly been dismissed as a traitor.

The War's Victims.—A despatch to *The Sun* gives the following official list of killed, wounded, and prisoners as submitted to the French Senate:

	Killed	Wounded	Prisoners	Totals
Allies	1,739,000	2,589,000	1,135,000	5,463,000
Teutons	3,350,000	3,885,000	1,795,000	9,030,000
Totals	5,089,000	6,474,000	2,930,000	14,493,000

The figures distribute the number of killed as follows: French, 460,000; English, 180,000; Russians, 1,250,000; Germans, 1,630,000; Austrians, 1,610,000; Turks, 100,000; Belgians, 49,000.

The Sun discredits the figures as excessive.

The Typhus Germ.—The *Staats-Zeitung* of this city recently announced the discovery of the germ of typhus fever by Dr. Friedrich Proeschel and said that the announcement of this discovery had been very warmly received in Frankfort, Berlin, and Vienna, and Dr. Proeschel had been urged to join the medical staff of the German army. Until this news was published we had supposed the typhus germ was discovered by an American physician, Dr. Plotz of Mt. Sinai Hospital, New York.

Award of a Medal to Surgeon-General Blue.—The trustees of the *American Medicine* gold medal award have unanimously selected Surgeon-General Rupert Blue as the recipient of this token, which is given each year to the American physician who is adjudged to have done most for humanity in the domain of medicine during the preceding twelve months.

Dr. Alexis Carrel of the Rockefeller Institute, New York, who is at present in the medical service of the French government and in charge of a hospital for wounded soldiers, is to receive the next promotion to the rank of officer of the Legion of Honor.

Dr. Elisha H. Cahoon, assistant physician at the Providence, R. I., State Hospital for the Insane, has been appointed physician, in association with Dr. E. E. Southard, to the Massachusetts State Hospital at Boston. Before going to Providence Dr. Cahoon was assistant physician at the Iowa State Hospital, and previous to that assistant superintendent in one of the Colorado State Hospitals.

Dr. A. S. Spoor of Big Rapids has been appointed State bacteriologist in charge of the laboratory at Lansing, Mich.

Dr. Charles E. Phipps of Muncie, Ill., has been appointed assistant surgeon to the National Soldiers' Home at Milwaukee.

Dr. James E. Drake of Lamont has been appointed health officer of the public schools of Spokane, Wash., by the board of education of that city. He will have two trained nurses as his assistants, but will be the sole physician on the work.

Naval Medical Reserve Corps.—At the prelimi-

nary examination beginning July 6, 1915, held in various cities of the United States, for examination of candidates for appointment as assistant surgeons in the Medical Reserve Corps of the Navy with a view to subsequent examination and appointment in the Medical Corps of the Navy, after a course at the Naval Medical School, the following candidates were found physically and professionally qualified: Drs. Virgil Hope Carson, Elphege Alfred Gendreau, Francis DeArmond Gibbs, John Harper, Forrest Martin Harrison, Richard Hagan Miller, John Paul Owen, John Floyd Pruett, William Jehiel Rogers, George Patrick Shields, George Washington Taylor, Russell John Trout, George Boyd Tyler, Walter Alfred Vogelsang, Charles Henry Weber, Grover Cleveland Wilson.

Civil Service Examinations.—The New York State Civil Service Commission announces examinations to be held on September 18 to fill the position of laboratory assistant in bacteriology and of assistant medical officer at the quarantine station of the port of New York. The salary attached to the first named position is from $720 to $1,200 per annum, and men and women, citizens and non-citizens, residents and non-residents are eligible. Only candidates who have satisfactorily completed a systematic course in bacteriology and have also had not less than eight months' practical experience in laboratory work will be accepted. Candidates will be examined on the technical procedures used in the study of the pathogenic bacteria of infectious disease, immunity, and the standard methods used in the examination of milk, water, sewage, air, and soil. The second position, which carries a salary of $1,500 and is open to men only, is in the Detention and Hospital Service of the Quarantine Station and involves residence and service at either of the quarantine islands in Lower New York Bay. It requires a knowledge of cholera, plague, yellow fever, smallpox, leprosy, epidemic cerebrospinal meningitis, and typhus fever. Examination is open only to licensed medical practitioners of the State of New York who are certified graduate internes after a course of at least fifteen months in a general hospital.

Twilight Sleep.—A motion picture exhibition was given to a large audience, the guests of the *Medical Review of Reviews*, at the Candler Theater, New York, on the afternoon of August 25. Before the pictures were shown the method was explained to the audience, composed of sociologists, public health workers, and physicians, in a lecture by Dr. Schlössingk of the Kroenig-Gauss Klinik of Freiburg.

The Michigan State Medical Society will hold its fiftieth annual meeting at Grand Rapids on August 31 and September 1 and 2, under the presidency of Dr. Reuben Peterson of Ann Arbor. The secretary is Dr. F. C. Warnshuis who is also president of the Kent County Medical Society.

The Panama-Pacific Dental Congress is announced to meet in San Francisco from August 30 to September 9, under the presidency of Dr. Frank L. Platt of that city.

The National Medical Association, a society of colored physicians, dentists, and pharmacists, held its seventeenth annual session in Chicago on August 24-26, under the presidency of Dr. F. S. Hargrave of Wilson, N. C. The secretary of the Association is Dr. W. G. Alexander of Orange, N. J.

American Medical Editors' Association.—The annual meeting of this Association will be held at the McAlpin Hotel, New York City on October 18 and 19, under the presidency of H. Edwin Lewis, M.D., editor of *American Medicine*. An interesting program has been prepared upon important subjects of interest to every medical editor in this country. The annual banquet will be held at the McAlpin Hotel on the evening of October 19.

Health Conference in Rochester, N. Y.—The Bulletin of the New York State Department of Health says that plans are being actively carried forward for the Health Conference at Rochester in September which promises to be the most notable public health convention ever held in the United States. The following general program has already been outlined by the cooperating organizations, the American Public Health Association, the New York State Department of Health, the New York State Sanitary Officers' Association, and the Rochester Public Health Association.

Monday, September 6, 8 P. M.—Opening meeting for Health Officers of New York State, Commissioner Hermann M. Biggs, presiding. Address of welcome, G. W. Goler, Health Commissioner of Rochester. Address by Surgeon-General W. C. Gorgas, U. S. Army.

Tuesday, September 7, 10 A. M.—Sectional meetings of the Health Officers of the State of New York, under the chairmanship of the Sanitary Supervisors. 8 P. M.—Opening meeting of the American Public Health Association, under the presidency of Prof. William T. Sedgwick. Addresses by Governor Charles S. Whitman and others.

Wednesday, Thursday, and Friday, September 8-10.—Meetings of the American Public Health Association. Special sessions will be arranged for the Health Officers of New York State dealing with Rural Hygiene, Milk, Control of Communicable Diseases, Public Health Education, and Diseases of Adult Life.

Wednesday, September 8, 4 P. M.—Business meeting of the New York Sanitary Officers' Association. 8 P. M.—Public meeting under the auspices of the New York State Sanitary Officers' Association, Dr. Montgomery E. Leary, presiding. Addresses by Secretary W. C. Redfield, Department of Commerce, Dr. Norman Bridge, and others.

On the mornings of Tuesday, Wednesday, and Thursday, between 9 and 10 A. M., there will be held a series of clinics on tuberculosis and infant hygiene and of demonstrations of public health laboratory methods, open to the health officers of New York State, and the members of the American Public Health Association. The tuberculosis clinics will be conducted by Drs. S. A. Knopf, Lawrason Brown, A. H. Garvin, and others, the infant hygiene clinics by Dr. H. L. K. Shaw, and the laboratory demonstrations by Dr. A. B. Wadsworth.

Obituary Notes.—Dr. EDMUND L. WOODS of Janesville, Wis., who was one of the victims of the massacre of non-combatants on the *Arabic* on August 19, was a native of England and returned there last spring to work in the English field hospitals. He came to this country when a child and was graduated from the Medical College of Indiana, Indianapolis, in 1882. Dr. Woods was a member of the American Medical Association, the State Medical Society of Wisconsin, and the Rock County Medical Society. He was a naturalized citizen of the United States, and was 61 years of age.

Dr. SAMUEL H. WOLLERTON of New York City, died at the home of his brother at Scranton, Pa., on July 27, at the age of 55 years. He was grad-

uated from the medical department of the University of Pennsylvania in the class of 1880.

Dr. JOHN BACON died at Philadelphia on August 2 at the age of 50 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1889. He served as intern in the Hospital of the University and later as physician to the Eastern Penitentiary. He was a Fellow of the College of Physicians of Philadelphia, a member of the Philadelphia County Medical Society, and of the Medical Society of the State of Pennsylvania, and a Fellow of the American Medical Association.

Dr. JEANNE DE LA MONTAGNIE LOZIER of New York, a graduate of the New York Medical College and Hospital for Women, and for some years professor of physiology and chemistry in this institution, died at her summer home in New Brighton, Staten Island, on August 6, aged 74 years.

Dr. CLARA EMMA WATSON formerly of Norwood, Ohio, a graduate of the Eclectic Medical College of the City of New York in 1895, died at her residence in Brooklyn, N. Y., on July 31, aged 54 years.

Dr. ALBERT MERRELL of Wilmington, Del., a graduate of the American Medical College of St. Louis, Mo., in 1875, formerly of St. Louis, and for twenty-four years a member of the Missouri State Board of Health, deeply interested in public health questions, and one of the organizers of the St. Louis Pure Milk Commission, died at his home on July 21, aged 72 years.

Dr. JOSIAH JONES of Tacoma, Wash., a graduate of the Rush Medical College, Chicago, in 1890, and a member of the Washington State Medical Association, the Pierce County Medical Society, the Pacific Coast Oto-Ophthalmological Society, and the Puget Sound Academy of Ophthalmology and Oto-Laryngology, was killed on July 5, when an automobile which he was driving skidded on a wet pavement and turned over, crushing the physician beneath it.

Dr. RELL M. WOODWARD, surgeon in the United States Public Health Service, and for many years in charge of the Marine Hospital at San Francisco, a graduate of the Miami Medical College, Cincinnati, in 1887, and a member of the Public Health Service since that time, on duty in Rotterdam during the cholera epidemic of 1893, at different times in charge of hospitals at Boston, Baltimore, and Chicago, and a member of the American Medical Association, died at St. Mary's Hospital, Rochester, Minn., following an operation, on July 16, aged 53 years.

Dr. SIMEON DOSSON TAYLOR of Beaver Dam, Ky., a graduate of Vanderbilt University, Medical Department, Nashville, Tenn., in 1887, and a member of the Kentucky State Medical Association, and the Ohio County Medical Society, died at his home from typhoid fever, after a short illness, on August 2, aged 53 years.

Dr. THOMAS LAWRENCE MCDERMOTT of Louisville, Ky., a graduate of the Bellevue Hospital Medical College, New York, in 1866, attending physician at SS. Mary and Elizabeth Hospital, a member of the Kentucky State Medical Association and the Jefferson County Medical Society, former health officer of Louisville, and a member of the Board of Safety, died at St. Joseph's Infirmary, Louisville, from cancer of the throat, after a long illness, on August 1, aged 72 years.

Dr. JOHN KENDRICK GILMORE died of angina pectoris at Renovo, Pa., on August 5, at the age of 56 years. He was graduated from the Detroit College of Medicine and Surgery in the class of 1892.

Dr. JAMES L. WHEATON of Pawtucket, R. I., a graduate of the Harvard University Medical School, Boston, in 1846, died at his home on August 12, aged 92 years.

Dr. PHILIP COFFMAN PALMER of Kansas City, Mo., a graduate of the Rush Medical College, Chicago, in 1884, died suddenly, from heart disease, on August 1, aged 63 years.

Obituary.

PAUL EHRLICH, M.D.,

FRANKFORT, GERMANY.

Dr. PAUL EHRLICH, director of the Institute of Experimental Therapeutics at Frankfort, Germany, the originator of the side-chain theory, the inventor or salvarsan, and one of the foremost medical scientists of the world, died suddenly from heart disease at Bad Homburg on August 20, aged 61 years. Professor Ehrlich was born at Strehlen, in Silesia, March 14, 1854, and was educated at the Universities of Breslau, Strassburg, Leipsic, and Freiburg. He was an ardent student of chemistry and most of his discoveries and contributions to medical science were in the line of the application of chemical principles to animal pathology. His side-chain theory was one result and his development of chemotherapy culminating in the invention of salvarsan was another. In 1908 he divided the Nobel Prize in medicine with Metchnikoff, and in 1910 he announced his discovery of salvarsan, which at the time was hailed as one of the most important advances ever made in medicine. In 1913 he was introduced by Sir Malcolm Morris to the International Medical Congress in London, before which he delivered an address on pathology, as "the greatest exponent of modern pathology in the civilized world" and received an ovation from the delegates. The Decoration of the Second Class of the Red Eagle was conferred on him by Emperor William in 1914, and in the same year he was awarded the Cameron Prize by the University of Edinburgh.

CARLOS JUAN FINLAY, M.D.,

HAVANA, CUBA.

Dr. CARLOS JUAN FINLAY of Havana, the discoverer of the agency of the Stegomyia mosquito in the spread of yellow fever, died at his home on August 20, aged 82 years. Dr. Finlay was of Scotch descent, born at Puerto Principe, Cuba, December 3, 1833. He received his medical education in the United States, being graduated from the Jefferson Medical College, Philadelphia, in 1855. His researches into the etiology of yellow fever began soon after his return to his native country. In 1881 he was delegate from Cuba to the International Sanitary Conference in Washington. From 1902 to 1908 he served as chief sanitary officer of Cuba, and since 1909 had been honorary president of the Junta Nacional de Sanidad y Beneficencia. He was a member of the Havana Academy of Sciences, the College of Physicians of Philadelphia, and the American Public Health Association, an honorary member of the American Society of Tropical Medicine, and the Société de Médecine Tropicale of Paris, a corresponding member of the Académie de Médecine of France, and a fellow of the Society of Tropical Medicine and Hygiene of England.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

ANTISEPTICS—REPORT TO THE RESEARCH COMMITTEE —MALACHITE-GREEN—HYPOCHLORIC COMPOUNDS —EUPAD, EUSOL, ETC.—THE WAR.

London, August 6, 1915.

Drs. P. Fildes and L. W. Rajchman, workers in the London Hospital Laboratory, have proposed a new antiseptic mixture which they think will be specially useful in gunshot wounds. They some time ago, in collaboration with Surgeon-General Cheatle, made a preliminary report to the Medical Research Committee and their work seems deserving of attention, although their conclusions differ from those of some observers who may well take them into serious consideration. Asepticism has for so long held sway in our literature and conversation that antiseptics have largely disappeared from civil practice and on the outbreak of war surgeons meeting with septic wounds turned to the remedies with which they had had experience, such as iodine, thinking it would kill the bacteria, and mild antiseptic lotions, which in actual contact with germs might have some effect, this condition implying that it could only be skin deep. But in gunshot wounds the infection as a rule is carried beyond the surface. Confronted by a deep focus of suppuration the surgeon knows the first essential is a means of drainage, so he opens the focus freely as otherwise nothing will save the patient. This done accessory measures may be employed, and among them antiseptics, for in the majority of cases the infection is superficial. However complex the recesses of the wound the bacteria are mostly confined to the surface.

It has been the practice of many to use mixtures of different antiseptics, but these investigators found this plan undesirable, at any rate with mercury and carbolic, for the compound was less potent than mercury perchloride alone. They were led to try the effect of aniline dyes and after some experiments selected malachite-green as a strong antiseptic which killed *Staphylococcus aureus* in serum, 1 in 2000, while with spores it is more potent, killing *B. subtilis* spores in a dilution of 1 to 5000. This dye does not diminish the effect of corrosive sublimate. Coloring the skin is no disadvantage. The solvent employed was 80 per cent. spirit; the small quantity of water in this seemed greatly to increase the effect. The best mode of using is spraying. The actual quantity thus used is small and evenly distributed.

The malachite-green is not very toxic and it can be used stronger, but 1 per cent. was found sufficient. It was mixed with corrosive sublimate, at first 1 in 500 dilution; eventually 1 in 200, but of course is not to be applied to mucous membrane in any case. The authors of the report made two separate solutions in spirit (80 per cent.) of 1.0 gram of pure malachite-green in one; and 1 gram corrosive sublimate in the other to 100 c.c. of the solvent. These two solutions they mixed in equal parts at the time of using as they found if kept ready mixed a compound of the two substances crystallizes out in a few days. The combined solutions they spray on to the wound, which at once turns green, but the color is discharged after a few hours from healthy tissues, but is retained by sloughs and dead bone.

Much of the malachite-green in the market is very impure. What are called "pure samples" often contain impurities soluble in alcohol. The spraying must be thorough, with a good instrument held as far as possible from the wound which it must completely cover, and extend over a wide area of surrounding skin.

Another investigation on this subject way well be considered in connection with the foregoing. It has been made by Drs. Lorain Smith, Murray Drennan, Theodore Rettie, and William Campbell, and was undertaken to find an antiseptic which could be applied as a first dressing in the field to prevent sepsis, but it included incidentally other points. At the outset they directed attention to the hypochlorites which have long been recognized as the most potent disinfectants, the best known, chloride of lime or bleaching powder being largely employed in the arts and by sanitary authorities.

But hypochlorites do not keep well in solution and there are other drawbacks to their use in surgical practice. These salts, too, are less powerful than the free acid, so the four pathologists engaged in this research devised a method of using it in its gaseous state or dissolved in water. The method is to prepare the gas by the action of boric acid on bleaching powder in the presence of a small quantity of water. The solution is obtained in the same way, but using a large quantity of water. A powder composed of finely ground bleaching powder and boric acid powder also finely ground (equal weights) they call eupad and the solution of the acid they term eusol. A strength of 0.5 per cent. of acid they found most satisfactory. It can be safely applied to open wounds. Many laboratory experiments are related both with the acid and its salts and go to show that bleaching powder retains its reputation as the chief of disinfectants. In other series of experiments the potency of the acid and its salts was compared with various antiseptics, showing them to be the most effective.

Chemical observations have also been made in more than one hundred cases treated with the antiseptic in one form or another. They give promise that the laboratory results will be realized in practice.

The conclusions reached by the investigators confirm the view generally entertained that hypochlorous acid is the most powerful antiseptic known and that practical methods of using it have been devised. Further they say—it can be used as gas or solution. The advantage of gas is that it will penetrate and act at a distance. Both gas and solution while extremely potent against organisms and their spores, cause little or no harm to the tissues. Fetor is rapidly eliminated. If pain and irritation occur they can easily be controlled by reducing the concentration of the antiseptic. A flow of lymph from the wound is reduced. The effect is purely local; decomposition products devoid of toxicity, so no danger from absorption. For field use the advantages are (*a*) it can be used as a dry powder, so obviates difficulty of procuring water; (*b*) can be introduced into the gauge pad of the first field dressing; (*c*) where water is available the same powder can be made up as a lotion for general use. The constituents of the powder are inexpensive, easily procured, and the preparation of the antiseptic extremely simple.

A committee of fifteen members of the British Medical Association with power to add others has been appointed to consider various aspects of the

war in relation to men and to act in the interests of those serving now and of those who may offer their services in the future.

Progress of Medical Science.

Boston Medical and Surgical Journal.

August 12, 1915.

1. The Origin and Aims of the Massachusetts Anti-Tuberculosis League. V. Y. Bowditch.
2. What the Anti-Tuberculosis Organizations Can Do to Help the State Department of Health. A. J. McLaughlin.
3. The Present Situation in Regard to Local Tuberculosis Hospitals. J. B. Hawes, 2d.
4. Local Tuberculosis Dispensaries. W. G. Phippen.
5. First Annual Report of the Massachusetts Anti-Tuberculosis League. S. H. Stone.
6. Reporting Cases of Tuberculosis. W. P. Bowers.
7. Tuberculosis Associations as Health Educators. M. M. Davis.
8. The Responsibility and Opportunity of the Teacher in Preventing Tuberculosis. T. F. Harrington.
9. Medical Inspection of School Children. F. L. Dunham.
10. Tuberculosis Work in this State. Amy F. Acton.

7. **Tuberculosis Associations as Health Educators.**—M. M. Davis states that the very success of the antituberculosis campaign has brought with it two dangers: First, that of over-specialization, a danger which creates, as it were, a vested interest in preventing tuberculosis, and fails to see its intimate relationships with other phases of militant public health work. The second danger is the popular fear of tuberculosis, which has been so developed as a by-product of the educational campaign that it acts in many ways as a handicap upon existing work and upon further progress. Anti-tuberculosis associations in their capacity as educators must devote themselves to informing the public that while it is well to fear tuberculosis, it is not well to fear it in the wrong way. The dread of the disease should be based on information as to how the infection is most likely to be carried. They must understand that the way in which infection is usually carried renders a tuberculosis hospital harmless, either to life (or property values) in its vicinity; but that, on the other hand, an active consumptive in the midst of his home and family is dangerous to wife, neighbors, and, above all, to the children. As health educators, anti-tuberculosis associations must teach the public to stop the waste of money and effort which arises from the discharge of sanatorium patients without adequate supervision after they leave the institution. As health educators tuberculosis associations must educate both the doctors and the public toward the early diagnosis of the disease. The author advocates as a measure of economy the co-ordination of the activities of the various public health movements, none of which will profit more thereby than the anti-tuberculosis movement.

New York Medical Journal.

August 14, 1915.

1. The Treatment of Obesity. B. Robinson.
2. Cardiovascular Disease. E. E. Cornwall.
3. Therapeutic Indications for the Various Electrical Currents. W. B. Snow.
4. The Study of Drug Action. T. J. Mays.
5. Tic or Habit Spasm. M. Grossman.
6. The Value of Some Tests of Renal Permeability. R. H. Greene.
7. The Treatment of Nervous Syphilis. C. R. Ball.
8. The Bone Pin Graft in Painful Flat Foot, Paralytic Valgus, and Other Painful Deformities of the Foot. R. E. Soule.
9. Röntgenoscopic Evidence in Appendicitis. P. Eisen.
10. The Newer Therapeutics in Otology. S. Moskowitz.
11. The Need of the Urethroscope in the Diagnosis of Pathological Conditions in the Anterior Urethra. J. Broadman.

1. **Treatment of Obesity.** — Beverley Robinson has found two remedies of value in reducing flesh. One is the phosphate of sodium, given at bed time in teaspoonful doses in a little water. The other is the solution of the hypophosphites of calcium and sodium, ten grains to the dose, given at meal time, as a general tonic to the nervous system. It does in some unexplained way, tend to reduce the amount of fat in the individual. The phosphate of sodium is particularly indicated in persons whose livers are engorged by numerous dinners and indulgence in rich wines and pure alcoholic drinks. The author advocates also the use, after meals and at bed time, of the Bulgarian culture in tablet form, to be taken two at a dose. In many instances of obesity the increase of fat is due in a degree, more or less important, to fermentative processes going on constantly in the bowels and from which poisonous results are constantly derived.

2. **Cardiovascular Disease.** — E. E. Cornwall states that dyspnea is an important and often an early symptom. It may be slight, brought on only by unusual exertion, or it may be severe; it may even occur when the patient is at rest, and it may occur in paroxysms. Abnormal sensations in the precordium may appear among the early or late symptoms, and may vary from a slight sense of oppression or uneasiness to a dull pain with radiation to the shoulders or arms, or angina pectoris. Some of these sensations, in their milder forms, may be present without necessarily indicating lesions of cardiovascular disease. Headaches, dizziness, vertigo, and head noises are common symptoms, as are also mental disturbances, particularly insomnia, irritability, changes in disposition, and dementia. Neurasthenic symptoms are frequently met with in the early stages of the disease. A tottering gait, a trembling hand, transient attacks of aphasia, or a paralytic stroke, point to changes in the cerebral arteries. The diagnosis of cardiovascular disease ultimately depends on the physical signs, although it may be suggested by symptoms and syndromes and by heredity and previous history. These physical signs, like the symptoms, may be shy in manifesting themselves, but usually before the disease has advanced very far some of them can be found if diligently sought for. A persistent rise in blood pressure is suggestive, particularly of the renal type of the disease. Impurity or roughening or enfeeblement or equivalence of the heart sounds or the appearance of a systolic murmur over the aortic cartilage, with or without much increase in the blood pressure, suggest myocardial degeneration or sclerotic changes in the aorta or its valves. Some of the earliest signs of the disease may be discovered in the ophthalmoscopic picture of the retina. Increase in the quantity of the urine and diminution in the quantity of urea excreted, with or without the appearance of albumin or casts, is also a significant sign. The later signs of the disease are usually plain, although not infrequently it happens that a cardiovascular accident suddenly reveals the unsuspected condition.

6. **Tests of Renal Permeability.**—R. H. Greene draws the following conclusions: If one kidney is diseased and the other sound, through ureteral catheterization phloridzin will demonstrate which of the two kidneys is in the best condition. Second, it is the most practical test for the general practitioner, without ureteral catheterization, at present at his command, being more accurate in its findings than the phthalein test and less complicated than the nitrogen test. Third, the delay of appearance of sugar in the urine following its administration will almost invariably indicate either a diseased condition of the kidney, or less frequently some abnormal condition of the system. Fourth, delayed appearance of sugar following the use of phloridzin, furnishes a marked indication of some diseased systemic condition and is a strong indication for farther investigation. This paper is an effort not only to repopularize the phloridzin test as far as we have found it available, but also to stimulate research along this

line and thus aid the finding of the ideal practical method.

10. Newer Therapeutics in Otology.—S. Moskowitz believes that vaccines should be used in every case of ear infection from furunculosis to mastoiditis as early as possible. If a case has been treated by a stock vaccine, and no change has been observed for the better, the autogenous should be used at once. All other modes of recognized aural treatment should be instituted, and kept up during the vaccine therapeutics. In very severe cases where there is no improvement and the disease is progressive, and it is not advisable to wait, the appropriate operation should be performed. Errors in vaccine therapy may occur from two sources: (1) Using the wrong vaccine, or poor and faulty smear taken for the production of the autogenous vaccine. (2) Using too little vaccine, and not persisting for a few injections, with such regularity as the case may need. In very severe cases the author has used daily injections until signs of improvement were manifest, and then every other day, continuing twice weekly until discharge of case. My results have been excellent, even in some very neglected cases, in which anatomical destruction was not too great.

Journal of the American Medical Association.

August 14, 1915.

1. The Pediatrician and the Section on Diseases of Children. L. T. Royster.
2. Starch Digestion in Children, with some Clinical Observations. H. H. Yerington and C. T. Wetmore.
3. Syphillis of the Stomach. A Clinical Study of Twenty-six Instances of Dyspepsia, Associated with Positive Wassermann-Noguchi Reactions. F. Smithies.
4. Specific Treatment of the Malignant Forms of Malaria. C. C. Bass.
5. The Relation of Animal to Human Sporotrichosis. Studies on American Sporotrichosis, III. K. F. Meyer.
6. The Recent Methods of Treating Diphtheria. F. C. Neff.
7. A Laboratory Method for the Diagnosis of Smallpox. J. N. Force and Helen L. Beckwith.
8. Focal Disease of the Brain. A Clinical Report of Eight Cases. C. R. Ball.
9. Chronic Tetany. Report of Case. J. P. Munroe.
10. Disturbances of the Acoustic Nerve in the Early Stages of Syphilis. G. H. Willcutt.
11. Syphilis of the Internal Ear (Hereditary). H. Hastings.
12. Auditory Neuritis G. P. Wintermute.
13. Myotonia Congenita. W. A. Jones.
14. Operation of Massachusetts' Laws for Hospital Observation in Cases of Alleged Mental Disease and Defect. H. R. Stedman.
15. An Operation for Congenital Equinovarus Deformity. Preliminary Report. F. R. Ober.

1. The Pediatrician.—By L. T. Royster. (See MEDICAL RECORD, June 26, 1915, page 1090.)

2. Starch Digestion in Children.—By H. H. Yerington and C. T. Wetmore. (See MEDICAL RECORD, July 3, 1915, page 38.)

3. Syphilis of the Stomach.—By F. Smithies. (See MEDICAL RECORD, July 3, 1915, page 41.)

4. Specific Treatment of Malignant Malaria.—By C. C. Bass. (See MEDICAL RECORD, July 3, 1915, page 41.)

5. Relation of Animal to Human Sporotrichosis.—K. F. Meyer notes that spontaneous sporotrichosis of domesticated animals, particularly horses, is very common in certain parts of the United States. Extensive bacteriological and serological experiments have proved the identity of the causative organisms in human and animal sporotrichosis. The pathogenicity for human beings was observed in an accidental laboratory infection. The geographical distribution of equine sporotrichosis, which is apparently closely connected with certain telluric and climatic conditions, covers, in two states, the same territories from which numerous cases of human infection have been reported in the last five years. In Pennsylvania, equine sporotrichosis—as so-called "epizeotic lymphangitis"—has been noted in as many as 150 cases annually. Only two human cases are on record in that state. A careful study of one case suggested at first a contact infection with a sporotrichortic horse, but this assumption could not be proved conclusively. The evidence collected does not support the theory that human sporotrichosis is very frequently transmitted from horse to man in the United States. The cases of Hyde and Davis, Sutton and others are discussed from this point of view, and compared with the cases reported by Gougerot, Carougeau, Lutz and Splendore, and Rouslacroix. The absence of sporotrichosis among veterinarians and farmers in Pennsylvania—where equine sporotrichosis is so exceedingly common, calling forth undoubtedly close contact with infectious material—demonstrates that sporotrichotic infections in man are established by this channel of contact in rare instances only.

14. Hospital Observation in Alleged Mental Disease.—H. R. Stedman concludes that hospital observation is a measure of proved value in doubtful cases of mental disease and defect in both criminals and noncriminals, and is growing in favor. It affords the opportunity for constant observation and ample time for thorough examination under the best conditions of trained hospital psychiatrists. It is of especial value in capital cases, in cases with concealed delusions and in the detection of maligners. It tends to make less frequent the plea of insanity as a defense for crime, and to lessen disrespect for expert medical opinion. In many noncriminal cases it saves persons from hasty and ill-considered commitment as insane. There appears to be every reason why the many States which are without this valuable provision should adopt it, particularly as it has been long in successful operation in some form in six States and in Germany, and has the endorsement of foremost jurists and alienists.

The Lancet.

August 7, 1915.

1. Some Recent Experiences in Vaccine Treatment. F. C. Madden.
2. Malignant Aortitis: Hypoplasia of the Aorta. H. D. Rolleston.
3. On a Case of Placenta Previa with Threatened Puerperal Eclampsia, Treated by Cesarean Section. J. B. Hellier.
4. Mechanical Treatment of Compound and Septic Fractures. R. McQueen.
5. Direct Hemolysis: A Test for Bacterial Toxins and for Estimation of Dosage in Vaccine Therapy. H. L. Smith. Clinical Notes of Cases Treated by Inoculation Suggested by Direct Hemolysis. By A. C. Brown.
6. The Relation of Ventricular Fibrillation to Clinical Chloroform Syncope. E. H. Embley.

2. Malignant Aortitis.—H. D. Rolleston reports the case of a man aged 34 years who was admitted to the hospital with fever gastric irritability, and vomiting. His illness dated from an attack of influenza one month before. He died nearly three months after admission to the hospital. The most probable diagnosis during life was subacute bacterial endocarditis; but the negative result of the blood culture, which, however, was only carried out once, the absence of splenic enlargement and of obvious infarctions, and to some extent the stationary condition of the cardiac signs, were recognized as militating against this view. The constant albuminuria was, perhaps, not given its proper value as evidence in favor of malignant endocarditis, and the spleen, though obviously enlarged at the necropsy, was never felt during life. An alternative diagnosis—latent carcinoma of the cardiac end of the stomach—was suggested by the association of gastric symptoms, grave secondary anemia, and fever, while the occurrence of thrombosis was quite compatible with this interpretation. Trousseau, who insisted on the association of thrombosis and gastric carcinoma, exemplified this in his last illness, and remarkable instances of multiple thrombosis in this disease have been described by Osler and McCrae. Pernicious anemia was excluded by the blood count, and especially by the presence of leucocytosis. The morbid lesion present in this case, which

appears to be analogous to malignant or subacute bacterial endocarditis, being situated in the arch of the aorta instead of on the endocardium, was not proved to be infective, as the only blood culture made was negative and no bacteria were seen in a smear from the pus found just outside the aortic lesion. Libman has shown that bacteria-free periods occur in subacute bacterial endocarditis; but as the blood culture was made on April 4, when the disease as shown by the temperature chart was active, it would hardly be justifiable to explain the failure to obtain a positive result by the hypothesis that this was an analogous bacteria-free period in a case of infective aortitis. Libman, however, points out that in cases of subacute bacterial endocarditis with high temperatures and with very well marked oscillations blood cultures are sometimes negative, although bacteria are present in enormous numbers in the vegetations in the heart; and presumably this might hold good in the analogous condition of infective aortitis. Although the view that the case was one of infective aortitis is attractive, it is safer to describe it as one of malignant aortitis.

6. Relation of Ventricular Fibrillation to Clinical Chloroform Syncope. — E. H. Embley concludes that syncope from cardiovascular inhibition in dogs occurs only in the period of induction. This is the period of incidence of clinical chloroform syncope. That of ventricular fibrillation in the cat may occur at any time in re-induction during a prolonged course of administration. Cardio-vascular syncope from chloroform in the dog is frequently recovered from by artificial respiration, either alone or in conjunction with heart massage. This coincides with the recoveries from syncope in clinical instances. In the author's experience established syncope from ventricular fibrillation in cats is not recovered from. If it is ever recovered from it must be very rare. The control of the cardiac rhythm in the dog is markedly vagal and approximates in this respect to that of the human being. In the cat, on the other hand, marked vagal control is not characteristic, and such control is readily inhibited. A heart under vagus control is not prone to ventricular fibrillation, hence, like that of the dog, the human heart should not be liable to ventricular fibrillation. Reflex syncope from cardiovascular inhibition in dogs under chloroform anesthesia occurs as readily as that in cats from ventricular fibrillation. Syncopal states occur clinically either reflexly or from overdose, in which the heart does not stop, but the rate becomes very slow. This resembles similar states occurring in the chloroformed dog which are promptly corrected by vagotomy. This statement appears to the author to show a considerable balance of probability in favor of cardiovascular inhibition as being the cause of clinical chloroform syncope. In view of this, one must regard the protest made by Levy against the exercise of care to prevent overdosage as unwarranted by the data and as a dangerous teaching.

British Medical Journal.

August 7, 1915.

1. Sidelights on the Practice of Medicine in the Past from Early English Literature. Major Greenwood.
2. The Principle of Anoci-Association Applied to Medical Practice. F. M. Rowland.
3. The Treatment of Pulmonary Tuberculosis by Nitrogen Compression. G. Lucas.
4. The Pathology and Treatment of Gunshot Wounds of the Small Intestine. O. Richards.
5. "Trench Back" Treated by Sodium Salicylate Ionization. J. D. Sandes.
6. Stromoxys, the Stable-fly. A. E. Shipley.

2. Anoci-association in Medical Practice. — F. M. Rowland believes that one may glean for one's everyday dealing with the treatment of illness some very useful truths from the theory of anoci-association as understood to mean the exclusion of all nocuous and harmful associations; and to this end the author pleads for the more systematic study and consideration of our patients' individual outlook upon life, not so much when in their normal health as when they are lying on a bed of sickness. At such times the subconscious mind is more in the ascendant, altered in its sensitiveness, and likely the more eaily to become the recipient of suggestions than in health, the mental attitude of a patient being so affected by an illness as to be altogether different from the mental attitude of the same person when in normal health. It is only by an experience, not otherwise obtainable than by years of intimate observation of the varying temperaments and idiosyncrasies of our patients, that one can judge even in the smallest degree of the lines of thought they will adopt at any given juncture, and by our knowledge so gained that one shall be enabled to some extent possibly to assist in influencing the course of their disease by the exclusion of all adverse subconscious tendencies, and by the furtherance of beneficial influences operating towards a cure.

4. Gunshot Wounds of Small Intestine.—O. Richards points out that death in uncomplicated cases of gunshot wounds of the small intestine is not usually due to escape of feces and general peritonitis, but to a progressive intestinal paralysis and distention spreading upwards from the injured coil. 2. Operation in such a case should include the resection of the injured portion together with as much bowel above it as would otherwise remain in a condition of paralysis. 3. If this be done sufficiently early there is a prospect of saving a fair proportion of cases. These conclusions are based on a small number of cases, those of which notes are given. Wider experience or the experience of other surgeons may perhaps modify or contradict them; meanwhile their practical importance at this time justifies their publication.

Berliner klinische Wochenschrift.

July 5, 1915.

Progress in Electrotherapy in 1914.—Tobias sums up the advances in this department of therapeutics under d'Arsonvalisation, diathermy and Bergonisation. In regard to the former the Germans have always been skeptical of the results claimed for it. Von Noorden calls its use in arteriosclerosis a mere French fad. However, Bühler, who has used it in 266 cases of this affection, sees unquestionable and permanent benefit. The local high frequency uses, notably in urology, are naturally better founded, as they represent a type of electrosurgery. In this connection the work of Beer and that of Bugbee, both of New York, is quoted. The former's activities in the field of vesical tumors are well known, while Bugbee gets good results in prostatic obstruction. Diathermy is a rational application of high frequency, but it has been overdriven and full-fledged textbooks were issued before the method had been thoroughly tested. Many Germans have taken up diathermy with enthusiasm. It seems to have no special indications and it represents no new therapeutic principle, since thus far it only stands for thermotherapy, like the hot air chest. One should be very skeptical concerning its deep action, although it is better applicable to certain regions like the internal ear than ordinary heating apparatus. General diathermy may also be superior to simple heat in low nutrition, in convalescence, etc., especially when there are unresolved collections and circulatory stagnation. The author is no less critical of Bergonisation, which is largely an exploitation of apparatus for universal usage in advance of thorough

scientific testing. It appears, like d'Arsonvalisation, to have aroused the antagonism of von Noorden (who on his part has pursued an identical course with radium). The author claims that Bergonisation is not used by itself for reducing flesh and that when it has been used alone not much loss is recorded. The subjects diet as usual. It is justly claimed that diet and active exercise suffice amply for the treatment of corpulence. Naturally resources like the preceding may give good results in special conditions and special subjects. They should be given a trial in supposedly incurable diseases and in patients who do not respond to other measures—for example in spondylosis rhizomelique.

Relation of Dressings to Wound Infection.—Gelinsky refers to the employment of dressings which are calculated especially to prevent the infection of wounds. He states that primary infection in warfare is insignificant, the danger lying in secondary infection. This peril increases rapidly with the size of the wound, the amount of shredding, the duration between injury and the first dressing. The latter should naturally be practiced at the earliest possible moment. In regard to removal of tissues which would become infected, this could involve mutilations which dare not be practiced. The greater the amount of tissue removed the less the chances of infection, but we cannot amputate limbs to save life until life is actually threatened. About all we can do is to remove all that is to the naked eye distinctly foreign material. Iodine, etc., can only prevent spread at the wound margin. The germs in the wound itself must be left wholly to the animal defences. With wounds of small opening we can do this with confidence, even when there is crushing of tissue. In these cases iodine destroys some of the germs and an occlusive dressing prevents new infection. Otherwise viewed our combined resources are as follows: asepsis throughout; rest (secured by posture, splinting, etc.); antisepsis as an inhibitant of germ proliferation (in powder form); drainage, after proper incision, with gauze and wet dressings allowed to evaporate; hyperemia, in any obtainable manner. Early, intensive treatment should imply a minimum of infection, but this is an unknown X, the capacity to resist infection.

Münchener medizinische Wochenschrift.

June 29, 1915.

Open Puncture of the Pleura.—Schmidt understands by open puncture the use of a simple trocar for evacuating a pleuritic exudate. There is no application of the aspiration principle, and no obstacle to the free entrance of air. He regards this method as the only rational one. In regard to technique only enough air should be admitted to offset the disturbance of pressure relations consequent upon removal of a certain amount of fluid. The air should not be forced in under pressure with the aim of forcing the fluid out. This may be a good principle to employ for cleaning beer barrels but is at least unnecessary in human pleurisy. Puncture should be made at the most dependent point as the patient lies on his side crosswise between two beds. The introduction of air does much to prevent the severe consequences of pleurogenous reflexes, and further serves to prevent adhesions and thickening of the visceral pleura. The possible consequences of irritation or puncture of the latter by an aspirating needle are summed up by the author as cough, syncope, edema of the lung and albuminous expectoration. The admission of ordinary unfiltered room air will have no bad effects in the pleura. The author not only eliminates all aspiration and filtration apparatus but sees no need for manometers. As long as air enters the pleura spontaneously there will be no disturbance of pressure equilibrium. If the exudate is pent up only enough will escape to neutralize the pressure in the pleura. Air then enters with inspiration and a little fluid escapes at each expiration. There can be no increase of pleural tension unless the operator suddenly withdraws the trocar at the acme of expiration. If an exudate is under negative pressure encapsulation must have occurred; puncture cannot cause collapse of the pleura for just enough air enters to raise the pressure to 0. Exudate flows through the puncture like water from a bottle. In hemothorax there is no contraindication of puncture. The same technique is recommended for diagnostic puncture. The author, who is an internist and not a surgeon, has been cautious in recommending his method as a routine measure, although it is within the reach of every practitioner. The remote results of a number of men have yet to be worked out.

Treatment of Large Wound Surfaces.—Schaedel speaks of war as causing a "traumatic epidemic." As in all epidemics we have a chance to use competitive procedures, compare them and choose the better ones. The one great aim is to make it possible for the injured to return to the war game at the earliest possible moment, or in other words conserve and restore his efficiency. From this viewpoint there are two classes of wounds, viz., those of the bones and joints and those of the soft parts. In the latter healing of the wound means return of efficiency, but not so in the former, for after healing we see stiff joints, etc.; so that we may speak of simple and complicated injuries. In large simple wounds it is seldom necessary to resort to skingrafting with its delays. The ideal dressing is that which takes care of the secretions without disturbing the young epithelium. A wall is built up about the granulating surface with adhesive plaster, and this protects the latter from friction and other insults. All fracture dressings must have the aim of enabling the patient to move about freely (but if there are simple wounds of the calf these do better under rest in bed). Plaster dressings are used freely in fractures, both for splinting and protection. Fenestration is necessary to give lightness and accessibility. Various artifices are useful to prevent soiling of the fixed dressings by wound discharges, such as the use of mineral fats. Bone splinters are never forcibly removed, for these often aid in the healing process. Tube drainage is used for fistulæ with balsam of Peru to hasten closing. Fever is an indication for slitting up to locate a pus pocket. Nothing improves the general condition so much as getting about on the legs.

Münchener medizinische Wochenschrift.

July 6, 1915.

Cadaveric Rigidity and the Physiological Processes in Muscle.—Wacker sums up his serially published study as follows: After cessation of the circulation there sets in a rapid disintegration of glycogen in the muscles which is dependent on the temperature. If the body is kept warm after death it sets in within a few hours, while application of cold can arrest it almost completely. On the rapidity of the process are dependent the point at which cadaveric rigidity begins and the duration of the process. The degree of rigidity depends on the state of the muscles at the moment of death. Certain metabolic disturbances, as in cachexia, antagonize the rigidity because the muscles no longer contain glycogen. As the latter disappears muscle alkalinity is diminished, while lactic acid increases and neutralization occurs. The quantitative relations and graphic representation of the processes indicate that lactic acid is derived from glycogen.

Theory of Graves's Disease.—Oswald, as a result of studies by recent authors, comes to the following conclusions: The old champions of the neurogenic theory

have received new support. Claude Bernard produced exophthalmus by stimulating the cervical sympathetic; Filehne got the same result by stimulation of the medulla, while Charcoi showed a relationship between Graves's disease and the psycho and central nervous system. The alimentary factor is the most obvious one, but next in order comes the neurogenic. Naturally the new doctrines of vagotonus and sympathicotonus have assisted in the rehabilitation of the neurogenic theory. We know that the other endocrinic glands are also under the influence of the nervous system, but do not yet know their relations to Graves's disease. The suprarenals secrete a sympathicotonic substance, but it is doubtful whether they can help in the causation of Graves's disease because we often find a hypoplastic state of the adrenals in the latter. But the reciprocal relations of the endocrinic glands are too little understood to enable us to speak offhand in the matter. Equally obscure are the relations between thyroid and thymus.

A Remarkable Case—Activation of an "Unsuccessful" Vaccination by an Injection of Diphtheritic Antitoxin.—Eggebrecht reports a case which occurred in a "plague hospital" or "military pesthouse," and states that he has had no opportunity to look up literature. The subject of the paper was a soldier originally qualified for active service at the front, but who as a result of military hardships had been assigned to laundry work. He had twice proved refractory to vaccination, and his subsequent typhoid and cholera vaccinations had called forth no suspicion of local or general reaction. While doing laundry work in February last he developed diphtheria and received 1000 units of antitoxin. His last vaccination against smallpox dated from October. Four days after receiving antitoxin the scratches of his most recent smallpox vaccination showed activity, reddened, and formed papules. Pustules did not develop and the papules underwent involution. Vague as were the phenomena they appeared in every way to represent a belated abortive vaccination, four months delayed. There is every reason to believe that the virus had slumbered in the scratch wounds on the forearm. The latter seem never to have undegone final cicatrization. To explain the action of diphtheria serum in rousing this latency the author invokes the aid of expert immunologists, and doubtless some of the latter will soon be heard from.

Deutsche medizinische Wochenschrift.

July 1, 1915.

Conception of Child Neuropathy and Its Limitations.—Stier states that the study of psychic-neurotic disorders of childhood is still young. The pediatrist is interested in the special subject of spasmophilia while the neurologist leans chiefly towards psychopathology. Disease having a somatic basis can be recognized readily even in very young children, but in psychic-neurotic disorders recognition is not so simple a matter because normal development in this province has not yet occurred. A nursling born without a brain behaves in the same manner as a normal newly born. Not until it is time for it to make grasping efforts, etc., is the difference perceptible. The author refers specifically to Hübner's celebrated brainless newly born which during its short period of life behaved like a normal nursling. At birth one nervous mechanism, the reflex, is ready for use; further, perhaps, spontaneous instinctive acts which have to do with self-preservation. Other functions have to wait upon structural development of ganglion cells, etc. This follows along ontogenetic and to a less extent along phylogenetic lines. Confusing as the picture is we are able to isolate three classes of phenomena from the developmental standpoint. First, neuropathic disorders, *i.e.* disturbances of the phylogenetically oldest function, the only one in readiness for activity at birth,—simple reflex mechanism. Second, psychopathic disorders, or disturbances of the phylogenetically younger functions—the impulse and instinct life common to all of the species. Third, intellectual disorders—disturbances of the phylogenetically youngest functions. These disorders have a stratification dependent on the degree of development. Reflex activity may be increased or lessened in theory but in practice it is overexcitability which is at the bottom of most of the reflex disorders of infancy and childhood. This overexcitability causes not only a morbid intensity of the reflexes but irradiation to more remote localities. Bright lights, loud noises, mechanical shocks, contact, in addition to local reflexes—as closing the eyes—cause the nervous child to start abruptly, and even its entire musculature may be involved. Motor restlessness is doubtless also due to reflex overexcitability. The normal infant smiles and is responsive when it is fed and tended, while the neuropathic child under the same circumstances becomes restless, moves its head, hands and limbs, rests on one foot, takes a foot in its hands, "weaves" to and fro, snatches its bottle and may then drop it. It tires easily and concentrates with difficulty. Sleep disorders are a third consequence of increased reflex excitability. The child has hard work to fall asleep and is easily aroused. It tosses about in its endeavor to find a comfortable position. Somniloquy, somnambulism and pavor nocturnus, however, indicate something more serious than mere overexcitability. Spasmophilia or the tendency to convulsions is closely related to reflex overexcitability, and the latter should be present to render the former possible. Special stimuli and mechanisms, however, characterize spasmophilia. Reflex overexcitability is manifested in the vasomotor as well as the cerebrospinal system, so that the neuropathic child blushes and pales, is sensitive to heat and cold, perspires freely, suffers from polyuria and anomalies due to gastric oversecretion, has palpitation, tachycardia, and cardiac arrhythmia. Other functional disturbances due to exalted reflex excitability are enuresis nocturna and erections. A secondary consequence of overexcitability is seen in the formation of disinclinations which resemble those of older individuals but are not natural to very young children. Certain odors may cause nausea. Oversensitiveness to noises may react seriously on mental development. The child is never sensitive to its own noises. Certain movements, as seesawing, rocking, traveling on steam cars, etc., cause vertigo. Sensitiveness of the skin toward irritants is pronounced. Tight clothing causes itching, mere contact of the fingers with plush garments or the sound of sawing through a nail will cause intense creeping of the flesh. The author does not pursue his subject beyond disordered reflexes.

Diplococcus Septicemia and Proliferative Activity of the Hematopoietic Organs.—Giovanni Ollino reports a case of acute leucemia in a man aged twenty-eight years in which the diagnosis was established by blood examination and confirmed at autopsy. There was isolated from the blood an encapsulated diplococcus whose virulence was demonstrated by animal inoculation. The author does not attribute any etiological relationship between this microorganism and acute leucemia. He notes however that various organisms have been isolated from the blood in acute myeloid leucemia: by Sternberg a streptococcus; by Woswinkel and Duzelt, a microorganism classified as the *Bacillus paratyphus B;* and by Barreschen, a staphylococcus.—*Annali dell' Istituto Maragliano.*

Insurance Medicine.

Total Abstinence in Relation to Insurance.—In the year 1840 Robert Warner, a member of the Society of Friends and a total abstainer from intoxicating liquors, applied to an English life insurance company for a policy. The directors made a condition for granting the policy that he pay 10 per cent. more than the ordinary premium because, as they viewed his case, he was "thin and watery and mentally cranked in that he repudiated the good things of God as found in alcoholic drinks." Warner refused to accept the dictum of the company that made total abstinence a handicap, and founded what is known as the United Kingdom Temperance and General Provident Institution to insure the lives of total abstainers. In 1848 the company extended its field so as to cover very moderate drinkers, who were carried in a separate class and very full statistics have been kept of the two departments.

Robert Mackenzie Moore, actuary of the company, read a paper before the Institute of Actuaries on November 30, 1903, which is summarized by Joel G. Van Cise, actuary of the Equitable Life Assurance Society of the United States, in an address before the Actuarial Society of America.

The figures given in the report, he says, include the entire experience of the office to the end of the year 1901, thus covering over sixty years in the case of abstainers and over fifty years in the case of non-abstainers. There are two important points to be noted: (1) That there has been no marked difference in the number of policies in force in the two sections. (2) The average amount of the policies in each section has been about the same, so that the comparison of the experience would seem to be as fair a one as could possibly be made. The following are the figures: Male lives, non-abstainers—total number of years of exposure to risk, all ages, 466,943; expected deaths by our table, 8,911; actual deaths, 8,947; per cent. of actual to expected, 100.4.

Male lives, abstainers—total number of years of exposure to risk, 309,010; expected deaths by our table, 6,899; actual deaths, 5,124; percentage of actual to expected, 74.3.

An instructive comparison in the report is that of mortality at various ages, as given below. Ages 20-30. Number of deaths total abstainers, 4,221; moderate drinkers, 4,677; excess deaths among moderate drinkers, 465.11 per cent. 30-40. Total abstainers, 4,201; moderate drinkers, 7,041; excess deaths among moderate drinkers, 2,840, or 68 per cent. 40-50. Total abstainers, 6,246; moderate drinkers, 10,861; excess deaths among moderate drinkers, 4,615, or 74 per cent. 50-60. Total abstainers, 13,056; moderate drinkers, 18,521; excess deaths among moderate drinkers, 5,468, or 42 per cent. 60-70. Total abstainers, 29,078; moderate drinkers, 34,568; excess deaths among moderate drinkers, 5,409, or 19 per cent.—Samuel Oelson in the *Outlook*.

The Increasing Need of Life Insurance for Women.—The problem of the insurance of women has been ever one of interest and difficulty due to the lack of knowledge we have been able to bring to bear upon its solution. At a very early period woman as an insurable subject was considered most desirable; at another period—the companies having insured her at a lower premium rate than men because of her supposed superior longevity—we find her attractiveness quite dispelled by the unfavorable mortality experienced. At still another and later period we find her again sought by life insurance companies, until at the present time practically all barriers to her acceptance have been removed. Mr. Herbert C. Cox, president of the Canada Life Assurance Company of Toronto, Ont., thus gives the history of women as risks in the insurance world. In 1742 Kersseboom, in his investigations into the mortality of the Dutch Annuitants, made special note of the greater longevity among females, and his data confirmed the fact. Up until 1843, on account of this increased longevity, the insurance companies offered lower rates to women, which proved to be a mistake, for in that year the tabulated experience of 17 British offices demonstrated that this longevity failed to assert itself in the case of insured women.

In 1861 the compilation of the well-known Combined Experience Table of Mortality led to the conclusion that the greatest reliance could be placed upon a table which was based upon observation of male lives exclusively, as the mortality among insured females had been clearly shown to be higher than among insured males. The recent investigation made by the Actuarial Society of America further confirms this finding, although the superior longevity of women in general is still unquestioned. This wide divergence in experience may be due to the fact that only women who presented themselves were insured, the companies making no effort to seek women as risks, or to force insurance upon them, as is done with men. Probably less than 7 per cent of insurance risks are upon the lives of women. This surely cannot be considered a fair proportion, having in mind how very extensively woman has been thrust into the professional and industrial occupations by our modern civilization. In all of the professions, in finance, in commerce, in manufacture, and even now in war, the twentieth century woman is bearing her full share in the creation and conservation of the wealth of nations, and in the support of those for whom circumstance have rendered her responsible. Every basic argument in support of insurance for men serves also to impress the necessity and desirability for similar protection for women producers. In addition and of equal importance is the economic value to the State of having insured those women who have established for themselves a monetary value through becoming the support of others who may eventually, but for the aid of life insurance, become a charge upon the State. Entitled to consideration and insurance benefits are numberless women of the home, whose lives represent a value which cannot be expressed in terms of money, but who, nevertheless, present an indisputable insurable interest.

It would seem, therefore, that the life insurance companies have a duty to perform in respect to the women—all women—who have assumed their responsibilities to the State and society in whatever form it may be; there should be set in motion whatever of machinery we may have or be able to devise, having always in mind that it is laid upon them by their relation to the State to make, even at the cost of some individual discomfort, ample or possible provision for the perpetuation of their earning capacity in its application to others.—The Association of Life Insurance Presidents, New York, December, 1914.

Book Reviews.

THE OPERATIVE TREATMENT OF FRACTURES. By Sir W. ARBUTHNOT LANE, Bart., M.S., F.R.C.S. Senior Surgeon to Guy's Hospital and Emeritus Surgeon to the Hospital for Sick Children, Great Ormond street. Second Edition. 184 pages, with 226 illustrations. Price, $4.00 net. London: The Medical Publishing Company, Limited. Chicago: Medical Book Co. 1914.

THE second edition of Lane's work differs but little from the first, for he has merely added such radiograms as he felt would be of service in demonstrating more clearly the best mode of reduction of fragments and their retention in position. Lane's views as to the operative treatment of fractures by screws and plates under varying conditions are given in detail, and the numerous illustrations make each important point clear.

While the popularity of the Lane plate method of treating fractures of the long bones reached its zenith and began to wane in this country at about the time when the inlay bone-graft technique was being developed and while this latter has now become the method of choice with perhaps the majority of progressive American surgeons, and particularly in the treatment of ununited fractures, Lane says: "In my experience it is very rarely necessary to employ bone grafts in the operative treatment of ununited fractures, since the metal bone plate is in the vast majority of cases the best and most efficient means of establishing union." Lane's own results in the use of the plate have been very much better than those of any other operator; hence he is justified in retaining an enthusiasm for the method that cannot be shared by others. There can be no doubt that this book is written in accord with his honest convictions and it is thus one of great interest to all surgeons who may be called upon for the operative treatment of fractures.

THE NEW STANDARD FORMULARY. Comprising in Part I all Preparations official or included in the Pharmacopœias, Dispensatories, or Formularies of the World, together with a vast collection from other sources; the parts following embracing Domestic and Veterinary Remedies, Proprietary and Synthetic Remedies, Perfumes and Toilet Articles, Soda and other Beverages, and Domestic Utilities. By A. EMIL HESS, Ph.G. and ALBERT E. EBERT, Ph.M., Ph.D. Chicago: C. P. Engelhard & Company, 1914.

THE scope of this volume is briefly set forth on the title page, of which the above is a transcript. It comprises 1,256 pages, the subjects being arranged alphabetically. The divisions of this work are as follows: Part I. Pharmaceutical Preparations. Part II. Domestic and Veterinary Remedies. Part III. Synthetic and Proprietary Preparations. Part IV. Perfumes and Toilet Articles. Part V. Soda Fountain Beverages. Part VI. Domestic Utilities. With encyclopedic comprehensiveness there is presented a survey of everything in the drug and pharmaceutical line from purgative powders to putz pomades. The book is primarily for the use of the apothecary but the physician will find in it a good deal to satisfy his own wants. There can be no question that this work supplies a distinct want in the medical library. It is a veritable storehouse of prescriptions and special formulæ.

THE EXTRA PHARMACOPOEIA of Martindale and Westcott. Revised by W. HARRISON MARTINDALE, Ph.D., F.C.S., and W. WYNN WESTCOTT, M.B., Lond., D.P.H. Sixteenth Edition. In two volumes. Price, Vol. I, 14s.; Vol. II, 7s. London: H. K. Lewis, 1915.

THE authors state in their preface that the notable progress in the sciences with which the Extra Pharmacopoeia is concerned . . . renders it imperative that the work should be divided into two volumes as in the case of the last edition. A large portion of the book has been rewritten but without increasing its size, and experimental research has gone hand in hand with the study of the scientific literature.

Volume I includes everything the physician and pharmacist are likely to require for immediate reference on therapeutic matters. This volume also contains the chapter on vaccines, the section on organotherapy, a supplementary list of drugs, a list of the most potent antiseptics, and the present legal conditions governing the sale of poisons in Great Britain and Ireland. At the end of the volume is a general posological index referring to the two volumes and an extended therapeutic index of diseases and symptoms.

Volume II contains analytical addenda to the materia medica described in the first volume; a list of proprietary medicines with their approximate compositions; a list of mineral waters with their chemical constituents and medicinal uses; analytical memoranda for the examination of urine, blood, and feces; the antiseptic power of numerous chemicals and disinfectant preparations for surgeons' use; methods of water and milk analysis; and extensive bacteriological and clinical notes.

The present edition of the Extra Phamacopoeia has been brought into accord with the new British Pharmacopoeia and a table is given of the more important changes which have been made. The scope and amount of information contained in these small volumes is truly remarkable: they will prove helpful both to physicians and pharmacists, and may be recommended without reserve.

QUAIN'S ELEMENTS OF ANATOMY. Eleventh Edition. Editors, Sir EDWARD ALBERT SCHÄFER, LL.D., Sc.D., M.D., F.R.S., Professor of Physiology and Histology in the University of Edinburgh; JOHNSON SYMINGTON, M.D., F.R.S., Professor of Anatomy in the Queen's University of Belfast; and THOMAS HASTIE BRYCE, M.A., M.D., Professor of Anatomy in the University of Glasgow. In four volumes. Vol IV, Part I. Osteology and Arthrology, by T. H. BRYCE. Pages 329, with 247 text figures and 28 colored plates. Price, $3.75 net. London, New York, Bombay, Calcutta, and Madras: Longmans, Green and Co., 1915.

THE same careful and painstaking attention to detail and accuracy of statement that has marked all previous editions of Quain's anatomy is quickly apparent even upon a cursory examination of this volume. The text has been thoroughly revised, new sections have been added on the development of the skeleton, and a bibliographical list covering the more recent literature on osteology has been added. The 28 full page colored plates accompanying the section on arthrology form a valuable aid to the interpretation of the text. The Basle nomenclature has been in great part adopted and, in short, the division of anatomy embraced in this volume has been most thoroughly covered.

THE GOLD-HEADED CANE. By WILLIAM MACMICHAEL, M.D. With an Introduction by Sir WILLIAM OSLER, M.D., F.R.S., and a Preface by FRANCIS R. PACKARD, M. D. Price $3.00 net. New York: Paul B. Hoeber, 1915.

THE early years of the nineteenth century saw the publication of a numerous family of books of this type. Whimsical, ingenious, often amusing and as often dull, most of them are now known only to collectors, whose shelves may hold "Chrysal, or the Adventures of a Guinea," the "Memoirs of an Old Wig," "The Interesting Adventures of a Hackney Coach," "The Recollections of an Old Umbrella," and others of like spirit. The best of the lot, if successive editions be a test of value, was "The Gold-Headed Cane," first published, by John Murray, in 1827. A second edition appeared in 1828, and a third, by Longmans, in 1884. The present reprint is the fourth.

The story of the cane, owned successively by Drs. Radcliffe, Mead, Askew, Pitcairn, and Baillie, and covering the period from 1689 to 1825, is interesting alike to the lay and to the medical reader. The reprint of a literary and medical classic such as this, requires no apology. The book is attractively printed and bound, with a slip-case.

UEBER DIE VERSORGUNG UNSERER VERWUNDETEN IM FELDE. Vortrag gehalten am 11 April 1915 im Saale des Abgeordnetenhauses von Dr. W. KÖRTE, Generalarzt, berathender Chirurg des III Reservekorps. Preis 1 Mark. Berlin: A. Hirschwald, 1915.

THE Third Reserve Corps was actively engaged on the Western frontier from August 17 to November 30, and was thereupon transferred to the Eastern frontier where it participated in heavy fighting for several weeks. Since that period only minor engagements have been fought. The fierceness of the hand-to-hand warfare was shown by the great number of wounds made by sabres and bayonets. The organization of the medical department, the routine management of the various injuries and their sequelæ, have of course been thoroughly covered by the medical press and present nothing new. The author cannot speak too highly of the bravery and fortitude of the plain soldier. The horror of the warfare he will not attempt to depict, as it is best left untold. Not a word is said against the enemy, and nothing in his praise, for the writer deals as his title denotes solely with the German wounded of a single army corps.

Society Reports.

AMERICAN GYNECOLOGICAL SOCIETY.

Fortieth Annual Meeting, Held at White Sulphur Springs, West Virginia, May 18, 19, and 20, 1915.

THE PRESIDENT, DR. THOMAS J. WATKINS OF CHICAGO, IN THE CHAIR.

The Present Status of Ovarian Transplantation. — Dr. FRANKLIN H. MARTIN of Chicago drew the following conclusions, based on his own experience and on the literature of the subject: (1) Subcutaneous transplantation of ovarian tissue did not increase the risk of operation. (2) In the majority of patients the graft would persist for a time. In one series it was still present, at twenty-seven months, eighteen months, and in three others more than a year. (3) In some patients it appeared to functionate as shown by the apparent development of Graafian follicles, by variation in size and tenderness, and, when the uterus remained, by menstruation. (4) The presence of one ovary in the pelvis did not necessarily interfere with the success of the graft. (5) Those patients in whom ovarian tissue had been grafted seemed to have less discomfort from the premature menopause.

What Is the Fate of the Ovaries Left "in Situ" after Hysterectomy?—Dr. HIRAM N. VINEBERG of New York City read this paper, of which the following were the conclusions: (1) There was considerable uncertainty as to which tissue in the ovary was responsible for the production of the internal secretion. (2) While it was established that the follicles went through the various stages of development in the conserved ovary or ovaries after the uterus had been removed, it was not at all certain that the function of the internal secretion continued uninfluenced by the great changes in the blood supply and by the traumatism to which the pelvic sympathetic nerves were subjected as a consequence of the operation. (3) It was still a disputed point as to what degree the climacteric syndrome was due to the removal of the ovaries, and to what degree of injury to the pelvic nerves incident to the operation. (4) Clinically, it had been found that the freedom from the climacteric syndrome in hysterectomized women, in whom the ovaries had been conserved, was only relative to that which obtained in the same class of women in whom the ovaries had been removed. A generous estimate would be 20 per cent. in favor of the former. (5) To obtain the benefits claimed by the advocates of conservation, the ovaries should be retained at all ages and not limited to those under forty years, as was done by most of them, inasmuch as it had been shown that of women who suffered most severely from the artificial menopause, 46 per cent. were only forty-five and over. (6) Subsequent disease of the conserved ovary, such as cystic degeneration, malignant growth, inflammatory processes, leading to adhesions, and pain calling for a second operation, did occur in some cases, the number no doubt being much larger than would be inferred from the records found in the literature. (7) In view of the foregoing conclusions, he was of the opinion that the doubtful clinical advantages accruing from retaining the ovaries in hysterectomy were more than counterbalanced by the risk to which the patient was subjected from subsequent disease and adhesions of the conserved ovaries. He would, therefore, not retain the ovaries in any case of hysterectomy unless he could leave enough of the lower segment of the uterus with its endometrium to insure the function of menstruation; for in his experience the knowledge imparted to the woman that her ovaries had not been removed had but little significance or moral effect when she learned that she would no longer menstruate.

Dr. FRANK F. SIMPSON of Pittsburgh stated that the first instance of transplanted ovarian tissue was one that encouraged them in this line of work. The patient, a young woman of considerable importance in the community, in the thirties, had a perforated appendix, with drainage for general peritonitis. The appendix was removed. Later there were adhesions about both adnexæ, which were treated. Six operations were done by leading general surgeons of New York. The young woman was a confirmed invalid. She suffered intensely at the menstrual periods. She, her father and mother insisted upon immediate removal of the uterus and adnexæ. He could not consent to do that for a period of almost a year. Every effort he was capable of was made to relieve the suffering by local and other measures. At the end of that time she suffered as much as she did at the beginning. With the full understanding of the parents and the young woman that this work was in the experimental stage, he consented to remove the pelvic structures. He did not transplant the ovary into the abdominal cavity, thinking it would cause serious trouble, and that disintegration of the ovarian tissue or infection might readily cause serious damage requiring a second abdominal operation. So it occurred to him to transplant it beneath the skin. He used the adnexæ, transplanted about one-half of the ovary; it lived, and to-day was quite the size it was when transplanted. On a number of occasions he had felt the ovary and, he believed, the Graafian follicles. In that young woman the functional result was good. Instead of being a confirmed invalid and lying in bed, she was about, was vigorous, and practically not harmed at all by the disagreeable phenomena of the precipitated menopause.

Dr. JOHN O. POLAK of Brooklyn had four unreported cases of transplantation of the ovary. In three of them the entire ovary was transplanted in a pocket in the pre-vesical space. Two of those had caused no trouble so far as the ovarian graft was concerned. This graft seemed to have had no effect on the symptoms of the menopause, that is, the woman suffering from convulsions and the other nervous phenomena. A third had become cystic, and he had seen that woman recently. She had a cyst in that locality about the size of a two months pregnancy. She was the only woman of those three who had had relief from the symptoms of the menopause. His fourth case was not an implantation of the whole ovary, but a graft of the ovary into the cornu of the uterus at the point of excision of the tubes. This patient menstruated for nine months, and then menstruation ceased. She then developed all the symptoms of the post-climacteric with considerable severity and gradually those had passed away.

Dr. J. WESLEY BOVEE of Washington, D. C., said that the ovary floated freely in the peritoneal cavity, and we knew it was the history of an ovary that became encased by adhesions, and not necessarily by marked infection, that it began to undergo sclerocystic degeneration. When we transplanted those ovaries we covered them entirely with tissue, and what was to his mind a very reasonable result was they would undergo degeneration, and he did not believe himself that the results were good or would be good so long as that plan was followed. When they resorted to transplantation of ovarian tissue, it must be done in such a way as to give freedom to such tissue.

Dr. HIRAM N. VINEBERG of New York City said he had had two cases of autotransplantation of the ovary, in which he took a small wedge-shaped piece of the ovary and inserted it into the lower abdominal wound, leaving it in between the fat and the skin. In one of those cases the operation was done nine months ago, and in the other about six months ago. There had been absolutely no difference in the healing of the wound. So far as one could tell from frequent examinations since then, one would not know that transplantation had been done.

Dr. JOHN J. CLARK of Philadelphia said there was no organ that had such a shifting circulation as that of the ovary and no organ whose circulation was so rich. In the little transplantation work he had done personally, he had endeavored to expose the cortex, to lay open the ovary, pulled it open as one would a kidney, and allowed the vascular portion of the ovary to come into direct contact with the peritoneum which he had utilized, and not the subcuticular tissue as Dr. Simpson had done, and thus far his experience had not been particularly satisfactory.

Dr. HERMAN J. BOLDT of New York City said those who had had a large experience with conservative surgery of the adnexa must have come to the conclusion which those who had read the papers had come to and the others who had spoken, and yet in view of the fact that there were undoubted instances where the symptoms of the menopause were at least ameliorated if a seemingly normal gland was conserved either by ordinary conservatism or by transplantation, he personally felt he wanted to continue that line of work. On the other hand, he could only say in those instances where conservatism had been practised, he had had the same disagreeable features to contend with that others had had. He recalled two instances where it became necessary for him to reopen the abdomen and to

remove an ovarian cyst from the ovary which had been retained, and he could not recall any instance where the removal of cysts had been more difficult than in those two cases. However, as he had said, there were instances where the symptoms of the menopause were at least ameliorated and where they were entirely absent.

Dr. J. Riddle Goffe of New York City said that about twelve years ago he made his first adventure into this field of work. It was on a young woman whose tubes were absolutely destroyed by disease. She came from Buffalo and she was anxious to have children. Her husband was equally anxious that she should have children. With this idea in mind of future offspring, he removed both tubes and one ovary; then he slit open widely the whole fundus of the uterus, being careful to preserve the mucosa of the salpinx in his obliterating operation, and to retain as far as possible the lymphatics and the arterial nutrition of the ovary. Without splitting the ovary, he turned it right around and hung the ovary free in the uterine cavity. He kept track of the patient for about six months. She had a slight discharge of blood at the regular time of menstruation once; then she escaped from his observation and he had not been able by correspondence in any way to get any further information in regard to the case.

Dr. Joseph Brettauer of New York City thought each case for ovarian transplantation ought to be individualized. To some women of a nervous temperament or who were neurasthenic the removal of the ovaries was a more serious matter than it was in other women who were not so constituted physically, and he thought it was very essential to individualize the cases and in this way they might come to some definite conclusion.

Dr. Willis E. Ford of Utica, N. Y., said he was temperamentally rather pessimistic about leaving parts of ovaries. His experience had rather prejudiced him against it.

Dr. Philander A. Harris of Paterson, N. J., said it had been his rule in removing the uterus to leave an ovary or both ovaries, if possible. In short, he left all the tissues that were healthy. That might be right, or it might be wrong. He was rather encouraged when he heard Dr. Goffe speak of having placed a piece of ovary in the uterus, but the question arose in his mind whether, if the woman became pregnant, it would not cause a rupture of the uterus. He thought he would worry over that.

Dr. Boldt would like to know if any member knew of any cases where, after an ovary had been left and the oviducts removed, the patients had subsequently become pregnant? That question had been raised a number of times.

Dr. Bovee stated there were plenty of them on record.

Dr. Boldt said he had not seen such a case himself.

Nitrous Oxide in Labor.—Dr. N. Sproat Heaney of Chicago said that during the last ten years Dr. J. Clarence Webster at the Presbyterian Hospital had been largely substituting nitrous oxide gas and oxygen for ether in obstetrical work. Versions, forceps, cesarean sections, and various other obstetrical operations were performed under this anesthetic when it seemed better suited to the condition of the patient than ether. He also used it early for the conduct of normal labor in the second stage, allowing the patient a light degree of anesthesia during pains, with a return to the normal state between pains. Lynch in August, 1913, began to use nitrous oxide gas and oxygen in labor and subsequently the speaker began independently to use it. With a proper machine and a nasal inhaler, nitrous oxide might be given to the extent that the patient did not experience pain during labor, and yet maintain consciousness and if needs be she could follow the directions of the attending physician. If oxygen was administered at the same time this stage of analgesia was more easily maintained and the headaches sometimes complained of after pure nitrous oxide were much more infrequent. To insure absolute painlessness the gas might be given to the surgical degree during the last few pains, or if, as infrequently happened, the birth began to advance too rapidly, ether might be mixed with the gas or substituted for it. The amount of gas necessary for the conduct of a case varied greatly with the type of machine used. The cost of the gas might be materially lessened in hospitals by the use of the large cylinders. For outside work, an efficient portable apparatus which with cylinders would fit in a suitcase was made by several different manufacturers. Nitrous oxide and oxygen analgesia might be given just as efficiently in a home as in a hospital. No expert anesthetist was necessary. From his observation and that of the members of the Presbyterian Hospital staff, he believed that in nitrous oxide and oxygen analgesia they had not only an efficient means of controlling the suffering in labor, but also a safe means, free from all the well known and valid objections advanced against other means of securing painless labor.

Dr. John O. Polak of Brooklyn, N. Y., asked Dr. Heaney if it was possible to continue nitrous oxide gas from the very beginning of labor as an analgesic method, and about what would be the approximate cost of conducting a twelve to twenty-four hour first stage with it, and how much personal attention the obstetrician would have to give in the management of the case?

Dr. Willis E. Ford of Utica, N. Y., wanted to know whether there was any cyanosis in the children, or whether there was more cyanosis from the use of gas than from ether?

Dr. Louis Frank of Louisville said he had used nitrous oxide gas as the anesthetic of choice in his surgical work for almost three years. In this work there had been included three cases of cesarean section in which nitrous oxide gas and oxygen was given as the anesthetic. He thought the administration of nitrous oxide gas and oxygen for analgesic purposes required the services of an expert. He had considered it the most dangerous of all anesthetics that could be used in unskilled hands, while in skilled hands it was the safest. The cost of the gas was lessened materially when large tanks were used and when the gas was manufactured in the hospital.

Dr. Hiram N. Vineberg of New York City had, in one or two instances, attempted to do a plastic operation under the administration of nitrous oxide and oxygen, and the blood was so black that the field of operation was obscured. They had to stop. He did not know whether it was improperly administered or not. They had to resort to ether because the operative field was dark and they could not see what there was to repair.

Dr. Heaney, in closing, said their opinion was that during the latter part of the first stage and second stage they could give gas for sixty cents an hour. The amount of oxygen varied with each patient. It depended how quickly the woman passed into cyanosis and how much oxygen one should give. The less the amount of gas given the better. With the nose piece the cyanosis in the infant was less marked. It was hard to determine what the effect of any method was, provided the baby did not require artificial respiration. If it was blue, it cried immediately. It was very gratifying in cesarean sections to have the baby cry at once. One could then dismiss the child from one's mind and attend to the mother, a thing which one was not able to do always under ether anesthesia, in performing cesarean section.

The Management of the Placental Stage of Labor, with Special Reference to Retained and Adherent Placenta.—Dr. John O. Polak of Brooklyn, N. Y., drew the following conclusions from his study, as to the management of the placental stage and the treatment of adherent placenta: (1) The placenta would separate spontaneously if the normal mechanism was allowed to obtain. (2) Any manipulation of the uterus before the clinical evidences of separation were apparent would disturb this normal mechanism. (3) Postpartum hemorrhage was best guarded against by the observance of the physiological processes, and that partial detachment, the result of manipulation, predisposes to bleeding. (4) The normal mechanism of placental delivery was that described by Schultze. (5) The Duncan mechanism only occurred in low implantations of the placenta or where manipulation had been untimely and vigorous. (6) The placenta might be retained in the uterus for hours or days without danger to the patient, provided it was attached or completely detached, which insured that the bleeding would be negligible. (7) Asepsis was dependent upon the penetration of the uterus by the hand or instrument to infected passages, and not upon the retention of the placenta. (8) That manual extraction was only admissible in partial separation with hemorrhage. (9) In retention of the placenta without hemorrhage the cord should be cut off close to the cervix and the case watched until the time of separation was apparent, when the placenta

might be expressed by Crede while the patient was under surgical anesthesia. (10) Invasion of the uterus *via* the vagina was fraught with danger from infection, and on exploration should the placenta not be found presenting at the internal os, infrapelvic delivery should be abandoned and delivery accomplished through sterile avenues by suprapubic extraperitoneal hysterotomy. (11) When the adhesion was so great that its removal entailed the digging out of the placenta piecemeal, excision of the placental site or hysterectomy should be the choice.

Dr. WALTER P. MANTON of Detroit believed that the implantation of the placenta was, as a rule, a good deal lower that it was usually supposed. A number of years ago he took up this subject at the Woman's Hospital and by careful examination of uteri and of the placentæ later on, he found that in several hundred consecutive cases the implantation was a good deal lower than what it was put down in the text books to be. The implantation was apt to be lateral rather than frontal or partial, therefore, he did not believe that the Schultze method of delivery of the placenta was the normal one, but that the Duncan method was.

Dr. GEORGE TUCKER HARRISON of Charlottesville, Va., agreed with Dr. Manton that the Duncan method was the one that should be employed in cases in which the placenta was detached. In such cases it was employed quite frequently. As soon as the child was born, he thought it was wrong to exercise compression. Let it alone.

Dr. PHILANDER A. HARRIS of Paterson, N. J., said in speaking of retained placenta, the placenta with the cord hanging from it was allowed to remain by him experimentally, and it was found it was all absorbed. They kept the patient in the hospital for weeks and weeks, and after absorption the uterus returned to its normal condition, showing that Nature after all was a very good doctor.

(*To be continued.*)

MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK

Stated Meeting, Held May 17, 1915.

THE PRESIDENT, DR. THOMAS S. SOUTHWORTH, IN THE CHAIR.

The Significance of the Presence of Acid-Fast Bacilli in the Feces of Patients Suffering from Joint Disease.—Dr. HENRY KELLER read this paper, in which were embodied the following conclusions: The acid-fast bacillus resisting decolorization with 25 per cent nitric acid, followed by 80 per cent alcohol, was a tubercle bacillus. Patients with joint tuberculosis kept on discharging tubercle bacilli for years, as long as the disease continued active. These bacilli were living and capable of producing tuberculosis in other individuals, as proved by animal inoculation. In obscure joint conditions the discovery of tubercle bacilli in the feces might be of great diagnostic significance, and the search for them should never be omitted. A patient suffering from joint disease should not be discharged as cured without a thorough search for acid-fast bacilli in the feces, and if they were found he should be kept for further observation; for this showed that there was still some activity in the disease process. In the feces the smegma bacillus was conspicuous by its absence. M. Solis Cohen was correct in asserting that the feces of tuberculous patients must be regarded as a source of contagion and always be thoroughly disinfected and that the same precautions in regard to disinfection of hands, clothing, bed covers, etc., soiled by fecal evacuations which were taken in cases of typhoid fever should be observed in the management of patients with tuberculosis. Tuberculous infections of the bones and joints, he said, often made their appearance in the guise of various other diseases, and, on the other hand, there were many instances of joint disease other than tuberculous which resembled tuberculosis so closely as to make one hesitate before making a positive judgment. While the lapse of time might clear up the matter, this, as Judson had remarked, was always at the expense of the prognosis. On account of the vast importance of suitable early treatment, therefore, any addition to our diagnostic armamentarium should be of the greatest value; and such additional aid the speaker ventured to offer in the finding of acid-fast bacilli in the feces. As the result of experimental and clinical investigation by A. J. Moraveek of the New York Diagnostic Laboratory, and himself, lasting over a year, it was his belief that the acid-fast bacillus resisting decolorization by 25 per cent. nitric acid, followed by alcohol (80 per cent.), was a tubercle bacillus, and nothing else. It had also been found that this bacillus was viable and able to grow on culture media, and that when these cultures were injected into guinea pigs they produced tuberculosis. It was ascertained that the tubercle bacillus was the only bacillus which would remain red, all others being decolorized and subsequently taking on a counter-stain. Having described the staining technique and detailed the experimental proof of the proposition stated, he gave the following deductions derived from the experimentation and animal inoculations: (1) The acid-fast bacillus found in the feces was a tubercle bacillus. (2) It was a living germ, capable of producing the disease when injected into animals. (3) No matter how the bacillus was introduced into the system, it would make its appearance in the intestinal tract, and be discharged in the feces, without necessarily producing a pathological lesion in the intestinal mucous membrane. *The Clinical and Diagnostic Significance of the Presence of Tubercle Bacilli in the Feces.* In order to study this it was necessary to select (a) cases with positive joint tuberculosis, as shown by the signs and symptoms pathognomonio of such disease, confirmed by the *x*-ray and other laboratory aids, or those with subsequent history bearing out early diagnosis; (b) cured cases of positive joint tuberculosis; (c) a number of cases suffering from affections other than tuberculosis, as controls; also dubious cases. Investigations were made in 42 cases with active tuberculosis of joints, 6 cases of cured joint tuberculosis, 9 suspected cases of joint tuberculosis, and 18 control cases, and the results showed that under normal conditions no acid-fast bacilli were to be found in the feces—also that only in active cases of joint disease were they thus present, and not in cured cases; therefore the finding of acid-fast bacilli in the feces of patients with active disease of a joint, and no active tuberculosis in any other part of the body, was of great importance in reaching a diagnosis in an obscure case. In 31 cases in which the acid-fast bacilli were found in the feces the location of the disease was as follows: Hip, 15 cases; spine, 6; knee, 6; sacroiliac, 2; shoulder, 1; foot, 1. The youngest patient with active joint disease in whose feces these bacilli were found was 2 years, and the oldest, 40 years. The shortest duration in active cases with presence of acid-fast bacilli in feces was three weeks, and the longest five years. The methods employed in obtaining specimens of feces and in preparing these for examination were as follows: The patient was given a mild laxative the night before collection, and ordered to defecate into a chamber-vessel which had been thoroughly cleaned and then washed with boiling water. The feces were to be put into a new fruit preserving jar, cleansed in the same manner; this was to be repeated for two or three successive days, separate jars being used each day, and each labeled with the patient's name and the date of collection. A small amount of the suspected feces was diluted with an equal quantity of sterile distilled water to which a few drops of phenol solution (4 per cent) had been added, and the mixture allowed to stand for twelve hours. The water was then poured off very carefully, and a small piece of the sediment picked up with a sterile platinum wire loop, and placed upon a clean slide for staining. From each specimen of feces ten or twelve slides were prepared, and a number of cultures made. The cultures were examined from the 15th to the 21st day, and some of them were injected into guinea pigs. It was a known fact that very few patients suffering from joint tuberculosis have pulminary tuberculosis. Dr. A. J. Quimby had *x*-rayed the chest in a number of his cases, to see whether he could detect any lesion, and with the exception of a few calcareous glands, such as might be found in normal thoraces, the findings were negative. It could be assumed, therefore, that it was not at all necessary to swallow sputum containing tubercle bacilli in order that such bacilli should appear in the feces. It seemed to him more likely that the presence of the bacilli in the feces of patients with active tuberculosis was due to the fact that the body, having good resistance power, was trying to rid itself of the invasion by discharging some of the bacilli into the bowel. This hypothesis was borne out by the fact observed by himself that the feces coming from the guinea pigs when they were very ill were frequently negative for tubercle

bacilli, while when they began to improve, these bacilli would reappear. Some of the animals had stopped discharging tubercle bacilli in their feces a few days prior to their death. In human beings with tuberculosis he had observed the same peculiarity. When the patients were very ill their feces contained no tubercle bacilli, but when they had improved in general health the bacilli again appeared in the feces. Whether this theory were correct or not remained to be seen. It seemed reasonable, and in his future investigations he would endeavor to test its validity.

Dr. E. E. Smith said that Dr. Keller's investigations were confirmatory of the point that if tubercle bacilli once got into the blood they would, under ordinary circumstances, appear in the feces. It was also true that if these bacilli made their appearance in the feces they might enter the blood. The propositions set forth in the paper could be divided into two parts: (1) The occurrence of tubercle bacilli in the feces, and (2) the conclusions from the facts presented. One of the most important assertions made was that all the bacilli which resisted 25 per cent of nitric acid were virulent tubercle bacilli. This fact might be applicable to human beings, but it seemed open to question whether it held true in the case of all animals, especially bovine ones. He thought we should therefore be cautious in making it applicable to all animal life. It had been stated in the paper that there appeared to be some relation between the occurrence of tubercle bacilli in the feces and the acuteness of the condition present. When a large supply of tubercle bacilli was suddenly introduced into the system of an animal, it was not surprising that it should endeavor to get rid of them by every possible channel. So, while in acute disease conditions the bacilli might be numerous in the feces, we should expect that as the condition became subacute or chronic the number would gradually diminish; so that it might require a more careful examination to reveal their presence. The paper, he thought, had distinctly advanced our knowledge, and would be of great practical service from more than one point of view.

Dr. Anthony Bassler agreed with Dr. Smith that Dr. Keller's investigations would be of great assistance in clinical work. Personally, he had had no experience with the observation of tubercle bacilli in the feces in cases of joint disease, but in pulmonary tuberculosis and tuberculous conditions of the alimentary tract he had been surprised to note how frequently the bacilli were to be found in the feces. It was a fact also that in a large proportion of cases of pulmonary tuberculosis there were found ulcerative, or at least hyperplastic, conditions in the intestinal tract.

Dr. Keller said that as to the system of an animal getting rid of a large quantity of tubercle bacilli suddenly introduced into it, he had always been careful to inject only a normal dose: usually eight minims—the maximum dose being ten minims. In cases of joint disease the bacilli were found in the feces as long as the activity of the disease continued, even if this were for two or three years. This was, therefore, a matter of importance from a sanitary as well as a diagnostic point of view. Such feces were to be regarded as a constant source of infection, and he had known of one instance in which the pet dog of a child with tuberculosis contracted the disease. As to the presence of tubercle bacilli in the feces of patients suffering from pulmonary disease, the only question was whether they got there by ingestion or through obtaining entrance in to the circulation. In his animal experimentation he had found that it made no difference by what method the bacilli were introduced into the system; no matter what the method employed, they would appear in the feces.

Twenty Uncommon Esophagus, Stomach, and Intestinal Cases; Salient Points in Case Histories; Lantern Slides.—Dr. Anthony Bassler reported these cases. Some of them were the following: Case V.—A girl of 23 had had for years "stomach trouble," consisting of pains in the abdomen, chiefly on the lower right side, which were worse half an hour after meals, and the year previous she had had an attack of what was diagnosed as an acute appendicitis, followed by inflammation of the right kidney. She was sent by a surgeon to Dr. Bassler to confirm the diagnosis of chronic appendicitis. The stomach was the most attenuated one he had ever met with; the pylorus was in the appendix region, and was not held there by adhesions. She was treated by diet, posture, abdominal support, etc., and in about four months had gained 30 pounds in weight, and was subjectively well. One year after this he was called to Pennsylvania to see her in what was supposed to be an exacerbation of chronic appendicitis. The pain she had was cramp-like in character, radiating from the right flank, and she had frequent urination. The four cardinal symptoms of acute appendicitis—local muscular spasm, febrile temperature, nausea and vomiting—were lacking. It was therefore decided to wait, and during the night the pain suddenly ceased. A week or so later the patient voided a small renal stone, and the cause of the attack was thus explained. The case was of interest on account of the position of the pylorus, and because both of her attacks had been attributed to appendicitis.

Case VI.—A girl of 18, who was very fond of sweets, had had for three months a distinct pain in the stomach after eating, lasting about an hour. This was located at the edge of the left rectus, some distance below the ensiform, and the peculiar feature about it was that if she lay down it would suddenly cease. She was anemic, and had lost ten pounds in weight. The upper part of the abdomen was board-like, and there was an area of extreme tenderness at the outer edge of the left rectus. An *x*-ray plate showed a large stomach and the pit of an ulcer filled with bismuth. With rest in bed, Lenhartz diet, bismuth and iron, she completely recovered, and had continued well for four years. Subsequent *x*-ray plates had failed to show any ulcer. In this instance there had been an ulcer in the anterior wall which if it had perforated, as such ulcers commonly did, would have discharged into the large peritoneal cavity and quickly set up a general peritonitis. The relief from pain which the patient experienced in the prone position he believed to be due to the small-sized meals which she accustomed herself to take, which, in a lax stomach, gravitated posteriorly when she was reclining, and tended to save the ulcer from irritation by foods and by gastric secretions which were markedly acid. Case IX.—A woman of 54 was sent to the speaker for diagnosis. She had pains in the upper abdomen, on the left side, which radiated into the back, and after eating, these became so aggravated that she dreaded to take food. Regurgitations and eructations were present, and during the past three weeks had been constipated. In this short time she had lost seven pounds, and she was very nervous and depressed. The stomach, liver and right kidney were in a low position. Fluoroscopically the stomach was shown to be in a state of marked peristalsis, with a defect on the lesser curvature extending half-way across the lumen, which was not due to spinal pressure, and it could be seen that the peristaltic waves were stopped at this point. The only thing disclosed by test-meal analysis was that with the double Ewald meal method the second meal showed very much less acidity; and there was no blood in the stool. At operation there was found, slightly to the left of the spinal column, a cancer which might have been started by an ulcer at that point. There was, however, a marked neoplasm, with involvement of the lymphatics, along the lesser curvature. A partial gastrectomy was done, and the patient had now been entirely well for two years. Case XIII.—A woman of 49 had had backache since girlhood and had had four attacks of nervous prostration. Five months before she came under observation she was supposed to have had an attack of intestinal grippe. She was always debilitated and constipated, and among the manifestations of her neurotic condition were coccygodynia and a nervous stuttering. There was much gas in the stomach and intestine, and she passed large amounts of mucus in her stools. By the *x*-ray it was shown that there were marked adhesions about the colon, binding down the transverse to the mid-cecum. Anyone observing such a strictured state of affairs would be apt to conclude at once that the patient could not be relieved without an operation; yet under rest, diet, atropine and tonics this woman had become substantially well, and although the adhesions were still present, her bowels were moving normally, and her nervous symptoms, as well as those of the colitis, had disappeared. Case XIV.—A woman of 46 had had aggravated symptoms referable to intestinal toxemia for twenty years. She was poorly developed and had dilatation and atony of the stomach, with marked stasis in the entire intestinal canal. An interesting feature of her case was that the entire colon was freely movable in the abdomen, having no mesenteries in the ascending or descending portions and no anchoring at the flexures; a condition which was probably congenital. When she was in the upright posture the colon took position in the lower right segment of the abdomen, arranging itself four-

ply. The laboratory tests showed that she was markedly toxic, and if there ever was a case suitable for a colectomy this was one. The entire colon had been removed seven months ago, and since then she had gained fifteen pounds and was much better in health, although, notwithstanding Lane's conclusions as to the effect of this operation on toxemia, she was still as toxic as ever. CASE XVII.—A woman of 43 had a history of many attacks of typical migraine and various other troubles. She was constipated and always passed mucus in her stools. She had much gas in her stomach and bowels, and had lost over thirty pounds. The *x*-ray showed a large cecum and a proximal transverse colon with an apparent stricture in the middle of it; presenting what had been termed "stricture with proximal dilatation." She was operated on upon that diagnosis, but nothing whatever was found at the supposed point of stricture, though the colon, up to where it was shown on the *x*-ray plate was immensely thickened. The parts were left undisturbed and subsequently the patient was treated by means of diet, massage, rest in bed, and other medical measures. After a year's time her weight had increased from 93 to 152 pounds, and to-day she was completely relieved of all her symptoms.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS

WASHINGTON STATE BOARD OF MEDICAL EXAMINERS.
July, 1914.

[Answers ten (10) questions only in each paper.]

(*Continued from p.* 297.)

GYNECOLOGY.

1. What is gynecology?
2. Name the external genital organs.
3. Define amenorrhea, dysmenorrhea, menorrhagia.
4. Give the forms of vaginitis: Give the symptoms of senile vaginitis.
5. Give causes and symptoms of endometritis.
6. Give the varieties of pelvic hematocele.
7. Differentiate: fibroid tumor, gravid uterus, and ovarian cyst.
8. Give symptoms and prognosis of carcinoma of the uterus.
9. Give symptoms and diagnosis of uterine polypi.
10. Differentiate: prolapsus uteri, rectocele, and cystocele.
11. Give varieties, causes, and symptoms of uterine displacement.
12. What are the symptoms of pelvic abscess? What the prognosis?

PATHOLOGY.

1. Mention the different kinds of tumor of the uterus, with short history of each.
2. Describe progressive changes in acute yellow atrophy of the liver.
3. Discuss hydrocephalus.
4. Give short definition of the following terms: Cystocele, embolus, keloid, lipoma, sycosis, variocele, mastitis, cholemia, apoplexy and clavus.
5. Describe leukemia; what other disease does it closely resemble and how differentiate.
6. Discuss epithelioma.
7. Give macroscopical pathology of small intestines in typhoid fever.
8. What are the findings in mitral regurgitation.
9. Give pathological anatomy in chronic parenchymatous nephritis.
10. Describe fully the progressive changes in gonorrheal rheumatism.
11. What is the pathology of locomotor ataxia.
12. Describe the pathogenesis of renal calculi.

ANSWERS.

GYNECOLOGY.

1. *Gynecology* is that branch of medicine and surgery which deals with the diseases peculiar to women.

2. The *external genital organs* are: Labia majora, labia minora, clitoris, mons Veneris, and the orifice of the vagina; the external urinary meatus is generally included, though it is not a *genital* organ.

3. *Amenorrha* is absence of menstruation during the period of sexual activity.

Dysmenorrhea is unduly painful menstruation.

Menorrhagia is a condition characterized by excessive loss of blood at the menstrual period.

4. *Forms of vaginitis:* Acute, chronic, primary, secondary, catarrhal, membranous, diphtheritic, gonorrheal, tuberculous, senile, emphysematous, granular, superficial (there is no recognized classification).

Symptoms of senile vaginitis: "The *subjective* symptoms are not in any way characteristic and all the patient usually complains of is a thin, serous, leucorrheal discharge which is not profuse or constant and which is at times streaked with blood. In some cases there may be a burning sensation in the vagina, a feeling of weight in the pelvis, and a distressing irritation of the external organs of generation. Sexual intercourse is either impossible or very painful. The *objective* symptoms, on the other hand, are marked. The mucous membrane is found to be smooth, atrophied, and covered with a scanty serous secretion, while various sized spots of ecchymosis and superficial ulceration are observed scattered over its surface. Adhesions resulting from contact between the ulcerated surfaces are common, and in some cases the vaginal vault as well as other parts of the canal may be obliterated or greatly distorted."—(Ashton's *Gynecology.*)

5. "*Acute endometritis* is the result of the introduction into the uterus of septic microorganisms. This usually occurs during labor or miscarriage, or it may result from operations, such as dilatation, or from the introduction of an unclean sound. It sometimes occurs as a complication of the exanthems. If the process is severe enough, it may involve the muscular tissue underneath the mucous membrane, when it is called metritis; or the peritoneal covering of the uterus may be invaded, when it is called perimetritis. *Symptoms.*—Acute corporeal endometritis is usually attended by considerable pain, of a dull, aching character. There are constipation and vesical irritability. The pulse is rapid and temperature in some cases is very high—from 104° to 106° F. Vaginal examination reveals a patulous cervical canal with a profuse purulent discharge escaping from it. The uterus is enlarged, boggy, and tender.

"*Chronic endometritis* may result from an acute attack or it may be chronic from the beginning. One of the most frequent causes of this condition is gonorrheal infection. Chronic endometritis accompanies a variety of pathological conditions of the uterus, such as displacements, subinvolution, laceration of the cervix, and fibroid tumors. Two varieties of chronic endometritis have been described—glandular and interstitial. The *symptoms* of chronic endometritis are usually well marked. There is pain, of a dull, aching character, most evident in the back and extending down the thighs. Leucorrhea is constant, and is quite characteristic. The discharge is thin, purulent, and blood-streaked. Menstruation is profuse, and lasts usually from 5 to 7 days. The patient's general health suffers; she loses weight and becomes anemic, there is a sense of great reduction in physical strength. Headache is a very common symptom. Nervous, digestive, and circulatory disturbances appear sooner or later. Physical examination reveals an enlarged, tender uterus. The cervical canal is patulous; the external os is eroded. The characteristic discharge can be seen escaping from the cervix."—(*Cyclopedia of Medicine and Surgery.*)

6. There are two varieties of pelvic hematocele: (1) due to rupture of an organ, (2) due to the entrance of menstrual blood into the peritoneal cavity. The most common cause is rupture of a tubal pregnancy.

7. *Pregnancy:* The tumor is hard and does not fluctuate, is situated in the median line, and may give fetal heart sounds and movements; the cervix is soft, and the other signs of pregnancy are present. The rate of growth of the tumor, and the general condition of the patient's health may also help in arriving at a diagnosis.

Uterine fibroid: Menstruation is irregular and sometimes very profuse; absence of the signs of pregnancy; the tumor is nodular, firm, irregular in outline, and while generally placed somewhat centrally is not in the median line, and is not symmetrical; the rate of growth is irregular, being, as a rule, slow, and sometimes extending over years.

Ovarian cyst: Absence of the chief signs of pregnancy; there may be the characteristic facies, the tumor is soft, fluctuating, is more to one side, and does not show fetal signs.

8. *Symptoms of carcinoma of the uterus:* Presence of a tumor, pain, offensive discharge, hemorrhage, and cachexia. *Prognosis* is unfavorable, particularly after glands are involved.

9. In the case of *polypus*, the body and fundus of the uterus are in their normal position in the abdomen, a sound can be passed into the uterus, the uterine and cervical canals are not obliterated, the polypus does not bleed easily, and is not particularly sensible to pain. The *inverted uterus* shows: Absence of body and fundus from normal position, will not permit passage of a sound into uterine cavity, the uterine and cervical canals are absent, the inverted uterus tends to bleed easily, and is very sensible to pain. In *prolapse* the largest part of the tumor is above; the opening of the Fallopian tubes cannot be seen; a sound can be passed into the uterine cavity.

Polypi of cervix. "Polypoid tumors are found growing from the mucous membrane of the cervical canal, projecting into the canal or protruding from the external os. The mucous polypus is the most usual form, and is caused by cystic degeneration of the Nabothian glands of the cervical mucous membrane. Sometimes such polypi protrude from the ostium vaginæ. Less often a papillary or warty growth is found on the mucous membrane of the cervical canal, in the neighborhood of the external os. There is usually present dilatation of the external os and cervical canal. The symptoms of cervical polypi are not characteristic. Inflammation of the cervical mucous membrane and cervical catarrh may result. There may be slight, and rarely profuse, bleeding from the externl os. The bleeding may follow efforts at straining, sexual connection, long standing, or exercise. Occurring at the time of the menopause or later, this symptom would excite the suspicion of beginning cancer of the cervix."

10. For *prolapse*, see QUESTION 9. In *rectocele*, the posterior wall of the vagina is bulged forward and downward. In *cystocele*, the anterior wall of the vagina is bulged backward and downward.

11. *The varieties of displacement of the uterus* are: Retroversion, retroflexion, anteversion, anteflexion, lateral version, lateral flexion, descent or prolapse, ascent, and mallocation (to front, back, or one side).

The following symptoms may follow displacements of the uterus: Backache, bearing-down pains, a feeling of pressure in the pelvis, constipation, hemorrhoids, frequent or painful urination, leucorrhea, menstrual disturbances, as dysmenorrhea or menorrhagia, sterility; there may also be *general symptoms*, as headache, indigestion, nausea, anorexia, neurasthenia, and general malaise.

CAUSES OF DOWNWARD DISPLACEMENTS OF THE UTERUS: (1) *Pressure from above* (pelvic or abdominal tumors, ascites, tight or heavy clothing, straining at stool, muscular exertion, fecal accumulations, habitual overdistention of the bladder); (2) *weakening and relaxation of the uterine supports* (subinvolution, senile atrophy of pelvic floor, abnormally large pelvis, increased weight of uterus, puerperal traumatisms, pressure from above, traction from below); (3) *increased weight of uterus* (congestion, subinvolution, metritis, pregnancy, fluid in the endometrium, uterine tumors); (4) *traction from below* (vaginal cicatrices, falling of pelvic floor, contraction and congenital shortening of vagina, tumors of cervix or vagina.)—(From Dudley's *Gynecology.*)

12. "The onset of pelvic cellulitis is usually marked by a rigor, followed by pain in one or both flanks; febrile symptoms supervene, and, as the exudation increases, troubles during micturition or defecation are experienced. These signs are of greater significance when they follow within twenty-four or thirty-six hours an abortion, delivery, or an operation on the uterus. On examining through the vagina, a hard mass will be found on one or both sides of the cervix; in many cases the hard masses are conjoined by a ring of hard tissue surrounding the neck of the uterus. When the whole extent of the ligaments is infiltrated the swelling is perceptible at the brim of the pelvis and in the hypogastrium. When suppuration occurs, the temperature, pulse, and general condition of the patient are those accompanying large collections of pus. The local signs are as follows: the previously hard masses become softer, fluctuation is detected, or the overlying skin is edematous and perhaps red. The abscess is then said to point." (Sutton and Giles' *Diseases of Women.*) The *prognosis* is favorable, if proper treatment is instituted.

PATHOLOGY.

1. *Tumors of the uterus* may be: Fibroma, fibromyoma, myofibroma, adenoma, sarcoma, carcinoma, papilloma, and syncytioma malignum.

"*Fibroids.*—These tumors are the most common of those of the uterus. Although spoken of as *fibroma*, they nearly always contain a large amount of involuntary muscle, so the term fibromyoma is the more correct. They are classified according to their situation into: mural, intramural, or interstitial, when occurring within the muscular body of the uterus; submucous, when beneath the endometrium; and superitoneal, when beneath the peritoneal covering. The tumors may be single or multiple, and their size varies from a pea to one weighing fifty pounds. The largest are the subperitoneal, as their growth is practically unlimited. The density of the tumors depends upon the amount of fibrous tissue present. They are generally encapsulated. The blood-supply is poor, so degenerations are common. These usually begin in the center of the tumor, and the most frequent form is calcification. If the tumor has been a pedunculated one, the pedicle may become twisted and necrosis set in. Fibromata may be associated with lipoma, myxoma, or sarcoma.

"*Sarcoma* of the uterus usually originates within the connective tissue between the muscle-fibers and about the vessels or occasionally from the muscle cells. It may also arise within the submucous tissue. The myometrial sarcoma is generally spindle-cell in character; is grayish-white and soft; the endometrial is commonly round celled. *Angiosarcoma* is rare, and the so-called *adenosarcoma* is probably nothing more than an inclusion of the pre-existing endometrial glands.

"*Papilloma* appears on the cervix as rather small, cauliflower-like growths, composed of connective-tissue villi covered by many layers of squamous epithelium. Venereal warts are sometimes found upon the cervix.

"*Adenomata* as such occur as polypoid projections from the mucous membrane, or as a glandular hyperplasia of the endometrium. They are benign.

"*Malignant adenoma*, or *adenocarcinoma*, usually arises in the fundus of the uterus, upon the posterior wall. It is characterized by the tendency of the glands to invade the uterine muscle and by the epithelium breaking through the basement membrane. Quite frequently the epithelium proliferates so rapidly that the acini become completely filled with cells, the glandular character is lost, and the tumor assumes a typical carcinomatous structure. Metastasis is unusual; the destruction is mainly local.

"*Carcinoma* is usually an adenocarcinoma and the progress is practically similar. There is rapid infiltration with extensive ulceration. The vaginal walls and the tissues in the neighborhood of the cervix become involved. The neighboring lymphatic nodes are frequently the seat of metastases.

"*Squamous epithelioma* of the cervix is the commonest type of malignant tumor. In many cases it probably begins as a papilloma. There is soon developed a tendency of the cells to infiltrate the surrounding tissues and to grow superficially as a cauliflower-like mass. The growth extends downward, involving the vagina; extensive ulceration, accompanied at times by severe hemorrhage, occurs, and there is an extremely foul discharge. The tumor extends in all directions, and may perforate into the bladder or rectum or into the peritoneal cavity, giving rise to fatal peritonitis.

"*Syncytioma malignum*, or *chorio-epithelioma*, is a peculiar malignant tumor developing from embryonal tissue. The greater part of the cells are supposed to be derived from the syncytium. Is a rare form of growth." (McConnell's *Manual of Pathology.*)

2. *Acute yellow atrophy of the liver.* "At a very early stage the liver may be a little enlarged, but it rapidly diminishes in size, and the disease may run a fatal course in ten to fourteen days. The liver is reduced to one-half its normal size or less, the capsule is wrinkled, the consistence tough, and the color usually yellow. The outline of the lobules is not recognizable; here and there patches of liver-cells may have escaped destruction, but for the most part they are converted into a granular and fatty detritus. Numerous hemorrhages may be found in the skin, serous and mucous membranes; the urine is almost destitute of urea but contains leucin and tyrosin. The etiology of the condition, which bears considerable resemblance to phosphorus poisoning, is unknown, but it is probably infective."—(Hewlett's *Pathology.*)

3. "*Hydrocephalus* is a condition characterized by the accumulation of an increased, and often very large, amount of serous fluid within the ventricles of the brain. This condition is sometimes spoken of as in-

ternal hydrocephalus, to distinguish it from external hydrocephalus, a collection of fluid between the brain and the dura mater. This occurs in atrophy of the brain (hydrocephalus *ex vacuo*), in advanced life, and after hemorrhages, softenings, etc.

"Internal hydrocephalus may be congenital or acquired. The congenital case may be observed at birth, when the enlarged head may interfere with parturition, or it may not become apparent until the child is some months or a year old. The condition may occur in several members of the same family. The real cause is not known, although it is likely some vice of development or a fetal meningitis obstructing the foramen of Magendie and leading to the intraventricular accumulation of fluid. The acquired cases may result from an ependymitis with marked serous exudation, a condition which Quincke believes to be angioneurotic in nature (Quincke's angioneurotic hydrocephalus); or they may be due to inflammatory (meningitis) or pressure (tumor) obstruction of the passage from the third to the fourth ventricle or of the foramen of Magendie.

"In the congenital cases and those developing in early life the head may be slightly or enormously distended. The bones of the skull are separated and the fontanelles widened; the forehead overhangs the face, the eyes are recessed, and the bones of the face seem small (ony relatively small in comparison with those of the skull). The brain is enlarged, the ventricles more or less distended, and the cortex, as a rule, correspondingly atrophied. Although rarely considerable intellectual development occurs, the mentality, as a rule, is variously impaired up to complete idiocy. Death usually occurs in childhood, but the patient may reach adult life. The cases developing in adult life can scarcely be recognized with certainty; the hydrocephalus is usually only an incident in the course of the disease to which it is due."—(Kelly's *Practice of Medicine.*)

4. *Cystocele* is a protrusion of the bladder into the anterior wall of the vagina.

Embolus is a plug of some substance blocking up a blood vessel.

Keloid is a growth occurring in scar tissue.

Lipoma is a tumor composed of fat.

Sycosis is a skin eruption involving the hair follicles, especially those of the beard.

Varicocele is a varicose condition of the veins of the spermatic cord.

Mastitis is inflammation of the breast.

Cholemia is the presence of bile in the blood.

Apoplexy is a condition resulting from hemorrhage or embolism of a cerebral vessel.

Clavus is a corn.

5. *Leukemia* is a condition in which there is a great and persistent increase in the number of white blood corpuscles. There are two varies of the disease: (1) *Splenomedullary* in which the chief changes are found in the spleen and bone marrow; and (2) *lymphatic*, in which the chief changes occur in the lymphatic glands. It is possible for leukemia to be confounded with splenic anema and Hodgkin's disease. The diagnosis is made by an examination of the blood. In Hodgkin's disease there is either no increase in the number of the leucocytes, or a very slight increase. In *anemia*, there is a marked diminution in the number of the red blood corpuscles and there is no leucocytosis. In *splenomedullary leukemia*, there is an enormous leucocytosis, and myelocytes are present. In *lymphatic leukemia*, the lymphocytes form the main part of the leucocytosis, and there are no myelocytes.

6. *Epithelioma*, or squamous-celled carcinoma, may arise on any surface covered with stratified epithelium. It usually arises in the middle-aged or elderly, but may also occur in the young. It often results from long-continued irritation, and may arise in old scars or ulcers. It may appear in one of three forms: (1) A wart-like growth with an indurated base; (2) a small circular ulcer with raised, rampart-like edges; (3) an indurated fissure. The growth extends to the deeper structures; the surface ulcerates and becomes foul from contamination with putrefactive organisms. The nearest lymphatic glands always become infected sooner or later, and a fatal termination occurs rapidly unless treatment is early and thorough. Secondary deposits, except in the glands, are rarer than in glandular carcinoma. The glands sometimes undergo cystic change, invade the skin, ulcerate, become foul, and may cause death by secondary hemorrhage from ulceration into large bloodvessels.

Microscopically, columns of cells are seen extending from the epithelium into the underlying tissues, and interlacing with one another. In some of the columns concentrically arranged masses of flattened, cornified cells occur, called 'cell nests.' The tissues immediately surrounding the growth are infiltrated with small round cells.—(*Aids to Surgery.*)

7. *Pathology of typhoid fever.*—"Principally inflammation of the lymphoid tissue of the lower portion of the ileum, with more or less catarrh throughout the bowels. Peyer's Patches—first week.—Are swollen through infiltration of leucocytes, the surfaces raised and fawn-colored—the infiltration involves the submucous coat. The lesions are most numerous at the lower end of the ileum. Second week.—The surface becomes abraded; sloughs form which are often bile-stained. Third week.—Sloughs come away, leaving ulcerating surfaces. Typical typhoid ulcers are thus formed. A few solitary glands undergo the same process. At the end of the week the ulcers begin to granulate, but healing is usually slow. Mesenteric glands may undergo the same changes, but more often become swollen, red, and tender only, or break down into cheesy masses. Other organs.—Spleen and liver are enlarged; heart is soft and flabby. The voluntary muscles undergo granular degeneration; in fact, similar changes to those found after death from high temperature."—(Wheeler and Jack's *Practice of Medicine.*)

8. In *mitral regurgitation*, "the most common conditions observed are more or less contraction and narrowing of the tongues of the valves, with irregular thickening and rigidity; atheroma or calcification of the segments; laceration of one or more segments; adhesion of one or more segments to the inner surface of the ventricle; thickened and stiffened, or ruptured, chordæ tendineæ, and also contraction and hardening of the *musculi papillares*. As a result of the regurgitation or leakage of the blood back into the left auricle, there is a dilatation of the auricle, followed by slight cardiac hypertrophy. Ventricular hypertrophy occurs after a time from the increased number of the cardiac contractions. If, as is eventually the case the left auricle is unable to overcome the backward flow of blood, it dilates and the lungs become congested. The right ventricle is then forced to perform more work and hypertrophies. Hypertrophy of the right ventricle is followed by that of the left ventricle. In the event of its failure to overcome the backward flow, it (right ventricle) also dilates and the tricuspid valve becomes insufficient."—(Hughes' *Practice of Medicine.*)

9. In *chronic parenchymatous nephritis* "the kidney is larger and paler than normal. The capsule strips easily and the stellate veins are injected. On section, the cortex is larger than normal and pale; the pyramids are often conspicuous by their engorgement. The pelvis shows no increase of fat. On microscopic section, the tubules are dilated, their epithelium shows fatty changes, and they contain fatty and granular casts. The epithelium lining Bowman's capsules may be proliferated, and the capillaries and epithelium of the tuft show hyaline changes. Changes in the interstitial tissue are present, such as edema and increase of fibrous tissue."—(Woodwark's *Manual of Medicine.*)

10. *Progressive changes in gonorrheal rheumatism.* "In recent cases of this disease the structures connected with one or more of the articulations are acutely inflamed. The cavity contains a variable amount of serous effusion according to its form and size; the knee, for example, being considerably distended, while the digital joints are more moderately enlarged. The various component parts are hyperemic and swollen; and the peri-articular structures full or even edematous. In more advanced cases the joints are found to contain either sero-purulent or purulent material; the cartilages may be eroded; and finally the articulations may become completely disorganized or ankylosed. The gonococcus has been found in the intra-articular effusion. The cardiac structures are very rarely affected The eye may present the ordinary appearances of catarrhal (not gonorrheal) conjunctivitis."—(Quain's *Dictionary of Medicine.*)

11. In *locomotor ataxia* the posterior columns of the spinal cord and the posterior nerve roots are involved.

The posterior columns of the spinal cord are gray and shrunken, and show considerable overgrowth of connective tissue in the columns of Goll, Burdach, and Lissauer; this process extends upwards from the lumbosacral region; the posterior nerve roots degenerate and become atrophic. The meninges over the affected parts become opaque and adherent. Some of the cranial nerves may also atrophy, notably the optic, but also the motor oculi and vagus.

The process is destructive and progressive; it is not a simple wasting, although the nerve fibers are atrophied, but it is characterized by irritation, changes in the axis cylinders, overgrowth of the connective tissue, and sometimes congestion; the spinal ganglia may be affected.

12. "The mode of formation of calculi has been much discussed. They may be produced by an excess of a sparingly soluble abnormal ingredient, such as cystine or xanthine; more frequently by the presence of uric acid in a very acid urine which favors its deposition. Sir William Roberts thus briefly states the conditions which lead to the formation of the uric-acid concretions; high acidity, poverty in salines, low pigmentation, and high percentage of uric acid. Ord suggests that albumin, mucus, blood, and epithelial threads may be the starting-point of stone. The demonstration of organisms in the center of renal calculi renders it probably that in many cases the nucleus of the stone is an agglutinated mass of bacteria."—(Osler's *Practice of Medicine.*)

(To be continued)

BULLETIN OF APPROACHING EXAMINATIONS

STATE	NAME AND ADDRESS OF SECRETARY	PLACE AND DATE OF NEXT EXAMINATION†	
Alabama*	W. H. Sanders, Montgomery	Montgomery	
Arizona*	J. W. Thomas, Phoenix	Phoenix	Oct. 5
Arkansas	W. S. Stewart, Pine Bluff	Little Rock	
California	C. B. Pinkham, Sacramento	Los Angeles	Dec 14
Colorado	David A. Strickler, Empire Building, Denver	Denver	Oct. 5
Connecticut*	Chas. A. Tuttle, New Haven	New Haven	Nov. 9
Delaware	J. H. Wilson, Dover	Dover	Dec. 14
Dist. of Col'ba.	E. P. Copeland, Washington	Washington	Oct. 12
Florida*	E. W. Warren, Palatka	Jacksonville	Dec. 7
Georgia	C. T. Nolan, Marietta	Atlanta	Oct 12
Idaho*	J. F. Schmershall, Jerome	Wallace	Oct. 5
Illinois	C. S. Drake, Springfield	Chicago	Oct. 13
Indiana	W. T. Gott, Crawfordsville	Indianapolis	Jan. 11
Iowa	G. H. Sumner, Des Moines	Des Moines	
Kansas	H. A. Dykes, Lebanon	Topeka	Oct 12
Kentucky	J. N. McCormack, Bowling Green	Louisville	Dec 14
Louisiana	E. L. Leckert, New Orleans	New Orleans	Dec. 2
Maine	F. W. Searle, Portland	Portland	Nov 9
Maryland	J. McP. Scott, Hagerstowo	Baltimore	Dec 14
Massachusetts*	W. P. Bowers, State House, Boston	Boston	Sept. 14
Michigan	B. D. Harison, 205 Whitney Building, Detroit	Lansing	Oct. 12
Minnesota	T. McDavitt, St. Paul	Minneapolis	Oct 5
Mississippi	E. H. Galloway, Jackson	Jackson	Oct 5
Missouri	J. A. B. Adcock, Jefferson City	Kansaa City	Sept. 28
Montana*	Wm. C. Riddell, Helena	Helena	Oct. 5
Nebraska	H. B. Cummins, Seward	Lincoln	Nov. 10
Nevada	S. L. Lee, Carson City	Carson City	Nov. 1
N. Hampshire	Walter T. Crosby, Manchester	Concord	Sept. 15
New Jersey	H. G. Norton, Trenton	Trenton	Oct. 19
New Mexico	W. E. Kaser, East Las Vegas	Santa Fe	Oct. 11
New York	H. H. Horner, Univ. of State of New York, Albany	New York, Albany, Syracuse, Buffalo	Oct 5
N. Carolina	H. A. Royster, Raleigh	Raleigh	June
N. Dakota	G. M. Williamson, Grand Forks	Grand Forks	Jan. 4
Ohio	Geo. H. Matson, Columbus	Columbus	Dec. 7
Oklahoma	J. W. Duke, Guthrie	Oklahoma City	Oct. 12
Oregon	B. E. Miller, Portland	Portland	Jan. 4
Pennsylvania	N. C. Schaeffer, Harrisburgh	Philadelphia, Pittsburgh, Harrisburgh	Jan.
Rhode Island	G. T. Swarts, Providence	Providence	Oct 5
S. Carolina	H. E. Boozer, Columbia	Columbia	June 13
S. Dakota	P. B. Jenkins, Waubay	Pierre	June. 13
Tennessee	A. B. DeLoach, Memphis	Memphis, Nashville, Knoxville.	
Texas	M. P. McElhannon, Belton	Dallas	Nov 9
Utah	G. F. Harding, Salt Lake City	Salt Lake City	Oct. 4
Vermont	W. Scott Nay, Underhill	Montpelier	Jan. 11
Virginia	J. N. Barney, Fredericksburg	Richmond	Dec. 14
Washington*	C. N. Suttner, Walla Walla	Spokane	Jan. 4
W. Virginia	S. L. Jepson, Charleston	Elkins	Nov. 9
Wisconsin	J. M. Dodd, Ashland	Madison	Jan 11
Wyoming	H. E. McCollum, Laramie	Laramie	Oct 13

*No reciprocity recognized by these States.

†Applicants should in every case write to the secretary for all the details regarding the examination in any particular State

Aural Hematidrosis.—E. Guarnaccia and V. Sborni report a case of this condition occurring three years after an attack of Malta fever in a woman twenty-nine years of age. There was no neuropathic heredity. Instances have been reported in which there was an apparent relationship between hematidrosis and the menstrual function but in the authors' case this relationship was not manifest. Moreover there was no disease of the middle or internal ear nor any hysterical auditory phenomenon. The hemorrhagic discharge was bilateral. There were accompanying hemorrhages from the nose, larynx, and trachea. The condition lasted for three months. It is regarded as purely of hysterical origin.—*Archivio Italiano di Otologia, Rinologia, e Laringologia.*

Therapeutic Hints.

Treatment of Fatigue Dyspepsia.—Guthrie Rankin prescribes for the hyperacidity resulting from an excitable state of the gastric mucous membrane the following:

℞ Morphine hydrochloride, 1/12 gr.
Tincture of belladonna, ♏ x.
Solution of suprarenal extract (1-1000), ♏ xx.
Spirit of peppermint, ♏ xxx.

M. Sig.: To be taken in one tablespoonful of water half an hour before meals.

The hyperacidity is chemically counteracted by the following:

℞ Bismuth carbonate, xxx gr.
Magnesium carbonate, xx gr.
Sodium bicarbonate, xxx gr.

Ft. pulv., Sig.: To be taken in a wineglassful of water whenever there is heartburn.

For its tonic, antiseptic, and sedative influence the following is recommended:

℞ Extract of valerian.
Pure phenol, āā ij gr.
Strychnine, 1/40 gr.
Codeine, 1/4 gr.
Extract of rhubarb, jss gr.

Ft. capsule, Sig.: To be taken three times a day after meals.

If anemic tendencies are discernible the formula may be modified as follows:

℞ Iron glycerophosphate.
Beta naphthol, āā iij gr.
Extract of nux vomica.
Extract of cannabis indica, āā 1/4 gr.
Compound pill of galbanum (Br. Phar.), jss gr.

Ft. capsul., Sig.: To be taken three times a day after meals.—*British Medical Journal.*

Thiosinamine in the Treatment of Uterine Fibroids.—S. Artault de Vevey states that this drug has an elective action on these growths. Although it does not bring about their entire disappearance, it nevertheless effects such a marked diminution in their size as to produce a relative cure. The mode of administration is as follows: There is injected deep into the buttock, at least three times a week, 0.20 to 0.25 gram of the drug dissolved in a mixture of 10 parts of alcohol and 90 parts of glycerin.—*Bulletin Général de Thérapeutique.*

Calcium Lactate in Raynaud's Disease.—D. W. Montgomery and G. D. Culver find that calcium lactate tends to counteract the increased irritability of the blood vessels present in this disease. They prescribe the following:

℞ Calcium lactate, 50 grams.
Simple elixir, 60 grams.
Water, to make 300 grams.

M. et Sig.: Two teaspoonfuls in a little water after meals three times a day.—*Journal of Cutaneous Diseases.*

Alcohol in the Treatment of Superficial Burns.—Brestmann of Petrograd is said to have obtained good results with this method of treatment, which consists in the application to the burn of a compress wrung out in 60 per cent. alcohol. There is a prompt relief in the pain, the inflammation subsides, and healing takes place without the production of any apparent cicatrix. In deep burns alcohol is contraindicated on account of the pain.—*Bulletin Général de Thérapeutique.*

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Original Articles.

THE HUMAN PROSTATE GLAND IN YOUTH.*

BY OSWALD S. LOWSLEY, A.B., M.D.,
NEW YORK.

THIS communication deals with the anatomy of the human prostate gland in youth. The specimens utilized were obtained from routine autopsies and they have been studied in gross, microscopically and in serial section. This period includes the first and second decades of life and is particularly interesting because we are here considering the changes in a sex gland during the years of puberty. The specimens number more than one hundred and vary in age from birth to twenty years.

Serial sections of the prostate of a new born baby have been described in detail in another paper.[1] It was shown by the investigation above mentioned that at birth the gland retains its fetal characteristics in that the five foci from which it originally develops have become the five lobes of the prostate, the ducts of each group of tubules emptying into the portion of the urethra from which they originally developed. The number of tubules is somewhat less than those of younger specimens studied, but the number of branches is markedly increased. The ventral or anterior lobe at birth is very small indeed. The subcervical group of Albarran has many more tubules at birth than were noted in any of the fetal specimens. Most of these occur in the mucosa on the floor of the beginning of the urethra within the vesical sphincter. The subtrigonal glands which I have previously described in detail occur more numerously at the time of birth than previously and are simple tubular structures. The tubules of the apex group are also more numerous at birth than during previous weeks. The seminal vesicles and ejaculatory ducts, together with the utriculus prostaticus, have all been described.

It was found advisable to study serial sections of a subject who had about reached the middle of the first decade in life. Therefore, the prostate of a boy four years of age was prepared in the usual manner, mounted in celloidin, cut serially, and stained with hematoxylin and eosin. There is a slight increase in size of the gland compared with the prostate at birth. The tubules have more branches, the greater number occurring near the periphery of the organ. This fact is beautifully shown by injecting the tubules with india ink and then clearing according to the method of Spalteholtz.† It is observed that the tubules as a rule run obliquely through the muscular and elastic tissue which forms the bulk of the gland, and upon reaching the peripheral fourth, spread out in many small branches, nearly all of which point posteriorly or toward the base of the prostate and resemble very closely a wind-blown umbrella tree with the forward half of its branches removed.

The Middle Lobe.—The musculature of the tubules of the middle lobe is slightly more pronounced than that in the specimens at birth and also more pronounced than that surrounding the tubules of the lateral lobes. This is noted particularly at their ends where the capsule of the prostate is deficient and these tubules are practically uncovered by the fibrous structures which surround the remainder of the prostate. Twelve tubules make up this middle lobe, all of which grow back behind the sphincter of the bladder, some of them in immediate contact with the outermost fibers of its posterior portion, but none of them projecting within the sphincter. These tubules are clearly separated from the other portions of the gland, more so even than the case of the prostate of the new born both as regards distance and appearance.

The lateral lobes are made up of ten tubules on the left and fourteen on the right side. There is a slight growth in them compared with those of the prostate at birth. Their branches are somewhat increased in thickness and number. One small duct carries the secretion from a large number of branches which spread out over a considerable area.

The posterior lobe is made up of eleven tubules which branch rather extensively. In most parts of the gland the dividing point between the lateral and posterior lobes is well marked off by an area of tissue similar to that making up the so-called capsule of the gland. However, there are places where the partition is thin but recognizable. The ducts draining the lateral lobe tubules run toward the apex and empty into the urethra on the lateral surfaces of the verumontanum below the entrance of the ejaculatory ducts and in the prostatic furrows. Rarely does a lateral lobe tubule empty into the urethra on its lateral wall. Toward the apex of the gland the posterior lobe increases in size and in this specimen forms a considerable portion of the gland, although it is not as bulky as the lateral lobes.

Anterior Lobe.—Five small tubules make up the anterior lobe in this specimen. These tubules end in the musculature of the ventral wall and are considerably larger than the subcervical structures, although they are not nearly so extensive as the tubules of other divisions of the gland. The muscular and connective tissue envelopes are very thin. They do not extend very far from the lumen of the urethra and their ducts all enter the urethra on its ventral wall above the point where the ejaculatory ducts open.

Histologically the tubules are lined with cuboidal cells, the nuclei of which are in the center of the

*Presented at the Fourteenth Annual Meeting of the American Urological Association, Baltimore, April 15, 1915.

†Spalteholtz clearing method: Fix in formalin, dehydrate slowly in alcohol, starting in at 40 per cent. Bleach in hydrogen peroxide at 60 per cent and continue to dehydrate by increasing the strength of alcohol until absolute alcohol is reached. Clear in a mixture of 75 c.c. of oil of wintergreen and 25 c.c. of benzil benzoate.

cell. I have been unable to find any difference in the histology of the lining membranes of the various lobes of the prostate.

The small finger-formed simple tubular glands,

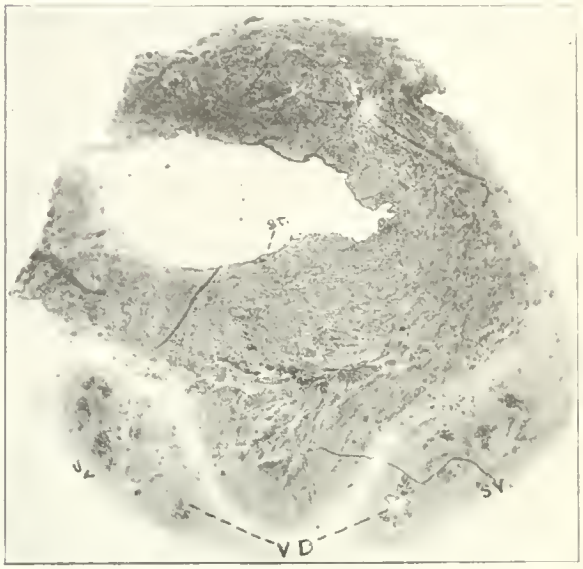

FIG. 1.—Cross-section through the midtrigonal region of a boy four years old. *ST*, Subtrigonal glands; *VD*, vasa deferentia; *SV*, seminal vesicles.

the development of which I have described previously,[2] are found in the mucosa of the trigonum vesicae at about its middle portion. There are twenty-three of these minute structures in this specimen, the uppermost of which are found as high up as the middle point of the trigone, the remainder are scattered between this point and the upper end of the vesical sphincter. There is nothing distinctive about the mucous membrane lining these structures and none of them are branched. They vary somewhat in size, but all of them are small and in no case is there muscular tissue surrounding them. The lumina are quite small and in some instances almost filled with heaped up epithelial cells. In addition to the tubules with lumina there are a number of solid epithelial evaginations which extend down to the submucosa, but in no instance do these structures extend into the submucosa.

The subcervical glands, first described by Albarran, are easily distinguishable from the subtrigonal glands and from the middle lobe of the prostate. They number thirty-three and are found in the mucosa on the floor of the urethra usually near the middle line between the vesical orifice and the upper margin of the verumontanum. They are branched and often extend for some distance into the submucosa, but grow back within the sphincter. Many of these structures at this age are simple tubular glands, but a number of them have several minute branches. Three of these structures are quite large compared with the others and, although lined with cuboidal epithelium, they are easily distinguished from prostatic tubules in that they are not surrounded by definite envelopes of muscle and connective tissue, their branches are not nearly so extensive, and the whole structure seems to be much more frail than the tubules comprising the lobes of the prostate.

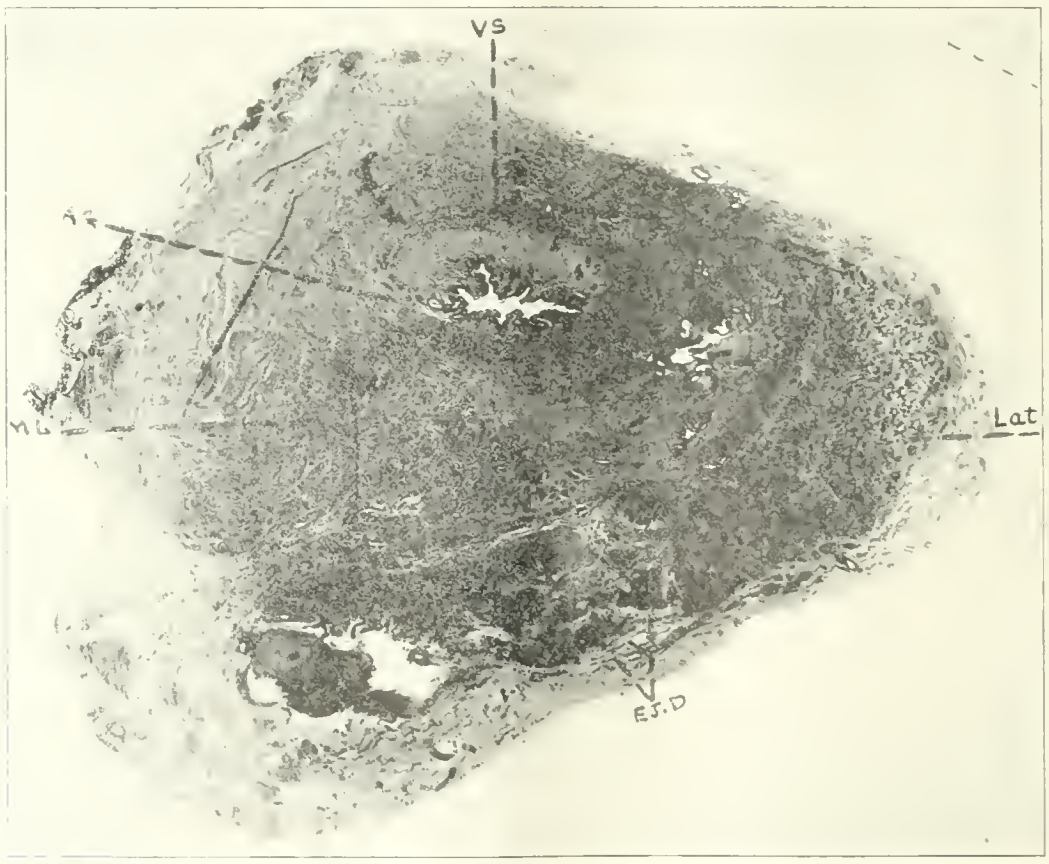

FIG. 2.—Cross-section through the vesical sphincter of a four-year-old boy; EJ.D, ejaculatory ducts; Lat, lateral lobe; ML, middle lobe; AG, Albarran's tubules; VS, vesical sphincter.

The verumontanum is formed by the ingrowth of the tissues of the ejaculatory ducts and utricle which in embryonic life have pushed up the floor of the urethra into a mound. The ejaculatory ducts

are firmly bound together and run parallel with the axis of the urethra for a short distance, finally emptying into it laterally near the summit of the verumontanum. This specimen is particularly interesting in that there is an entire absence of the utricle. The space between the ejaculatory ducts in the verumontanum usually occupied by this vestigial organ is taken up by two moderate sized tubules lined by stratified epithelium and supplied with a great many branches which empty into the urethra on the summit of the verumontanum just below the mouths of the ejaculatory ducts.

The vasa deferentia are slightly larger in size than in the specimen at birth. The seminal vesicles have the characteristic main lumen with five smaller tortuous branches as described by Pallin. The walls of the ejaculatory ducts are found to contain numerous small branched tubules lined by cuboidal epithelial cells which extend rather deeply into the musculature of their walls.†

†Dr. Morgan Vance of the Pathological Department of Bellevue Hospital has prepared serial sections of a prostate of a four year old child and allowed me to study it. In general it shows the same characteristics as the specimen described above. The middle lobe is composed of seven tubules, the right lateral lobe of eleven tubules and the left lateral lobe of twelve. The anterior lobe has four very small inconspicuous tubules while the posterior lobe is made up of eight moderately branching tubules. The posterior lobe is fairly well separated from other portions of the gland.

The subtrigonal tubules are present although quite small. The tubules of Albarran are very extensive, thirty-nine in all. Their ducts open near the midline above the verumontanum and on the verumontanum itself above the openings of the ejaculatory ducts and utricle.

Below the point where the ejaculatory ducts enter the urethra are found in this specimen a group of glands occuring upon all sides of the urethra, but chiefly on its ventral surface, which are distinctly

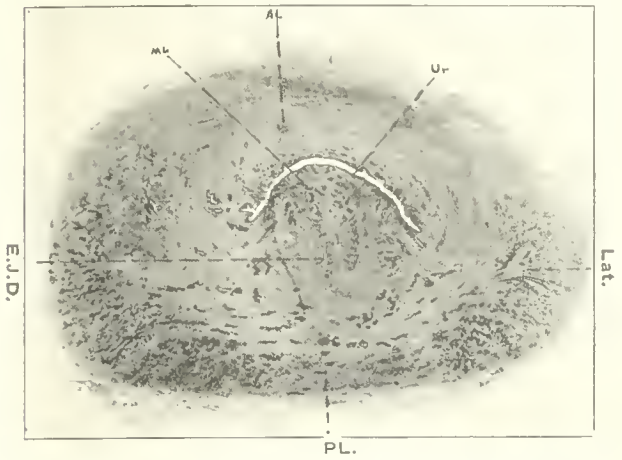

Fig. 3.—Cross-section through the upper portion of the verumontanum and prostate gland of a boy four years old. Ur, urethra; EJ.D, ejaculatory ducts; ML, middle-lobe tubules; the ducts of which are seen about to empty into the urethra; Lat, lateral-lobe tubules; PL, posterior lobe; AL, anterior-lobe tubules.

separate from the prostate. Their architecture is more fragile and they project less extensively into paraurethral tissues than do the prostatic tubules. They are not surrounded by specialized muscular tunics and their mucous membrane is composed of low columnar cells. These structures are thick-

Fig. 4.—Cross-section through the uppermost portion of the vesical sphincter of a 17-year-old lad. VO, vesical orifice; IS, internal sphincter; AG, Albarran's subcervical group of tubules; ML, middle lobe of prostate; Lat, lateral lobe of prostate; VD, vasa deferentia; SV, seminal vesicles.

The utricle is interesting in that its lower end branches and extends almost to the base of the prostate divided into nine smaller projections. At various points there are small glandular structures extending from the utricle into its muscular wall. These tubules are thickest near the orifice of the utricle. The ejaculatory ducts are also supplied with simple glandular tubules which occur quite thickly near their orifices. It is noticed that the urethral mucosa is very vascular particularly near the vesical orifice.

est directly at the apex of the prostate below which they gradually diminish in number and a short distance below the apex they practically disappear. At a number of points they extend through the submucous tissue into the investing muscular tunics, although the greater number do not extend beyond the submucosa. Some of these tubules have a number of branches; the larger number, however, are simple in their structure. There are twenty-six present in this specimen.

On account of the fact that nearly all of the specimens obtained from children were less than five years of age, it is not possible to follow the anatomy exactly during each year of the first decade. It is a strange but true fact that very few deaths occur in the hospital service in patients between the ages of five and fifteen years. The thirty-eight specimens examined show no abnormalities except one

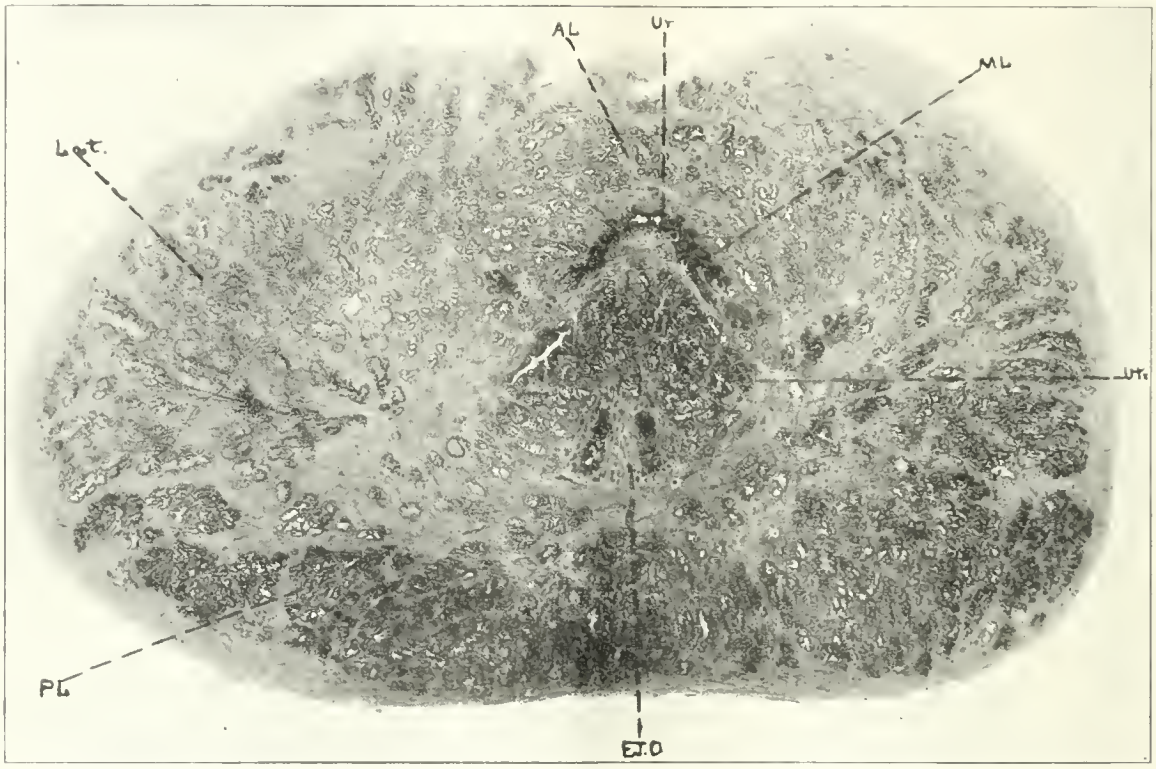

FIG. 5.—Cross-section through the level of the upper end of the verumontanum in a lad of 17 years. Ur, urethra; ML, middle-lobe tubules; Lat, lateral lobe tubules; PL, posterior-lobe tubules showing a fairly well marked partition between the lateral and posterior lobes; AL, anterior-lobe tubules; Utr, utriculus prostaticus; EJ.D, ejaculatory ducts.

case described in another communication,[1] in which there occurred an obstruction at the lower portion of the verumontanum. Surprisingly slight increase in size is made out by observation and measurement during the first decade. The average length is 1.2 cm., width 1.5 cm., thickness 0.9 cm. Distended tubules of the prostate measure at this period 0.25 mm. Thirty-three per cent of the trigonal areas show a slight but decided asymmetry. Muscular and connective tissue bundles extending between the apex of the trigonum vesicae and the upper end of the verumontanum are found in every instance. There are usually three, but there may be more and often less.

As is to be expected, there is a very great increase in the size of the prostate gland after the twelfth year. This increase seems to be even more rapid than is observed in other organs of the body. The enlargement apparently affects all the lobes to about the same degree and there is corresponding increase in the growth of inter- and intralobular connective tissue. The muscular tissue surrounding the tubular elements becomes very markedly thickened. There is no marked change in the mucosa. The alveoli are lined by the usual simple columnar epithelial cells, their inner portions often showing acidophile granules, a pseudo stratified epithelium with two rows of nuclei as pointed out by Rudinger is occassionally present. The basement membrane consists of delicate connective tissue threads as shown by Walker. The ducts are supplied with a mucous membrane composed of simple columnar cells except at their orifices, where they are replaced by transitional epithelium similar to that of the posterior urethra.

A prostate removed from a seventeen-year-old boy measures 2.28 cm. in length, 3.9 cm. in width, 1.8 cm. in thickness. It is noted that there is an increase of about 100 per cent. in the dimensions of the organ during the years of puberty. A microscopic study of the serial sections into which this specimen was cut proves to be very illuminating. Besides the great increase in size of the entire organ, there is a marked change in the elements composing it. The tubules are greatly increased in size both actually and relatively when considered with the amount of stroma present. They are distended, with secretion, in a way which is far more noticeable than in any of the younger specimens studied. The muscular tunics surrounding them are considerably increased in size and the fibers are more compactly arranged. The architecture of the tubules is discernible at any portion of their course through the gland, but it is particularly beautifully portrayed at the ends of the branches, which extend to the base of the prostate, where the component parts of the gland are not so firmly bound together as is the case elsewhere. This is most noticeable in the middle lobe region. Each branch of every tubule is contained within a heavy

muscular envelope as described by Walker.[1] It is noticeable, however, that around the branches of the tubules the circular layers are most strongly developed, while at the region of the ducts the longitudinal layer is mostly in evidence. Near their orifices the circular layer again becomes pronounced, forming a sort of sphincter.

The tubules in this specimen are arranged in five groups thereby retaining the fetal characteristics of the gland.

The middle lobe is represented by twelve tubules with numerous branches which occupy the region between the bladder, ejaculatory ducts, urethra, and the two lateral lobes. The points of entrance of the ducts of the middle lobe into the urethra are particularly widely separated from those of other portions of the structure. At most points the line of demarcation between middle and lateral lobe tubules is quite distinct, but there are points where they are only distinguishable by following from section to section and by so doing it is found that in no case do they intermingle. At the periphery the separation between middle and lateral lobes is quite marked. It is noteworthy that there is a great increase in the number of branches connected with each tubule compared with any of the younger specimens observed. The tubules of the middle lobe seem to be quite as large as those of the lateral division and no histological difference has been made out.

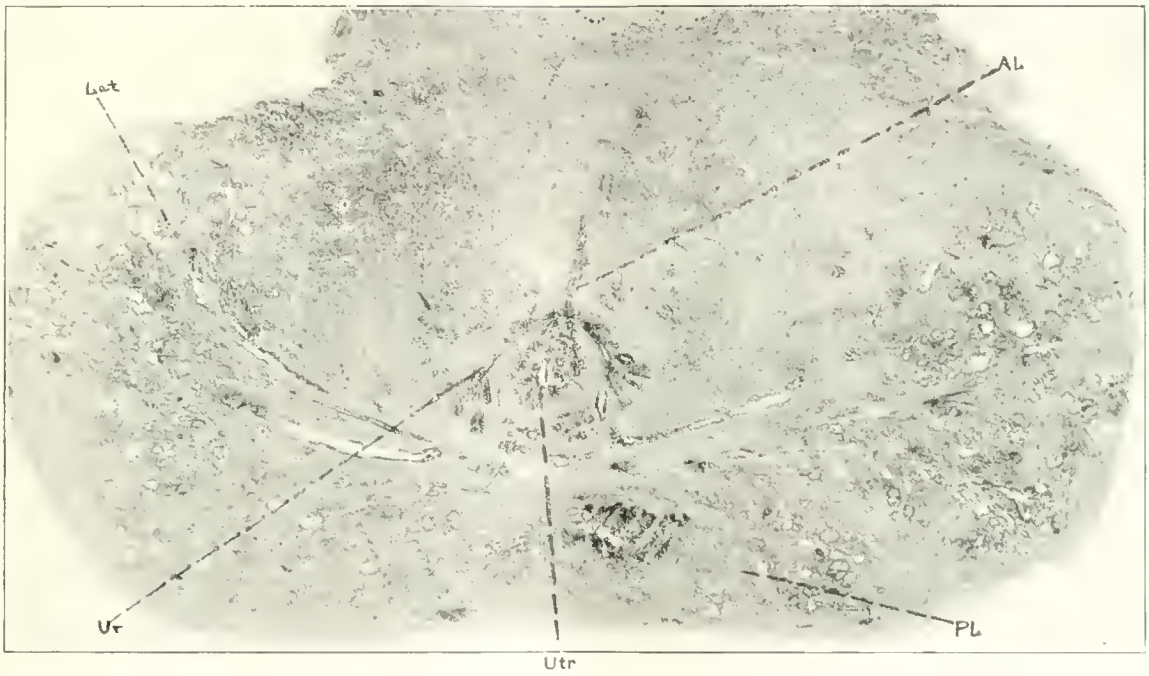

Fig. 6.—Cross-section through the level of the summit of the verumontanum in a lad of 17 years. Ur, urethra; Lat, lateral-lobe tubules; PL, posterior-lobe tubules; AL, anterior-lobe tubules, the duct of one of which is just emptying into the urethra; Utr, utriculus prostaticus surrounded by the tubular structures which empty into it and all contained within its sheath.

The lateral lobes form the largest portion of the gland as in all previous series studied. They are composed of twenty-two tubules which are large and branching and which discharge their secretion through comparatively small ducts into the urethra. Most of them empty into the prostatic furrows or on the lateral walls of the verumontanum. They extend as far toward the base of the gland as do the middle lobe tubules, but are contained within the fibrous capsule which is quite dense at this portion of the gland. Very few ducts of lateral lobe tubules enter the urethra above or bladderward from the ejaculatory duct openings. The largest and longest tubules which begin at the base enter the urethra at the level of the ejaculatory duct openings, the greater number are found below or outerward from this point. The increase in size of these tubules keeps pace with those of the middle lobe. It is not only noticed in regard to the size of the tubules, but also the number of branches. There is, however, no increase in the number of tubules. Branches of the lateral lobe tubules extend in a bladderward direction at every point except at the apex of the gland, where some of the tubules send branches forward. The muscular envelopes are thickened as has been described in discussing the middle lobe tubules. The arrangement seems to be ideal for a rapid emptying of the entire structure with considerable force. The periphery is much more thickly studded with acini than the central or paraurethral region. The ducts of the tubules proceed rather directly toward the urethra and surrounded by their thick muscular walls, pass through a dense area composed of smooth muscle and elastic tissue which is arranged in a more or less circular manner around the urethra. This structural arrangement is more pronounced in that part of the gland outerward from the openings of the ejaculatory ducts. The tubular ducts proper are comparatively short and at their proximal ends have no branches.

Posterior Lobe.—The twelve tubules which compose the posterior lobe are similar in size and appearance to those of other portions of the gland. Their ducts open into the posterior urethra on the sides of the verumontanum and occasionally on its summit outerward from the mouths of the ejaculatory ducts. This lobe is separated from the lateral lobes by a partition which is quite thick and is composed of elastic and white fibrous connective tissue with occasional smooth muscle fibers interspersed. There are some places where this tissue is thin, so that the separation between lateral and posterior lobes is not particularly marked. The amount of

prostatic tissue in the posterior lobe varies according to the location in the cross-section at which it is observed. This lobe occurs in the shape of a wedge with its base at the apex of the prostate, its apex being found posteriorly from the point where the ejaculatory ducts begin their oblique passage through the prostate. The posterior lobe, it is therefore seen, is the only portion of the gland which is palpated per rectum except in a very few instances in which the lateral lobes are greatly enlarged and may be felt on the borders of the gland. The tubules of the posterior lobe send their branches backward toward the bladder except at the very apex of the gland at which point, as is the case with some of the lateral lobe tubules, a few of the branches extend forward and become firmly imbedded in the capsule of the gland.

The anterior lobe is composed of five tubules. They are distributed along the ventral aspect of the gland from a level with the beginning of the ejaculatory ducts almost to the apex of the gland. These tubules are not as large nor do they have as many branches as do those of other lobes, but they do not entirely atrophy after puberty. In fact, from the fifth month of fetal life up to the fourth year of life they seem to be far less in size and importance than they are either before or after this period. Their lumina are distended, showing the presence of some secretion, and while a difference in size is noted it has been impossible to find any marked histological variations from the tubules of other lobes. This portion of the gland is well marked off from the other lobes.

Subtrigonal Glands.—These interesting, minute, finger-formed, simple tubules are found in the lower one-half of the trigonum vesicae near its middle portion. In this specimen there are thirty-two of these structures. They extend to the submucosa and almost never are branched. They are considerably larger in size than any of those observed in younger specimens. They do not have definite connective tissue or other differentiated envelopes surrounding them. Their general direction is oblique, the blind pouch extending toward the base of the trigone. Their appearance is insignificant, but they occupy an important position in that any considerable overgrowth would cause a serious obstruction to urinary outflow. I have found two tumors of this region in postmortem specimens and have observed three others in cystoscopic examinations. Dr. Hugh H. Young[5] saw a case which showed a peculiar hypertrophy of these tubules in which a globular structure was formed which was attached to the trigone by a pedicle. Upon attempted urination this mass would be forced into the vesical orifice, producing a complete obstruction which was easily relieved by catheterization. These tubules are lined with cells not unlike those of the bladder itself.

The subcervical glands of Albarran[6] are present in large numbers. In places their branches extend slightly within the submucosa, a condition not observed in any of the younger specimens. These tubules are much larger than those of any specimen previously described. They are, however, not nearly so large as any of the prostatic tubules. Some of the branches extend slightly into the sphincteric musculature which separates them from the tubules of the middle lobe proper. They extend as a horseshoe around the floor of the urethra from the vesical orifice to the verumontanum. Just above the upper end of the verumontanum the tubules are most profusely distributed and occur in greater numbers than at any other point. Nowhere do they extend into the tissue of the prostate gland itself.

The verumontanum shows a considerable increase in size compared to younger specimens. It is 0.45 cm. wide and 0.35 cm. high at the point where the ejaculatory ducts open into the urethra.

Utriculus Prostaticus.—This interesting vestigial organ opens on the summit of the verumontanum just below the mouths of the ejaculatory ducts. It extends backward in the summit of the verumontanum to the upper end of that protruberance running parallel with the axis of the urethra. It is lined with a mucous membrane composed of stratified epithelium, consisting of two layers of cells provided with a distinct cuticular margin upon which rests cilia. The mucosa is loose and much folded in this specimen. There are eight small glands which extend into the muscular wall of the utricle. These glands open into the utricle for the most part, but some of them open into the urethra itself on the summit of the verumontanum. They are compound tubular glands, very frail in architecture and lined by stratified epithelium.

The vasa deferentia widen out into the ampullae in the region of the seminal vesicles and there are observed a number of definite evaginations from the lumina into the solid walls which are lined with simple columnar epithelium which is occasionally pigmented.

The seminal vesicles show a very great increase in size over those of the pre-puberty specimens. The lumina of the various convoluted branches which form the vesicles are greatly enlarged and their walls are markedly thickened and more compactly arranged than in younger subjects. These organs are composed, on each side, of a main convoluted tubule with five branches extending from it, the branches being also convoluted. They are all bound quite firmly together by a white fibrous connective tissue envelope. Their lumina are lined by simple nonciliated columnar epithelium containing yellow pigment.

The ejaculatory ducts extend obliquely through the prostate in the manner hitherto described, always emptying on the lateral walls and near the summit of the verumontanum in such a way that there is a thin lamina of tissue over the mouths of the ducts, which easily occlude them, provided they are not thickened by disease, in case there is any considerable pressure in the posterior urethra. The mucosa of the ejaculatory ducts is much folded and loosely arranged. The two ducts are closely bound together and are contained within a rather firm muscular sheath which also includes the utricle in the region of the verumontanum. It is easy to see how a sudden increase of pressure within this firm envelope, as in ejaculation, would cause intense pain if the utricle were in an inflamed condition.

The apex group of glands consists of a small group of frail structures which take their origin from the urethra just at and below the apex of the prostate. Sixteen of them are observed in this specimen and most of them occupy a ventral position, although a few of them are found in the lateral walls. There are none in the posterior or dorsal wall. Their lumina are small in size and surrounded by very delicate walls. Many of them have a few branches, but some of them are simple tubules. They occur most thickly at the apex of the prostate and become fewer in number and smaller in size lower in the urethra, until they entirely disappear.

Discussion.—A most interesting feature of the anatomy of the prostate gland in youth is the enormous increase in size during the period of adolescence. Thus we see that from an average length of 1.2 cm. in the first half of the first decade the structure increases to 3.0 cm. at the end of the second decade. From a width of 1.5 cm. to 3.8 cm. and from a height of 0.9 cm. to 2.1 cm. Therefore, there is an increase of over 100 per cent. in size at this period. The size of the prostate has been a matter of interest for many years. Sir Henry Thompson,[7] one of the older writers, measured a number of prostate glands, the youngest one of which was twenty-one years of age. He found its length to be 1.3 inches, breadth 1.4 inches, and thickness 0.7 inch. Dr. Gross,[11] in his second edition on the urinary organs, made measurements of the prostate at birth and found that the width was at the base five lines, length four lines, thickness three and one-quarter lines. At four years of age he found it to be seven lines in width, six lines in length, thickness four lines. At twelve years of age width is nine and one-half lines, length eight lines, thickness four and one-half lines. At fourteen years, width nine and one-half lines, length eight lines, thickness five lines. At twenty years of age, width sixteen lines, length fifteen lines, thickness ten lines. Mr. H. P. Bell wrote on the subject[8] and found between two and four years of age the transverse diameter to be 1.24 to 1.35 cm., thickness 0.32 cm. From five to ten years transverse diameter 1.35 cm. to 1.7 cm., thickness, 0.55 cm. From ten to twelve years of age transverse diameter 1.9 cm. to 2.2 cm., thickness 0.67 cm. to 0.9 cm. From twelve to fifteen years, transverse diameter 1.9 cm. tto 2.2 cm., thickness 0.79 cm. Sir Henry Thompson measured one specimen twelve years of age and found its length to be 1 inch, breadth ¾ of an inch, thickness ⅜ of an inch. Deschamps[9] also measured a number of specimens and found in subjects from three to eight years of age the thickness to be four and one-quarter lines, width seven lines. In subjects from eight to sixteen years the thickness was five lines and width eight to ten lines.

The width is at all ages the greatest diameter of the prostate and the height the least. At the end of the second decade the prostate has assumed adult proportions and changes in normal specimens are very slight indeed. In appearance the gland seems to bulge considerably more at its base and seems to have lost the more or less rounded appearance that it possesses in childhood.

The vessels are situated chiefly on the lateral and anterior portions of the capsule, very few being found on the posterior surface. Phleboliths have not been found in any of the specimens representing the first two decades. The glands studied all show a persistence of the five lobes. Bernard Cuneo[10] says that according to Aschoff and Albarran the prostate is divided into two groups of glands, one central, which has small excretory canals and is situated under the mucosa and within the smooth sphincter, the other (the peripheral group has long excretory ducts and is called the prostate proper) that develop from the original foci in the embryo which I have already described in detail. Although the five lobes persist during the period of youth, there is not a dividing partition between middle and lateral lobes, the tubules from these divisions do not at any point intermingle and at the region where the ducts of the middle lobe tubules empty into the urethra there is wide separation of these from all similar structures.

There is a corresponding increase in the size and number of branches of each tubule of the prostate during puberty, but the number of tubules in each lobe of the gland is not increased. The increase in the number of branches occurs near the periphery of the gland and the central portion is made up of stroma and ducts of tubules. In the embryo and new born I believe that the portion of the gland occupied by glandular elements is one-fourth, but in the post-puberty period I believe that there is such a relative increase that the glandular elements occupy at least one-third of the gland and the stroma only two-thirds.

The capsule of the gland is almost entirely lacking at the middle part of the base so that the tubular branches, particularly in the middle lobe region, are held in with the general structures chiefly by the musculature of their own walls, which is very strongly developed at this point.

It has not been possible with the staining method at hand to find any histological differences in the lining membrane of the tubules making up the various lobes of the prostate. The alveoli are lined by simple columnar epithelium after puberty, the inner portion of the cells often showing acidophile granules. A pseudostratified epithelium with two rows of nuclei is occasionally present. In the younger specimens this is invariably true.

The ducts open into the posterior urethra, usually on the lateral walls of the verumontanum, in such a manner that there is a little valve-like, thin laplet of tissue over the orifice, which is easily closed by any pressure within the posterior urethra. In disease the tissues making up the orifices become indurated and stand widely open, as can be demonstrated by the posterior urethroscope, so that this wholesale valve-like action of the compressible verumontanum does not functionate. I saw a case with Dr. J. F. McCarthy of New York in which a shred of pus attached to the orifice of a prostatic tubule could be made to regurgitate into the wide open mouth of a duct at will by increasing the pressure of fluid within the posterior urethra. The greater number of prostatic ducts empty into the urethra in the immediate vicinity of the ejaculatory ducts. The middle lobe tubules all have their orifices just above the ejaculatory duct orifices, most of the posterior lobe duct orifices are just below this point, the lateral lobes have their duct orifices most thickly arranged at and below this region while the anterior lobe has its ducts, which are quite small and comparatively unimportant, all along the ventral wall of the urethra. Thus it is seen that the anatomical arrangement is perfect for making a thorough mixture of fluid expelled from the ejaculatory ducts and the prostate gland during ejaculation, thus activating the spermatozoa, as George Walker of Baltimore has shown. The ducts of the prostatic tubules are comparatively short and extend almost directly toward the verumontanum. For the most part they have their orifices on the lateral surfaces of that structure and a few in the prostatic furrows, and very few open at other portions of the urethral circumference. The posterior lobe for the most part in the specimens studied is fairly well separated from other portions of the gland by a partition made up of fibrous tissue. This partition varies in thickness and hence in distinctness, but is usually present. At the apex of the gland the lateral and posterior lobe tubules

send a few branches forward instead of posteriorly, as is always the case. This is a matter of some importance to the surgeon because during the enucleation process these forward branches protrude into a portion of the gland which is very compactly arranged so that more force is required to separate it at this point than elsewhere. The posterior lobe is the only part of the gland felt per rectum except in cases of hypertrophy of lateral lobes, in which case there may be compression of the posterior lobe and nodules are felt through it and on the lateral borders. The anterior lobe becomes very small and unimportant at about the time of birth, but in none of the cases here observed has it entirely atrophied. It is smallest at the time of birth apparently. After puberty, as in the seventeen-year-old specimen, it is quite prominent. We have other evidence that this portion of the gland may be of some consequence in the fact that in two of my series there is an hypertrophy of the anterior lobe.

The subtrigonal glands, the development of which I described in a former communication, occur in every specimen studied older than the twenty-second week of fetal life. They increase in number all during fetal life and in childhood. In the specimen of the new born there were nine of these structures, at four years of age their number increased to twenty-three and after puberty there are thirty-two. Their structural arrangement changes in size only and not in character. After puberty they are quite large, comparatively speaking. They have no differentiated tissue around them and at this time there are no branches. Their general direction is toward the base of the trigonum vesicae, but they are contained entirely within the mucosa and do not extend into the submucous structures. The epithelium is often piled up several layers thick, more or less occluding the lumina, which is in every instance small. Abnormalities of this group occasionally occur and their significance lies in the fact that they occupy a position that has the possibilities of great disturbance.

The tubules of Albarran's group increase in number during the period of youth and occupy a position within the sphincter between the vesical orifice and the upper end of the verumontanum. The anatomical arrangement here is the most important of any group of tubules in this region, considered from the standpoint of disturbance caused by a slight abnormality in their growth. They were first called attention to by Albarran, and Cuneo considered their structure to be absolutely identical with the tubules of the prostate, but I do not agree with this. Their architectural characteristics are much more slender in that their tubules are not surrounded in health by muscular or other differentiated tissue envelopes. The lumina of their tubules are smaller than are those of the prostate and while it is true that the mucosa is sometimes made up of columnar epithelial cells, these cells are smaller and inclined to be heaped up more than are those of the prostate proper. In some specimens the prevailing cell of the mucosa of this group is cuboidal. These tubules begin to develop at the fourth intrauterine month and increase slightly in size and number until birth. After birth they increase considerably in number and slightly in size. After puberty they increase enormously in size and number.

The vasa deferentia widen out into the ampule in the region of the seminal vesicles and at that point there are observed a number of definite evaginations from the lumina into the solid walls, which are lined with mucous membrane similar to that of the vasa deferentia themselves. These evaginations are not found before the period of adolescence, although a number of tubules extending into the walls of the ejaculatory ducts are found both before and after this period. The mucosa of the ejaculatory ducts in the older specimens taken from subjects in the period of youth is quite folded and loosely arranged, although the two ducts themselves are bound very tightly together by a firm muscular tissue circularly arranged.

The seminal vesicles show a corresponding increase in size during the later years of this period, their walls are markedly thickened and composed of more compactly arranged tissues. Their lumina are lined by simple nonciliated columnar epithelium containing yellow pigment.

The verumontanum is formed by the ingrowing of the ejaculatory ducts and utricle with their enveloping tissues. These structures themselves are quite firmly bound together, as has been mentioned, and most of the ducts of the prostate proper empty into the urethra on the lateral walls of the verumontanum, being more or less arranged in groups around the orifices of the ejaculatory ducts. In spite of the fact that so many compact structures traverse the verumontanum, it is a fairly compressible organ and this fact is of great importance physiologically in that any increase of pressure in the posterior urethra compresses the verumontanum and, due to the direction of the tubules of the prostate and the peculiar anatomical arrangement at their orifices, they are completely blocked off so that urine passing through the posterior urethra or pressure from other causes will permit of no regurgitation of fluid into prostatic tubules or ejaculatory ducts. It is well known that instrumentation is frequently followed by an ascending infection through the ejaculatory ducts and sometimes the prostatic tubules, more often the former. This is probably due to the fact that the ejaculatory ducts are more exposed, being near the summit of the verumontanum, and the passing of an instrument in the direction opposite to the course of these ducts causes a forcing of fluid into them.

The utriculus prostaticus is sometimes absent, as in one of the serial sections studied, in which the place usually occupied by this structure is taken up by two fairly large tubules with a great many branches which empty into the urethra on the summit of the verumontanum in the place usually occupied by the orifice of the utricle. This structure varies a great deal, its depth averages 0.4 cm. in the first decade, 0.5 cm. in the second decade. It is usually contained within the very summit of the verumontanum, but may extend to the base of the prostate. It is lined with stratified epithelium, which is loose and folded there are a number of glandular structures contained within its walls. They are compound tubular glands and also lined with stratified epithelium. There has been no instance in the specimens here studied in which an ejaculatory duct empties into the utricle. The orifice of the utricle is not protected by its position or by any tissue over it so that the long slit-like open mouth affords a very easy entrance for any infecting agent and hence gives an explanation for the frequent inflammation of the utricle. The compact arrangement of the utricle and the ejaculatory

ducts within the same envelope make it easy to understand how sudden greatly increased pressure, as in ejaculation, would cause severe pain during the act. I believe this to be the chief cause of painful ejaculation and think that this symptom is practically never due to the opening of an ejaculatory duct into the utricle. Three hundred and fifty specimens that I have studied have not shown this condition and Poroscz[16] has studied three hundred cases without finding such abnormal communication. He believes that disturbances in the sexual act are usually caused by a pathological condition of the proximal ends of the ejaculatory ducts, the musculature of which at this point he terms the sphincteric muscle.

Below the apex of the prostate a small group of glands, which I have described as the apex group, persists and increases in volume, as do the other component parts of the prostate gland. These usually begin in the lower end of the prostatic urethra and while some of them have a number of branches, for the most part in the first decade they are simple tubular structures which are quite frail as regards their architecture. Most of them occupy a ventral position, a few being found in the lateral walls, none in the posterior walls. They extend through the submucosa into the investing muscular tunics. In some instances their number increases after adolescence, as many as sixteen being observed in one specimen. Lower down in the urethra they completely disappear.

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The Blood Platelets and the Megacaryocytes.—A. Cesaris-Demel contributes the result of his observations in support of the theory advanced by Wright, namely, that the blood platelets are derived from the megacaryocytes.—*Pathologica.*

ROENTGEN-RAY TREATMENT OF EXOPHTHALMIC GOITER.*

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THE thyroid gland in exophthalmic goiter most frequently undergoes hyperplasia, and the effects of this process are to be seen in both the stroma and parenchyme. The increased stroma or support of the gland seems to be a compensatory hyperplasia which takes place in order to meet growing demands and to supply a framework for an enlarging, growing, and ever active parenchyme. The parenchyme, active or secreting portion of the thyroid gland, in exophthalmic goiter presents several hyperplastic alterations which are more or less constant in hyperthyroidism, and which are no doubt the pathological lesions which lead indirectly to symptoms of the disease. In these cases the secreting epithelium changes from a low cubical variety to a columnar form. This apparent over-activity of the individual epithelial cells is further increased by a great and general enlargement of the epithelial cell area of not only the larger alveoli, but of the smaller ones as well. This epithelial cell increase is in many cases so marked and abundant as almost to fill the cavities of the gland, and is in marked contrast to the simple, flat epithelial cells witnessed in cases of simple goiter. The alveoli while greatly increased in number and presenting the above signs of over-activity of their lining epithelial cells, yet contain a small amount of this colloid material, and this markedly decreased colloid proves to be in most cases very weak in iodine.[1] All who have investigated the thyroid gland chemically in exophthamlic goiter agree that the percentage of iodine is generally less than normal, and it is on this percentage of the iodine content that the colloid depends for its activity. Adami[2] contends that a thick, dense colloid indicates an accumulation and storing up of this material, as witnessed in simple goiter, instead of an increased discharge of the internal secretion. MacCallum[3] has shown that in the severe cases of exophthalmic goiter the normal colloid of the gland is not only greatly decreased in quantity, but has become changed into a thin, palely staining substance which has no longer the refractive qualities of normal colloid. Lebert and F. Kocher[4] have pointed out cases of simple goiter which, having received large doses of iodine internally, developed hyperthyroidism and the classical symptoms of Graves' disease. Thus, in exophthalmic goiter there are all the evidences of highly increased secreting activity of the thyroid, yet the products of this overwork have escaped from the gland. In simple goiter no such clinical evidences of hypersecretion or over-activity of the gland are to be seen, yet the thyroid is filled with thick colloid while its percentage of iodine is very high. This leads one to suppose that the chief clinical difference in simple and exophthalmic goiter lies in the increased or decreased secretion of the highly concentrated iodized colloid from the gland. In support of such a contention one has only to mention instances where too much manipulation in the removal of the gland has produced alarming symptoms of hyperthyroidism in cases of simple goiter. Dangerous symptoms such as these occur much more

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frequently when operating on Graves' disease probably because of the ease with which the toxin escapes from the gland and reaches the circulation. Another reason given for such symptoms as high fever, cyanosis and difficult breathing, following thyroidectomy for exophthalmic goiter is the association of an unsuspected enlarged thymus gland. Surgeons are just beginning to appreciate the frequency with which enlarged thymus glands complicate Graves' disease. Hart,[4] Von Haberer,[5] Klose,[6] Simmonds,[7] and Nordman of Germany, Rose[8] of Paris, and Cretti[9] of Columbus, all speak of the frequency and the dangers of complication.

Simmonds found such a condition in fourteen out of eighteen cases of exophthalmic goiter, and in seven out of sixteen cases of hyperthyroidism. He believes that 75 per cent of the cases of abnormally active thyroids are associated with enlarged thymus glands. All of these men agree and insist that the enlarged thymus should be investigated and resected in order to eliminate dangerous and even fatal postoperative symptoms. Failure to do this has resulted in many deaths, both in this country and abroad. So much importance is being placed on the presence of a hyperplastic thymus that some surgeons believe that resection of this gland alone will relieve symptoms of hyperthyroidism. Von Haberer removed the thymus alone in one case with entire cure of exophthalmic goiter. The cases of reported improved Graves' disease following the ingestion of thymus tissue may throw additional light on this subject. I think all of us have seen failures following operations on exophthalmic goiters, and I am inclined to believe that the above mentioned associations have caused many of them. Cretti alone had three deaths from this cause, and in going over the histories and investigating the *x*-ray pictures of his old cases he was surprised to find a number of cases of thymic hyperplasia that he had completely overlooked. These reports certainly emphasize two important points, namely the insufficient relief surgery has given many of these patients in the past, and the increasing tediousness and danger which the complete operation of the future offers. Resection of the thymus and thyroid at one operation must increase the risks on what should be and is considered a notoriously bad operative subject.

The action of Roentgen ray on some of the ductless glands of the body has been observed for many years. While its selective effect on the testicle and ovary is now common knowledge among the profession, its atrophic action on the thyroid, thymus and pineal gland has until recently received only superficial study. While these glands may vary somewhat in their radiosensibility, any one who has investigated the literature or had the opportunity to note the effects of *x*-ray on various tissues, could not help but note the selective action of the ray on these ductless glands. Williams,[10] Campbell,[11] and Butler[12] have obtained good results with Roentgen ray in exophthalmic goiter. Freund[13] speaks of his excellent results with the same method. In five cases of Graves' disease treated by him none failed to show improvement in weight, pulse, nervousness and exophthalmus, only one tumor in the five cases treated failed to decrease to its normal size. Some of his cases were observed for one and a half years with no return of the symptoms. He reports three cases treated by Weiderman with the same excellent results except the improvement in the exophthalmus. Freund also quotes the same encouraging results by Gilmer, Schesinger, Stegman, and Schwarz. C. H. May[1] is positive that the ray lessens vascularity, improves the clinical symptoms, induces sclerosis of the capsule of the gland and better prepares the patient for the future operation. He believes that the *x*-ray, by reducing the pulse, changes a risky operation into a safe one. All of these results were obtained with what we now know to be a very crude technique. Between the lines it is easy to read that burns and vague methods kept the treatment from becoming popular among the profession. Neither the operator nor anybody else knew the amount of ray the patient was getting; hence the method was crude, inaccurate, unsatisfactory, and dangerous. The accurately measured doses of *x*-ray have worked almost as great a change in deep roentgentherapy as it has in skin cancers and ringworm. That any benefits could be had with the older methods of administration is to be wondered at when we know what a haphazard and illogical technique it was. The Sabouraud pastile method of measuring the ray allows massive doses to be given with little or no danger of producing a burn and, properly interspersed, do away with the risks of cumulative effects and burns. Now that the entire field of roentgentherapy has been placed on a scientific and sound basis it is without a doubt to play a prominent part in the future therapy of the hyperactive ductless glands. In the recent literature from France and Germany many articles appear which show what the improved technique has accomplished in the treatment of exophthalmic goiter. Ludin[14] compares his results with 208 articles on the subject, and reaches the conclusion that roentgentherapy will be the method of the future for relieving the symptoms of exophthalmic goiter. F. A. Stoner in the same article claims he had only one failure in forty-one cases, a number being benefited. Decreased nervous disturbances and slowing of the pulse were the first signs of improvement.

Some of these cases were under observation from one to four years, with no sign of returning symptoms. Ledoux of France had the same good results; he exposed the thymus gland along with the thyroid. Wagner,[15] Howell,[16] and Hollang[17] are other European physicians who give results just as favorable. Beck's cases, reported by Freund, mention two cases where the ray was applied and relieved all symptoms after an incomplete thyroidectomy. Schultz[18] in his excellent book on roentgentherapy speaks of complete atrophy of the thyroid gland being produced by the Roentgen ray, and proves by experiments that the thyroid gland is one of the most radiosensitive organs of the body. Pancost[19] lays stress on the selective action of the ray on the thyroid, especially when the gland is hyperactive as in Graves' disease. He says that one of the early and essential physiologic actions of prolonged radiation upon such a radiosensitive glandular structure, and which almost invariably precedes atrophy, is an inhibition of glandular activity. Pfahler[20] says he obtained marked improvement in 75 per cent of his patients with ophthalmic goiter. To demonstrate the fact that the Roentgen ray does cause lessening of gland activity, and even atrophy of the thyroid gland, Ludin in his article speaks of where too intense radiation of a case of exophthalmic goiter changed the condition into a typical case of myxedema. These reports are sufficient proof of the vulnerability to the *x*-ray of the hyperactive thyroid gland and class the organ with other ductless glands, testicle, and ovaries, as being unusually radiosensitive and liable to atrophy from prolonged *x*-ray exposures. My efforts in this

paper are not only to show the members of this society that a case of exophthalmic goiter may be made to undergo a lessening of its activity, or even atrophy, but to lay stress on the treatment of these cases of Graves' disease associated with hyperplastic thymus glands. That this serious complication possesses no added difficulties for the roentgen therapeutist seems evident when one reads of the experiments of Alfred Friedlander[21] of Cincinnati.

Following the reports of Heinecke and Hochsinger, Friedlander set about to learn the action of the Roentgen ray on the thymus gland. After treating and curing a number of cases of status lymphaticus by exposing the thymus gland to *x*-ray he sought to demonstrate a selective action of the ray by experiments on rabbits. His results were so successful that I would refer all those that doubt the efficiency of *x*-ray to make a study of this excellent article. Briefly, he noted that he was able to produce fibrosis of the gland with gradual disappearance of the thymus cells in every case he rayed. By increasing the length and decreasing the interval of exposures he could quicken the atrophic process up to the point where all that remained of a normal thymus was a small mass of fat and connective tissue without any glandular substances whatever. Diminution of the weight of the thymus, both absolute and relative to the body weight of the animal (as compared with the controls) was constant. The loss of weight was proportionate to the number of exposures and the length of time which elapsed between the treatment and autopsy. The general weight of the animals remained undisturbed, showing that such a loss in the thymus was not a part of a malnutrition of the animal. These experiments convinced Freidlander that the *x*-ray did have a selective action on the thymus, and supported his clinical observations on the treatment of status lymphaticus by Roentgen ray. Rachford[22] in his book on children mentions the specific effects of the ray on these hyperplastic glands, and concludes that its use will cause a decrease in the size of an enlarged thymus and control the excessive physiological action of the gland. I am at this time unable to state the frequency with which my cases of exophthalmic goiter are associated with enlarged thymus glands. In view of the recent literature on the subject and the reports of various surgeons of large experience, the percentage must be considerable. I hope to have a radiograph made of every case treated, especially those with the cardinal symptoms of exophthalmic goiter, but presenting little enlargement of the thyroid.

Cretti and Ledoux[23] have shown that such an association offers no serious obstacles to roentgentherapy, as both glands, being very radiosensitive, may be exposed at the same time. If the future proves that such a close connection exists between exophthalmic goiter and hyperplastic thymus glands it is evident that it will tremendously hinder surgical interference, while not in the least discouraging roentgentherapy. The two cases that I reported before this society last month were uncomplicated exophthalmic goiter so far as several physicians could judge without the aid of a radiograph. At least the thyroid alone was exposed, with the results that I stated. The pulse of both patients was less than eighty-five the last time they reported to me one week ago. One of the patients has been without treatment for six months with no return of the tachycardia or tremor, and a gain in weight of twenty-three pounds. The other patient had a pronounced tachycardia, the pulse at times reaching 140, considerable tremor, fever of 100 to 102, persistent headaches and sleeplessness, which she claims had been persistent for six years. She was considered a bad risk by the surgeon she consulted, and advised by him to take a rest cure. After four exposures and with no rest or relief from her hard work, her pulse is now eighty-five, her headaches have disappeared, she gets eight hours of undisturbed sleep, and she has been without fever since the first treatment, two months ago.

I have recently completed the treatments in three other cases of exophthalmic goiter with the same gratifying results. In every case that has had three or more exposures a decided slowing of the pulse, lessening of the nervousness, tremor, and exhaustion have been apparent. Along with these results the size of the tumor has decreased in most of the cases, while the patients always gain in weight, they look and feel better, and are better able to attend to their social and business duties in spite of the fact that they are kept at their regular duties and are allowed no rest cure, bromides, digitalis, or other methods or drugs to quiet them. It is very interesting to observe the slowing of the pulse in these cases. Very often this is noticeable after the second exposure notwithstanding the excitement resulting from the loud sparking and buzzing of the apparatus, the strangeness of the experience and the natural timidity of these highly nervous subjects. The pulse usually shows the first improvement forty-eight hours after the second treatment, although it is sometimes noticeable while the thyroid is being exposed, which might be partially due to the patient being at rest at this time. This continues for several days or a week, when the tachycardia again becomes troublesome. By the time the patient returns for the third treatment, two weeks later, the heart may be almost as rapid as before the treatment began. After the third or fourth exposure the effects are more lasting and are often evident at the time of the next treatment in two weeks. From this time on the improvement continues until the pulse reaches eighty, or until six bimonthly exposures are made. According to the foreign roentgenologists, if more than six full doses are necessary to show improvement the treatment should be discontinued. However, in my few cases four applications have never been necessary to benefit, but of course there must naturally be a certain percentage of cases that will not react so favorably as these. The technique is of the greatest importance and should receive the most careful study. One must remember that the patient must get large doses of ray yet not receive any Roentgen ray irritation or burns. The method that I employ is first to cover the entire area with a layer of chamois skin to protect the patient from the secondary rays given off from the aluminum filters above. Over this a heavy lead protector 3 mm. thick is placed, a hole having previously been cut large enough to allow the tumor to be palpated and located. The pastile, Hampson, is placed in a black envelope to exclude light, and this envelope rests between the edges of the opening in the lead and on the chamois and the surface to be rayed. To increase the safety, brass disks are also used; these are kept 1½ inches above the pastile and patient. The disks are 2½ in. deep and are surmounted by an aluminum filter 1 mm. thick. The filter is 1 in. below the wall of the tube, which is 7 in. in diameter. This makes a distance of 5 in. from the wall of the tube, not anode, to the patient, and 8½

in. from the anode to the patient. I make it a practice always to give between three and four points Hampson's radiometer, but never more than four points for fear of a reaction in isolated cases, although I am aware that five points of filtered ray

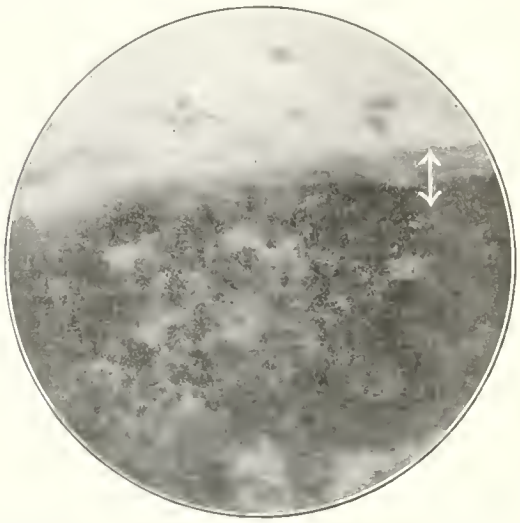

Fig. 1.—Normal delicate capsule of an untreated thymus; the line shows the normal thickness of the capsule.

could be given many cases with safety. The treatments are never given oftener than once in two weeks, which allows the skin effects of one application to wear off before another is given. I employ a medium thick filter because I wish to get rather deep action and at the same time guard against any superficial skin reactions. I do not employ the dense thick filters because I believe a hard, penetrating ray would not be the one most easily absorbed by the hyperplastic thyroid. Schultz and others have shown that to get the best results one must employ not necessarily the hardest and most penetrating ray obtainable, but the one with a hardness most easily absorbed and taken up by the lesion or gland. Poor results in treating cancers, skin lesions, and uterine fibroids may result from the employ-

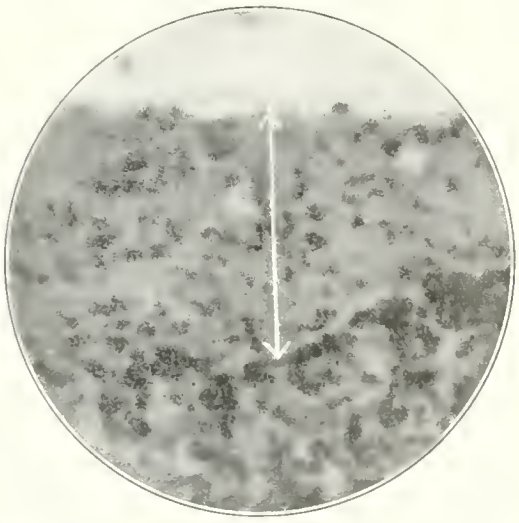

Fig. 2.—Great increase in the thickness of the capsule of a treated thymus; indicated by the line.

ment of such a hard, penetrating ray as to pass entirely through the tumor without affecting it in the least. For this reason I feel that a moderately thick filter, 1 to 1½ mm., answers our purpose better than one 3 to 5 mm. thick.

I realize that a series of five completed cases is little proof of the efficiency of Roentgen ray in exophthalmic goiter, but in a number of other cases that have had less than six exposures not one fails to show improvement in at least the pulse, weight,

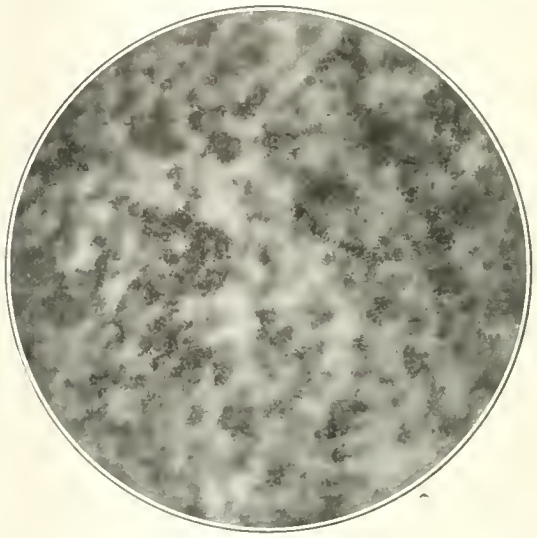

Fig. 3.—Normal cells, vessels, and trabeculæ of an untreated gland.

nervousness, and tremor. In most of the uncompleted cases the exophthalmus is still and may permanently be prominent. The latest text books on the eye contend that this symptom is the result of the thyroid poison acting on the sympathetic nerves, which in turn affects the vessels of the eye leading to their content engorgement. This continuous increased blood supply leads in the older cases to a new formation of tissue, hence the exophthalmus in such cases is permanent and explains the frequent persistence of the symptom in an otherwise satisfactory thyroidectomy. Aside from this symptom, which resection of the gland also frequently fails to relieve, I am firmly of the opinion that the great

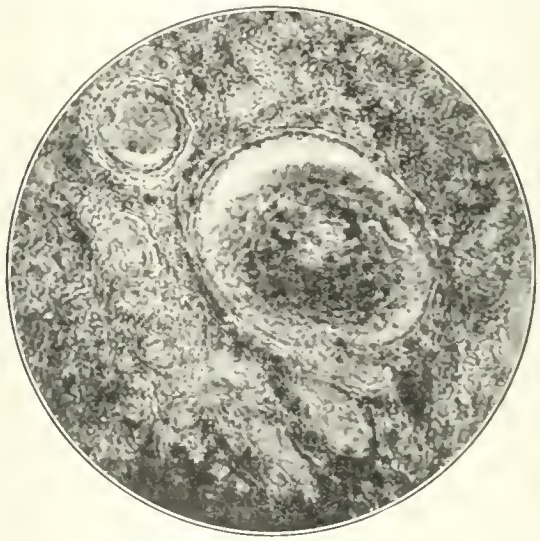

Fig. 4.—Great increase in number of blood-vessels, their intense engorgement with organizing thrombi, thickening of the trabeculæ, increase of the reticula and other signs of well advanced sclerosis.

majority of the cases of exophthalmic goiter can be relieved of all troublesome symptoms. This is not my individual view but includes the ideas of every Roentgen therapeutist of experience who has taken sufficient interest in these cases of exophthalmic

goiter to build up an accurate technique and give it a reasonable trial. Many of these patients offer risks too great for any surgeon to ignore and I believe that it is in this class of cases that the Roëntgen ray will prove most efficient. If the symptoms of the disease are of sufficient gravity the risks in that case must certainly be increased and be ample excuse for using the Roentgen ray or any other non-operative measure that will give relief. Should this method be chosen too much importance cannot be placed on the experience of the *x*-ray operator. Past performances have proved that the mere ownership of a machine does not entitle one to do such technical work, nor does it prove that one who takes and interprets *x*-ray pictures fairly well is competent to undertake it. It is necessary for the future general practitioner to know enough about roentgentherapy to choose the competent men of his community, not only in order to get the best results, but to prevent one of the most useful therapeutic methods we have from being discredited and condemned.

Conclusions.—1. Many cases of exophthalmic goiter are associated with enlarged thymus glands and this association often causes serious postoperative symptoms and even death.

2. While such an association will seriously complicate and prolong a surgical operation, it offers no such added difficulties for the Roentgen therapeutist.

3. Not only such ductless glands as the ovaries and testicles but also the enlarged thyroid and thymus glands as well are very sensitive and may be atrophied by the Roentgen ray.

4. This theory has been amply proved by laboratory experiments and clinical results in many cases of hyperactivity of the thymus gland seen in cases of status lymphaticus and hyperactivity of the thyroid gland—exophthalmic goiter.

5. If these cases of status lymphaticus and exophthalmic goiter will give the Roentgen ray a fair and impartial trial the majority of them will be relieved of all troublesome symptoms and make unnecessary a disfiguring, dangerous and often futile operation.

6. The above findings are not entirely my own hastily formed ideas but include the results of several hundred cases of exophthalmic goiters that have been successfully treated by the Roentgen ray, the literature of which is open to all who may care to investigate it.

April 1, 1915.—Since this report was read I have completed the treatment in five additional cases of Graves' disease. In every case the patients gained in weight, the nervousness has very much improved, they sleep better, the tumors have decreased in size, the tremor disappears and the pulse in every case but one was brought below 85. Some had been as high as 160. In this one exception a radiograph showed the patient had an active tuberculous lesion in one lung associated with an evening elevation of temperature of 102 deg. and a pulse that failed to go below 112. The goiter in this case has greatly decreased in size, the general nervousness has improved, while the tremor is no longer noticeable.

Action of Roentgen Rays on the Thymus.—To demonstrate the action of the Roentgen ray on the thymus gland I took two guinea pigs of the same weight and age for experimental purposes. The post mortem findings in these two pigs were compared to those on a normal untreated control pig of approximately the same age and size. There was a great difference in the size and appearance of the treated glands when compared to the untreated gland. To the unaided eye the amount of of thymic tissue was little more than half of that found in the untreated case. Microscopically the findings were even more marked and could be divided into a capsular and an interstitial hyperplasia, both increasing to a marked degree, leading to a distinct sclerosis and a reduction in the amount of the gland tissue proper. The capsule of the treated glands was in places increased to six times the thickness of those untreated, as the pictures show. Below the capsule the findings were even more interesting. The veins, arteries and capillaries were widely engorged with thrombi and organizing blood clot. The walls of the blood vessels were thickened. The thrombi in places were undergoing hyaline degeneration and showed in some locations the conversion of hemoglobin into hemosiderin, proving ante mortem formation of the clot, all pointing to the future organization of the vessel contents leading to an additional sclerosis of the gland. In addition to this, there was a decided thickening of the delicate trabeculæ and a great increase in the reticula taking place at the expense of the thymic cells.

Technique of Roentgen Ray Exposures.—The treated pigs were each given 3 points Hampson's radiometer every other day until 12 points Hampson or 3 erythematous doses were given. This was applied over the upper thorax and neck of the pig, the ray was filtered through 1 mm. of aluminum, and two layers of chamois were employed to protect the skin from secondary rays. The pastiles were covered with black paper and placed on the exposed surface and under the chamois. In this case the two pigs received an unusual amount of hard ray in a very short time, eight days. Under ordinary circumstances this amount of ray is almost three times the amount recommended for human beings where skin irritation is to be avoided. An ordinary *x*-ray tube was employed, a 1 KW. transformer with a 4-inch spark gap being used to excite it. In addition to these experiments, I have exposed the thymus of two rabbits to the Roentgen ray to note the effects when compared with a normal control and also to see the effect such raying would have on the blood picture. According to Lampe and Liesegang the removal of the thymus is followed by a great fall in the lymphocyte count. Garrés and Halstead have seen a great reduction in the number of lymphocytes following resection of the thymus. Rachford has seen rapid disappearance of a lymphocytosis accompanying status lymphaticus when the thymus was exposed to the Roentgen ray. Of the two rabbits that I exposed to the ray, one was rayed every day for eight days, getting in all, six erythematous doses of ray or 24 points Hampson radiometer through 1 mm. of aluminum and using a Coolidge tube excited by a 16-inch coil. The white cell count in this rabbit before treatment began was, polymorph onuclears 39, lymphocytes 60, and mononuclear 1. After eight days of intense treatment with a filtered ray the count was polymorphonuclear 40 and lymphocytes 60. At this time, not having had the gland sectioned, I am unable to state the amount of thymic destruction caused by giving so much ray to the thymus, but compared with the changes in the case of the pig which received only one-half the amount, it must have been considerable, certainly enough to cause some change in the lymphocyte count, which how-

ever did not take place. For this reason I am compelled to think that the enormous fall in the number of lymphocytes following destruction of thymic tissue as reported by the above investigators must be explained in some other way.

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CEREBELLAR SYMPTOMATOLOGY.*

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It is universally true in regard to symptoms associated with lesions of the nervous system that the pathological anatomy and physiology of the affected areas furnish a ready explanation for the symptoms which are encountered, the only limitation being that our physiological and anatomical knowledge is very incomplete.

The cerebellum may be roughly divided into two lateral lobes and a central lobe or vermis. The cerebellum is not in the usual acceptation of the term either truly motor or truly sensory in function. It receives impressions from afferent tracts and transmits impressions to certain efferent tracts. The following anatomical reminders will serve to recall the more essential elements concerned in connecting the cerebellum with other structures.

The component fibers of the posterior spinal nerve roots may be subdivided into several different groups varying in destination and function; only one of these groups concerns us at the present moment. The fibers of this group enter the posterior portion of the cord and terminate in arborizations around the cells of Clarke's column. Thence new neurones extend by way of the direct cerebellar tract and Gowers' tract to the cerebellum—the direct cerebellar tract by way of the inferior peduncle, Gowers' tract by way of the superior peduncle. Both these tracts are homolateral, though some writers hold that there may perhaps be contributing fibers to Gowers' tract from the contralateral side.

These tracts represent the principal afferent fibers from the cord to the cerebellum, and furnish the direct nervous connection between muscles and joints and the cerebellum, to which they convey joint and muscle impressions.

There are two principal efferent tracts which leave the cerebellum, one being the vestibulospinal tract, and the other the rubrospinal tract. Both are physiologically essentially homolateral (though the latter becomes so only after crossing to the red nucleus of the opposite side and then recrossing to the side of its origin), and both convey stimuli from the cerebellum to joints and muscles by way of the anterior spinal nerve roots. Recognition of these facts reveals the reflex mechanism which permits cerebellar muscle control.

There is also a connection between the cerebellum and the oculomotor nerves by way of a group of fibers which is known as the posterior longitudinal bundle. Furthermore, there is a connection between the internal ear and the cerebellum by way of the vestibular nerve, the vestibular nucleus, Deiter's nucleus, thence to the vermis.

The cerebellum, then, is a reflex apparatus in close connection with the spinal cord. It is a modifier of influences, rather than an originator. It is closely connected also with the semicircular canals and with the eye muscles, and, furthermore, there are fibers connecting the frontal and temporal cerebral regions with the cerebellum.

While it is not an originator of motion, it in a way presides over motion and provides for cooperation of muscle groups (synergia), and graduates the strength of nerve impulses (eumetria). It regulates the inervation of the trunk, limb, and eye muscles in such a manner as to secure continuous and harmonious maintenance of equilibrium (Bing).

The question of definite cerebellar localization has been much discussed. Ferrier maintains that the various segments, particularly of the vermis, have specific function. Rothmann and the Italian neurologists support the theory of definite cerebellar localization. Horsley and the English school have not been able to confirm these claims. Balk, a Dutch comparative anatomist, has worked out a rather elaborate scheme of localization. He appears, at least, to have shown that all areas in the cerebellum are not of equal consequence; for example, he points out the interesting fact that the spinocerebellar tracts end in the vermis, and that in animals requiring a high degree of skill in the maintenance of balance the vermis is highly developed.

The chief and more characteristic symptoms of cerebellar disease may be grouped under four heads: (1) Ataxia (incoordination); (2) hypotonia (reduced muscle tone); (3) astasia (tremulousness); (4) asthenia.

Asthenia is an inconstant general symptom. Astasia or tremulousness occurs only in unsupported parts on the affected side—it is not a true tremor but rather a tremulous unrest. The symptom of chief importance is *ataxia*, and without ataxia a diagnosis of cerebellar disease is not justified.

Cerebellar ataxia affects chiefly the larger and more complicated movements. Simple movements, such as flexion, extension, abduction, or adduction may be correctly executed. It is the lack of "team work" of the muscle groups, *i.e.* the lack of synergia that is really characteristic.

*Read before the Ontario County Medical Society, April 9, 1915.

Synergia implies the proper action of opposing muscle groups and of other groups contributing to the performance of movement. Thus, to flex the fingers to the best advantage the wrists must not flex. This cooperation of muscles is imperfect in cerebellar disease. As a result of this, inability to maintain the balance is frequently present.

In order to test synergia, Babinski has the patient stand well balanced and suddenly throw back the head. In the event of impaired synergia the patient loses his balance. Another test is rapid alternate pronation and supination of the forearms, or similar tests involving the smaller movements. In case of unilateral cerebellar disease there is marked impairment in the ability to perform these movements on the affected side, a symptom which Babinski calls adiadochokinesia. Dysmetria or the failure to judge distances is another evidence of incoordination. For example, a cerebellar patient reaching for an object will frequently overdo the movements necessary in obtaining it.

Cerebellar ataxia is not affected by closing the eyes. The more complex a movement is the more likely is it to bring out the ataxia. The typical gait of the cerebellar patient is the "drunken stagger".

In unilateral disease, deviation in walking is toward the affected side. The patient may complain of a sense of being dragged toward the side of the lesion; accordingly, in starting to walk he sets himself with the shoulder of the affected side forward to counteract this tendency. If the patient is on his hands and knees he may present the "corkscrew" symptom. Thus, if the head represents the handle of the corkscrew, a left-sided cerebellar lesion produces the attitude of an ingoing corkscrew. That is the left buttock will be lower than the right.

Certain other tests have been elaborated, as, for example, Bárány's rotation test. Under normal conditions, when the patient is rotated rapidly to the left, if he tries to point at an object when the rotation ceases he will point to the left of it and have nystagmus to the right. If he has right cerebellar disease he will point more directly at the object and does not have nystagmus. Bárány's test of producing nystagmus by injecting cool water into the external auditory canal is of considerable value. In case of involvement along the vestibular tract the nystagmus does not occur as in the normal subject. Weisenberg has recently effectively emphasized the value of these tests when properly applied, and has well urged their routine use in suspicious cases.

Pure cerebellar disease causes no cranial nerve symptoms. Neither does it cause a disturbance in reflexes. However, pressure symptoms, producing cranial nerve symptoms and reflex disturbances, may result in cases of cerebellar disease, as in diseases affecting any other intracranial structure.

Hypotonus is a rather frequent symptom in cerebellar disease, inasmuch as the spinocerebellar and cerebellospinal tracts are concerned not only in the regulation of muscle movements, but also in the maintenance of muscle tone. Whereas hypotonus in spinal disease is accompanied by reduced reflexes, this is not true in pure cerebellar hypnotonus. It is true, however, that cerebellar growths may produce pressure in such a way that there is a marked increase in the pressure of the cerebrospinal fluid so that the posterior nerve roots may be disturbed and reflexes may be diminished. Hypotonus involves chiefly the body and extremities on the same side as the cerebellar lesion, though it may be to some extent bilateral, especially in conditions involving the vermis.

While these two symptoms, ataxia and hypotonia, are the most characteristic cerebellar symptoms, even they are not pathognomonic, for it is evident that lesions affecting the tracts leading to or from the cerebellum may produce similar symptoms—as, for example, Friedreich's disease.

Next in symptomatic importance is vertigo, which in type is practically identical with labyrinthine vertigo. It is rotary, giving rise to sensations of rotation between the patient and external objects. The vertigo may be so troublesome as to cause vomiting. The explanation of the vertigo would seem to be that the vestibular nerve is involved either by disease or by pressure, so that the information received by the cerebellum from the labyrinth does not correspond with the information received from the muscles and joints of the trunk and extremities; these paradoxical reports produce confusion as to the true location of the head and body in space, and vertigo results.

Rotary vertigo then may occur either in affections of the labyrinth, affections of the vestibular nerve, vestibular nucleus or in intracerebellar disease. In case of intracerebellar lesions the tendency is for rotation of self and of external objects toward the side of the lesion.

If the labyrinth or vestibular nerve is involved, as in extracerebellar disease, the tendency is for rotation of self toward the side of lesion, and rotation of external objects in the opposite direction.

A fourth common cerebellar symptom is nystagmus. This is usually slow, strong, of wide range, and most marked toward the side of the lesion, and increased by eye movements toward the side of the lesion. Divergence toward the well side produces diminution in the range of the nystagmus and makes it more rapid. The explanation of eye symptoms in cerebellar disease is furnished by the connection between the cerebellum and the occulomotor nuclei by way of the posterior longitudinal bundle, as previously stated.

Moderate speech defects may occur.

Occasionally, when the cerebellar peduncles are involved, one observes forced movements toward one side or the other, such as forced rotation of the head or trunk.

In conclusion, it should be stated that several symptoms which are common to intracranial lesions are frequently present in cases of cerebellar disease. For example, persistent headache, sensitiveness to pressure or to percussion over the affected area, persistent nausea and vomiting, and choked disc.

The following case history illustrates a number of the points in the symptomatology of cerebellar lesions. The patient was seen with Dr. Brotherhood.

CASE 16061.—Woman, married, aged 63. Family and personal history and general physical examination may be omitted, as the points of particular interest appear in the neurological examination and the patient's general condition was relatively good. Patient was well up to two years before her admission. At about that time she began to be affected with a moderate degree of dizziness. This had continued up to the time of admission and had been gradually increasing. She described the vertigo as undulatory and rotary, both herself and eternal objects having tendency to rotate to the right. Dizziness was not constant but was produced by any change of position. She was more likely to be free from it when lying down than when sitting or standing, though it had been present at times even when she was lying down. The dizziness was at first es-

pecially pronounced in the morning and particularly when the patient was going upstairs.

After the onset of the dizziness, there had been more or less headache. Shortly before admission the headache had appeared about twice each week or even more frequently. It was at times very severe, affecting particularly the back part of the head, continuing usually not more than fifteen minutes, but at times lasting considerably longer than this. An acute exacerbation of the headache might be produced by turning the head, by increased intraabdominal pressure when the bowels were moved with effort, by coughing, sneezing, or exertion.

Three months previous to admission, after going upstairs, she "gave out," did not completely lose consciousness but fell. She succeeded in getting on to a bed. She stated that the fall was due entirely to dizziness. Her husband stated that about four months previous to admission, he noticed a little thickness in speech which continued up to the time of admission, without any particular variation.

For two months previous to admission, the patient was not able to walk alone and when walking with support was very unsteady, the right side appearing to be the weaker, and the stagger, which she said was like that of a drunken individual, was more pronounced toward the right side. For several months previous to admission, she has had considerable nausea which was more marked at the time of her headache, but occurred occasionally without headache. She never vomited. Previous to two years before admission she never had suffered from nausea.

Neurological examination: Gait—"drunken stagger," with a tendency to fall more particularly to the right. Patient unable to walk alone. Romberg showed no difference in the ataxia with eyes open or closed. Pupils reacted actively to light and accommodation. Eye movements were fairly free in all directions. Marked lateral nystagmus about equal in the two directions, perhaps slightly more marked toward the right. The left disc was apparently normal. Retina showed moderate tortuosity of vessels. No atrophy, no swelling of the disc. The right showed decidedly tortuous vessels and moderate but distinct swelling of the disc and blurring of its upper margin. This, however, was not sufficient to be regarded as a definite choke.

No evidence of cranial nerve involvement (except the nystagmus). Moderate incoordination of the arms (finger-nose test). Marked incoordination of the right leg. Moderate adiadochokinesia of the right forearm. Touch, pain, and temperature sense normal. Sense of passive motion notably impaired in the right leg, a difference of 45° not being appreciated, whereas on the other side very slight changes were noted by the patient. Sense of position definitely impaired on the left, a change of position of 45° not being recognized; sense of position normal in the right leg. Sense of vibration not impaired. Sense of spacial discrimination showed a very wide threshold about equal on the two sides.

Deep reflexes of the arms active. Knee kicks and ankle jerks active and equal. No ankle clonus, no patella clonus. No Oppenheim, no Gordon, no Babinski. Abdominal reflexes not made out perhaps because the abdominal musculature was flabby. No definite weakness in the legs or arms.

Impression: The ataxia was definitely of the cerebellar type. The fact that it came on together with other suggestive symptoms and had been increasing, raised the suspicion of cerebellar lesion. Dizziness occurring two years previous to admission and gradually increasing, headache appearing at about the same time, troublesome nausea, nystagmus, adiadochokinesia of the right arm, swelling of the right disc, incoordination of the right arm and leg all suggested cerebellar disease.

The absence of cranial nerve involvement, especially the fact that the auditory nerve had escaped, suggested that the growth was probably intracerebellar. The involvement of the right arm and leg, together with the character of the nystagmus, suggested that the growth was right-sided. The slow progress of the disease made it seem likely that the patient was suffering from a glioma. It was thought that there might perhaps have been a small hemorrhage into the growth at the time the patient fell after going upstairs.

Diagnosis: Right intracerebellar glioma.

The patient was referred to Dr. Harvey Cushing. The diagnosis was confirmed at operation, and the patient was much improved when last heard from.

A VOLUMETRIC DETERMINATION OF THE SULPHATES IN THE URINE.*

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THE method herein outlined is a volumetric one and depends upon the so-called Mulder's end point, the principle of which is well known to those familiar with the Habel-Fernholtz chloride determination.

Gay-Lussac in 1832 (Instruction sur l'Essai des matières d'argent par la voie humide, Paris) and Mulder in 1859 (Die Silberprobiermethoden, Leipsig, XIX, 311; *Chem. News,* IV. 99, 125, 137, 204, 231, 297, 321 (1861), V, 2, 1862), both noticed that AgCl was sufficiently soluble to introduce an appreciable error in the determination of Ag or chlorine by precipitation as AgCl. Mulder records that when equivalent quantities of $AgNO_3$ and NaCl are mixed the filtrate will still give a cloudiness either with $AgNO_3$ or NaCl. Whereas Mulder's experimental findings have withstood the test of time, and have indeed been successfully applied by Habel-Fernholtz (*Pflügers Archiv f.d. ges. Physiol,* 23, 85, 1880), his explanations, in the light of present-day physico-chemical conceptions, are valueless.

Principle of the sulphate determination.—When a soluble sulphate is added to a soluble Ba salt, $BaSO_4$ is precipitated:

$$BaCl_2 + K_2SO_4 = BaSO_4 + 2KCl.$$

This is more correctly shown in the following:

$$\left.\begin{matrix} K_2SO_4 \rightleftarrows 2K^{\cdot} + SO_4'' \\ BaCl_2 \rightleftarrows Ba^{\cdot\cdot} + 2Cl' \end{matrix}\right\} \rightleftarrows BaSO_4 \text{ (dissolved)} \rightleftarrows BaSO_4 \text{ (solid)}$$

This takes into consideration the ionization of the salts, and the separation of the non-ionizable product. It also emphasizes the important fact that no matter how insoluble a substance may be, it is soluble to some extent, and part of the soluble portion will itself be ionized:

$$BaSO_4 \text{ (dissolved)} \rightleftarrows Ba^{\cdot\cdot} + SO_4'' \qquad (1)$$

The law of mass action applied to (1) gives

$$[Ba^{\cdot\cdot}] \cdot [SO_4''] = [BaSO_4] \cdot K \qquad (2)$$

Where $[Ba^{\cdot\cdot}]$ = conc. of Ba ions, etc.

But since we are here dealing with a highly insoluble substance, the soluble part must form a saturated solution, the concentration of which is dependent only on temperature. Hence $[BaSO_4]$ is constant (call it k). Substituting in (2) we have

$$[Ba^{\cdot\cdot}] \cdot [SO_4''] = k \cdot K = K' \qquad (3)$$

which means that in a saturated solution the product of the concentrations of the Ba ions and SO_4 ions remains constant, and is equivalent to K′ (the Ostwald solubility product).

It is evident that the addition of either $BaCl_2$, or K_2SO_4 would upset the equilibrium in (3) by introducing more Ba ions or SO_4 ions. The adjustment is brought about by a further precipitation of $BaSO_4$.

In a highly insoluble salt such as $BaSO_4$, where the solubility product is so small, a small excess either of $BaCl_2$ or K_2SO_4 would be more than enough to go beyond the end point, which is reached when equal cloudiness is obtained with the same quantity of either of the salts.

Method: Solutions required

(A) $BaCl_2$, 1 c.c. = 0.005 g H_2SO_4

(B) K_2SO_4, 1 c.c. = 1 c.c. of solution (A)

A.—*Total (inorganic and ethereal) sulphates.*—

The preliminary procedure is based on Folin's well-known method. Fifty c.c. urine and 5 c.c. HCl (S. G. 1.2) are poured into an Erlenmeyer flask, and the mixture boiled for about 10 minutes. $BaCl_2$ (solution (A)—usually 10-15 c.c.) is now added, and the mixture boiled for 3 to 4 minutes further. Three small test tubes of uniform bore and scrupulously clean are now placed side by side in a test tube rack, and labelled 1, 2 and 3. Small portions (not more than 1 c.c.) of the solution are filtered into each, using a very small funnel and a very small filter paper for the purpose. (1) is kept as a control. to (2) three drops of $BaCl_2$ and to (3) three drops of K_2SO_4 are added. If not enough $BaCl_2$ has been added then (2) will appear cloudy; if the $BaCl_2$ is in excess, then the cloudiness will make its appearance in (3). In either case the contents of the test tubes are carefully poured back into the main solution, the test tubes and filter being thoroughly rinsed with distilled water, and 1 c.c. of $BaCl_2$ or K_2SO_4, depending upon which is in excess, is now added. The tests are once again repeated. If in the first trial test tube (2) gave a cloudiness, and after the addition of another c.c. of $BaCl_2$, it still continues to give a cloudiness, whereas (3) is clear or far less cloudy than (2) this means that there is an excess of SO_4 ions, and therefore more $BaCl_2$ is added. If the further addition of $BaCl_2$ causes the reverse to take place—namely, clear or slightly cloudy in (2) and decidedly cloudy in (3)—then there is an excess of Ba ions, and therefore more K_2SO_4 is added. It is evident that if at a given point the reverse phenomenon is observed to that which we had with 1 c.c. less, then the end point must lie somewhere between these two. If the determination need be approximate only, then the average is taken. If not, further trials, taking tenths of a c.c., are made, until a point is reached where 3 drops each of $BaCl_2$ and K_2SO_4 added to (2) and (3) give precisely the same cloudiness. To confirm this end point, another sample of urine is taken, the number of c.c. of $BaCl_2$ used in the first filtration are run in immediately, and the test repeated.

B.—*Inorganic Sulphate.*—The procedure is analogous to the above, except that acetic is substituted for hydrochloric acid, and the solution is *not heated.*

A — B = *ethereal sulphates.*

C.—*Neutral Sulphur.*—Here 50 c.c. urine are treated with 5 grams of KNO_3 and 7 grams of Na_2CO_3. The mixture is evaporated and then heated till all the carbonaceous mass has been oxidized. The residue is dissolved in water, the solution poured into an Erlenmeyer flask, neutralized with HCl, and 5 c.c. of HCl (S.G. 1.2) is added. From here follow A. This will give total sulphur. If we now subtract the total sulphates (obtained in A) from this, the result will be neutral sulphur.

Example.—Fifty cubic centimeters of urine were treated as described, and 15 c.c. of the $BaCl_2$ were added. The test showed incomplete precipitation. Successive additions of $BaCl_2$, 1 c.c. at the time were made, tests being performed after each such addition. After 21 c.c. had been added a test portion still showed a cloudiness with $BaCl_2$, but the addition of a further cubic centimeter gave a cloudiness with K_2SO_4, but none with $BaCl_2$. Hence we knew the point to lie between 21 and 22 c.c. One-half cubic centimeter of K_2SO_4 were now added. Here a cloudiness was obtained with $BaCl_2$, but none with K_2SO_4. This meant that this point must lie between 21.5 and 22 c.c. The further addition of 0.2 c.c. of $BaCl_2$ gave the end point (equal cloudiness with both).

Amount of $BaCl_2$ used = 23.7 c.c.
Amount of K_2SO_4 used = 2.0 c.c.

Actual amount of $BaCl_2$ needed = 21.7 c.c.
Since 1 c.c. = 0.005 g H_2SO_4
21.7 c.c. = 0.005×21.7 grams.
But this is in 50 c.c. urine. Hence in
100 c.c. = $0.005 \times 21.7 \times 2 = 0.217$ grams.

(The advantage of making a solution where 1 c.c. = 0.005 g is apparent. In order to get the percentage of sulphates, the burette reading is taken, and the decimal point moved two places to the left.)

The amount of urine collected in 24 hours = 1600 c.c. Hence the amount of sulphates in the 24 hours sample = $0.217 \times 16 = 3.47$ grams. (Calculated as H_2SO_4.)

In conclusion, it may be added that in point of accuracy this method compares most favorably with the usual gravimetric method. Once the procedure is mastered a determination can be made in 15 to 20 minutes. To the clinician, therefore, in particular, the time-saving factor, as well as the simplicity of the method, should prove of value.

PAIN AND ITS SIGNIFICANCE.*

By J. H. DEMPSTER, A.B., M.D.,
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THERE is no other presenting symptom which brings patients to the physician more frequently than pain. It has been estimated that more than 90 per cent. of all diseases either begin with it, or have it as a prominent symptom some time during their course. Pain has been regarded as the most universal symptom of disease; it may range from a comparatively mild discomfort to a sensation of the most agonizing kind. An accurate diagnosis frequently depends upon its proper interpretation. It is the main subjective symptom in its various manifestations which we as physicians endeavor to relieve. Cabot, in his work on "Differential Diagnosis," states that the book is an attempt to study medicine from the viewpoint of the presenting symptom. Of the thirty-three chapters devoted to symptoms, twelve are on pain alone. A study of pain and its symptomatic significance should, therefore, prove not wholly unprofitable.

Probably medicine presents no more fascinating chapter than the history of the efforts put forth to mitigate the sufferings of the human race. Simpson and Morton and others who have lulled with sweet nepenthe the physical sufferings of man, are deserving of a place on the bead rôle of fame along with the discoverer of methods of antisepsis. "Divinum est opus sedare dolorem," once spoke the father of medicine. The story is a long one. The first curative effort on the part of primitive medicine was bent toward the relief of pain. The "sorrow easing" drug was employed in the Homeric age. Indian hemp and the juice of the poppy were known to the ancient Egyptians. Every age and clime has contributed its quota to the relief of human suffering.

There is less known about pain than about any other symptom, largely because we know less about the nervous system than any other system of the body. Of metabolism of the nervous system we

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know nothing, and of the functions of some parts of the brain our knowledge is almost as scant.

For the evolution of the race, as well as for the preservation of the individual, the pain sense is all-important. Max Nordau declares that without pain our lives would not endure an hour, for we would be unable to recognize danger symptoms and to guard against them. This thought is voiced also by Schleich, "Pain is a warner, an exhorter calling for defence, for fight, for the employment of all the measures of resistance and self-preservation." Crutcher maintains that pain is not to be reckoned as abnormal but as Nature's protest against the abnormal. Insensibility to pain, on the other hand, is often a grave symptom.

Metchnikoff speaks of the erratic nature of pain in both human beings and animals. Insignificant causes, certain forms of neuralgia, give rise to unbearable agony. The violent pain of childbirth is absolutely useless as a danger signal; on the other hand, such dangerous conditions as cancer and nephritis may exist for a long time without any discomfort to the individual. Weir Mitchell expressed himself on the mystery of pain as follows:

"What will implacable, beyond our kin,
Set this stern fiat for the tribes of men!
This none shall 'scape who share our human fates:
One stern democracy of anguish waits
By poor men's cots—within the rich man's gates.
What purpose hath it? Nay, thy quest is vain:
Earth hath no answer: if the baffled brain
Cries, 'tis to warn, to punish—Ah! refrain
When writhes the child beneath the surgeon's hand,
What soul shall hope that pain to understand?
Lo! Science falters o'er the hopeless task,
And love and faith in vain an answer ask,
When thrilling nerves demand what good is wrought,
Where torture clogs the very soul of thought."

A comprehensive idea of pain must be sought from a study of those organisms in which sensation merges from the simple state in which all stimuli have their corresponding movements, of which it is impossible for the organisms to have any conception. In these studies of the simpler forms of animal life no one is more deserving of an audience than Loeb. In the lowest forms of life, the nervous system is not a necessity but only an auxiliary in the life economy of the animal. In the earthworm each segment has its own special nerve supply. W. W. Norman has experimented with the simple earthworm and with vertebrates as highly organized as the fish, cutting off segments and mutilating the body without producing any movements. The reactions to injurious stimulation on the part of the lower vertebrates have led some to conclude that these forms of animal life have the same pain sensation as man. It has been found, however, that sharks may be operated upon without the slightest movement on their part. Norman's experiments go to prove that true pain phenomena do not make their appearance until we ascend rather high in the scale of vertebrates. Motor response to an irritant is not always an indication of pain; it may be nothing more than simple reaction to stimuli.

Loeb states that in his experiments on the tropisms of animals, it became clear to him how easy it was for an observer to regard machine-like effects of external stimuli on lower animals as the expression of intelligence. In regard to pain sensations of animals, Loeb believes that animals devoid of associative memory are also deficient in pain sense. Associative memory he defines as peculiar qualities of the central nervous system, whereby processes that occur there leave an impression or trace whereby they may be produced even under different circumstances than those under which they had originated.

According to Loeb: "Associative memory probably exists in most mammals. The dog which comes when its name is called, which runs away from the whip, which welcomes its master joyfully, has associative memory. In birds it is likewise present. The parrot learns to talk; the dove finds its way home. In lower vertebrates, memory is also occasionally found. Tree frogs, for example, can be trained, upon hearing a sound, to go to a certain place for food. In other frogs, Rana esculenta, for instance, no reaction is as yet known which proves the existence of associative memory. Some fishes evidently possess memory; in sharks, however, its existence is doubtful. With regard to the invertebrates, the question is difficult to determine. The statements of enthusiasts who discover consciousness and resemblance to man on every side should not be too readily accepted."

The same investigator expresses his conviction as to the ease with which an observer, inclined to look at things from the human viewpoint, regards the machine-like effects of external stimuli on lower animals as the expression of intelligence. Bethe also regards associative memory as a criterion for the existence of consciousness.

The reaction of an injured earthworm when it writhes and wriggles is naturally regarded as the expression of pain sensation, and some go so far as to regard these contortions as the expression of severe pain. This conclusion is not justified by the experiments of Norman, who found that if an earthworm be divided transversely, only the posterior piece makes the writhing motions, while the anterior portion crawls off, apparently unaffected. The anterior portion, which contains the brain, evidently experiences no pain sensations.[2] There is a tendency, almost universal, for man to interpret pain in the lower animals, and even in the lowest animals, in terms of his own sensation.

It is a physiological fact that the superficial parts of the body are well supplied with sensory nerves, while the deeper, internal portions are less richly provided. The brain, the center of the nervous system, is itself without sensation. Cushing was the first to demonstrate that the dura mater is insensitive to ordinary pain stimuli. The reason for these physiological phenomena is apparent when we consider that the brain and dura are well protected by the skull, and that the viscera are protected by the external portions of the body; that the skin, the "flesh garment" of the body is most richly provided of all with nerves of sensation.

The pain-sense, like the special senses, is largely a matter of mental and racial development. The self-mutilations of primitive peoples are not so much a matter of bravery as of the presence of a rudimentary pain sense. The horse with a broken leg will proceed to graze in the pasture with little apparent discomfort. Veterinary surgeons perform operations upon animals with little thought of administering anesthetics. Even in civilized man the pain sense requires to be developed; it is not born with him. The operation of circumcision is frequently done on newly-born male infants, who exhibit little evidence of pain. The "facies pathetica"

of the dog, horse, and some other animals, and the tendency to interpret pain in terms of our own sensation are responsible for those self-constituted sponsors of the lower animals—the antivivisectionists whose excessive zeal for the dumb animal makes them quite forget the welfare of the human offspring.

When a hard object is applied to the skin with greater pressure than is necessary to evoke the sense of touch, the sensation becomes one of pain and its severity is in proportion to the degree of pressure exerted. The sense of pain has been described as over-maximal stimulation of any form of sensory nerve (Starling). According to Howell, "For continuous pain at least, the evidence is very strongly in favor of the view that there exists a special set of fibers which have a specific energy for pain. It would appear that the pain sense has a punctiform distribution in the skin." When a pin or needle is pressed against the skin, the pain increases until just before the moment of penetration. An intestine may be cut or sewed without causing any sensation, while strong contraction of the intestinal muscles will evoke intense griping pain. Deep injection of fluids into the voluntary muscles occasions but little discomfort, while cramping of such muscles gives rise to disagreeable sensations of great severity. The feeling of muscle fatigue is on the bordeland of painful sensation. The quality of pain will be found to depend upon the kind of sense organ which is stimulated; for instance, pain described as "burning," means the stimulation of the pain sense as well as stimulation of the nerve endings of the so-called "warm spots"; a "throbbing" pain is due to local congestion with lymph, the throbbing being due to arterial pulsation, causing painful stimulation, the cadence of which is timed with the pulse. Many inflammatory pains are of this nature, and particularly if the site of inflammation be in the digital extremities. In addition to temperature and tactile spots on the surface of the body, there are spots from which pain may be elicited. In some parts of the body tactile and temperature sense is entirely absent, while pain is easily evoked. The cornea is a good example of this, as those who know, who have ever experienced the sensation of a foreign body in the eye. Under some conditions, chiefly pathological, pain sense may be wanting while tactile sense is normal.

We see, smell, taste, and hear by means of the mind, the sensation being referred to the respective organs of special sense. Likewise, pain is a matter of cerebration. Pain is much more severe if the attention be directed to it. An accidental, unexpected cut or bullet wound causes comparatively little pain at the time it is received, while the anticipated prick of the finger, necessary to obtain blood for examination, may cause a patient real agony. It is evident that pain is increased by the imagination. Undoubtedly this characteristic accounts for the greater severity of pain at night than during the day. Kant, the philosopher, a sufferer from gout is said to have mitigated his troubles by exercising more than ordinary self-control. Kant said: "Out of patience at feeling myself deprived of sleep, I soon seized upon the stoical expedient of fixing my thought intently upon some chance object, whatever it might be, and of consequently diverting my attention from all sensations. In this way the sensations speedily became blunted, so that the natural tendency to sleep overcame them. And this I could repeat with equally good results each time in the little interruption in my night's rest occasioned by recurring attacks. But in the morning the shiny redness of the toes of my left foot was sufficiently convincing to me that these sensations had not been purely fanciful." Undoubtedly some Christian scientists, under the spell of religious zeal, are able to efface their sensations. The ancient stoic held that pain, though evil, could be triumphed over by a mind properly disciplined.

Sensitiveness to pain varies with individuals; a strong willed person may suffer intensely without wincing, while the prick of a pin will greatly affect another. Some react to pain stimulus much more readily than others. As a general thing, those of thin build and neurotic temperament suffer more than the more robust. Carlyle once said, "With stupidity and a sound digestion man may confront much," but Carlyle himself belonged to the neurotic type and doubtless envied the so-called phlegmatic with the sound digestion. Cabot states that those patients who describe all their troubles as "terrible," "awful," "fearful," and the like, are apt to have lively knee-jerks, and that those more moderate in their expressions have usually less active reflexes, which would point to a parallelism between reflex sensibility and sensitiveness to pain. To establish the fact of pain it is necessary to take into account the facial expression and bodily movements. Emaciation or muscular weakness is apt to result from long-continued suffering. The account of an onlooker who unobserved watches the patient is also of value. Cabot maintains that severe pain almost always causes a notable rise in blood pressure, and if we find nothing of the kind we may rightly conclude that if pain is present it is probably not intense. The relation between the intensity of pain and blood pressure elevation is also corroborated by Curshman, who, in his experiments found that in 90 per cent. of people examined with normal sensibility the blood pressure arose from eight to ten mm. of mercury under stimulation with a faradic current on the upper portion of the thigh; in the remaining 10 per cent. it rose to fifteen mm. During gastric and intestinal crises of tabes and lead colic a pressure of 170 to 210 is common, quickly subsiding to 120 when the attack is over. During labor pains the blood pressure becomes higher, varying directly with the pain.

The diagnostic import of pain is the chief concern of the physician. Yet, dissociated from other clinical phenomena, it is apt to mislead. Alone it is a danger signal, as Richardson has said, "Alone, pain indicates danger in general; in combination with other signs it indicates danger in particular and guides the physician's hand to its source. The truth of this will commend itself to every one. Only recently the writer saw the case of a boy eleven years old with tenderness even on a slight pressure over the region of the gall-bladder, with little or no spontaneous pain or pain that could be elicited on pressure over McBurney's point. No jaundice, the only other symptoms were vomiting and elevation of temperature. A diagnosis of appendicitis was made and confirmed at operation. Every physician can relate cases where a diagnosis based upon pain alone would have been faulty.

Ross, in 1858, in his investigations on Visceral Diseases, thought that the impulses produced by irritation of the peripheral terminations of the splanchnic nerves were conducted by the posterior roots to the posterior horns of the spinal cord, where they diffused to the corresponding somatic

nerves and thus cause an associated pain in the territory of distribution of these nerves. He claimed that there were two forms of pain, somatic and splanchnic. Following the work of Hilton, Ross, McKenzie and Head, and more recent observers, the following facts may be crystallized. (Summary by Finney.) (1) That any nerve ending may be sensitive to some form of stimulation, which has been called the adequate stimulus, but insensitive to all others. The adequate stimuli for pain vary for different regions and structures of the body—for instance, those for visceral pain, are not of the ordinary tactile or thermal types, to which the skin and mucous surfaces so promptly respond, but are tension in some form or other. (2) That the threshold of pain, that is, the point at which pain as a result of any form of stimulation begins to be felt, may be raised or lowered, according to certain established conditions. (3) That tension in some form or other is the commonest, perhaps the sole cause of visceral pain.

Finney, of Johns Hopkins, is inclined to the belief of Ross that there are two forms of pain, splanchnic and somatic. It is almost impossible for the patient to localize a visceral pain. Ask him to point out the location of his discomfort and the average person will indicate in a vague indefinite way with all the fingers of his hand; ask him to use his index finger and he has some difficulty in accurately locating the pain. This is practically true of all visceral pains, whereas pains of the skin are located more or less accurately at the point stimulated.

According to Harris, "the theory of so-called referred pain is that somewhere in the common path the excitement of the splanchnic afferents is transmitted to the somatic afferents, and that the cerebral center for these being stimulated, the mind suffers an illusion and refers the source of irritation out to an area of the skin." The principal cause of referred pain is a lesion somewhere on the nerve circuit. When a lesion is located on a nerve trunk it is always referred to a point on the periphery distal to the area at which it occurs. Among the characteristics of referred pains are the following: They are not increased upon pressure or movement; they do not produce muscular stiffness as do inflammatory pains, and lastly, morphine as a rule does not relieve them for any length of time.

With the development of medicine diseases hitherto regarded as functional are gradually giving away to those having an anatomical basis. Thanks to the advancement of modern surgery, the foundation for a living pathology has been laid and we have anatomical causes for symptom complexes hitherto regarded as purely functional in origin. Abdominal surgery in particular has added to our knowledge of pain of that particular region. Again, the absence of pain, as in the case of certain breast tumors, points to the presence of malignancy; or the sudden cessation of pain in an appendix case, particularly if accompanied by corresponding fall in temperature, pulse rate, and leucocyte count, may be part of a danger syndrome.

According to Cannon,[3] pain has the effect of inhibiting the peristaltic waves of the stomach and the peristalsis and kneading movements of the small intestine. It has been shown also that excitation of the sensory fibres in the sciatic nerve for two or three minutes resulted in the inhibition of the secretion of gastric juice, which lasted several hours. Mantegazza (quoted by Cannon) has found that in human beings, pain interferes with digestion by lessening appetite and by producing various forms of dyspepsia with the arrest of gastric digestion, with vomiting and diarrhea. Violent pain may be accompanied by nausea and vomiting. Pain by reflex stimulation of the adrenal glands causes them to pour into the blood stream an increased amount of adrenin. "That the adrenal glands are subject to splanchnic influence has been demonstrated anatomically and by the physiological effects of their secretion after artificial stimulation of the splanchnic nerves. Impulses are normally sent along these nerves, in the natural conditions of life, when animals become greatly excited, as in fear, rage, and pain. There is a probability, therefore, that these glands are stimulated to extra secretion at such times. . . . Clear evidence has been secured that in pain and deep emotion the glands do, in fact, pour out an excess of adrenin into the circulating blood." (Cannon.) As a result follow; the liberation of sugar from the liver into the blood stream; alteration of the distribution of blood in the body, namely from the abdominal viscera to the heart, lungs, central nervous system and limbs; the shortening of the coagulation time of the blood. Regarding the increase of sugar in the blood, due to emotion or excitement, the relation between "flight instinct" and "fear emotion" and "pugnacity instinct" has been suggested. Since in wild life, fear and anger are likely to be followed by activities involving severe muscular exertion, probably the pouring out of sugar into the blood is Nature's way of coming to the aid of the laboring muscles. Darwin has drawn our attention to the fact that a "man or animal driven through terror to desperation, is endowed with wonderful strength, and is notoriously dangerous in the highest degree." . . . "In the agony of pain," he says further, "almost every muscle of the body is brought into strong action."

Crile has explained that with every injury there is a discharge of nervous energy. According to his kinetic theory of shock, the essential lesions of shock are in the brain cells. It is difficult to imagine the surgical shock of preanesthetic days. Inhalation anesthesia goes a long way toward mitigating the effect of surgical trauma upon the nervous system, by abolishing pain, which can be of no possible advantage to either patient or physician. Pain of surgical operation decreases the patient's resistance, exhausts his nervous energy, and delays convalescence. Crile has found experimentally that trauma, fear, and fatigue have similar effects on the brain cells. It is his belief that inhalation anesthesia does not go far enough; he speaks of it as only a "veneer." He reduces surgical shock to the minimum by eliminating fear and by the employment of local anesthesia to block the nerve trunks. Crile's work is a distinct contribution to medicine in its efforts to overcome the effect of pain and surgical shock.

Once pain has served its purpose as a diagnostic aid, it should be abolished for reasons which are self evident.

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2. Loeb: Physiology of the Brain, page 213, et seq.
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In addition to the authorities credited in this paper, the writer's grateful acknowledgements are accorded the excellent work of Behan, on Pain, which volume contains also an exhaustive bibliography.

142 Missouri Avenue.

COMPLEMENT FIXATION IN CHICKEN SARCOMA.*

By CHARLES H. BAILEY, M.D.,

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THE discovery by Rous of a tumor in fowls which can be propagated by a filtrate made from crushed cells or by the powder of dried cells, showed that in these animals, at least, there exists a new growth of a type entirely different from any as yet described, since no other tumors in animals, so far as is known, can be propagated by the means just mentioned. The natural assumption would be that this tumor is produced by a virus which is filterable, since it has been impossible, either by culture, by examining the fluid by ultramicroscopic methods, or by the study of stained sections, to demonstrate any parasite.

On the theory that if the growth were of parasitic origin the blood of the animal would contain a complement-fixing substance, the following experiments were carried out in the laboratory of the Crocker Special Research Fund at the suggestion of Dr. F. C. Wood. Sarcoma No. 1, which was kindly supplied by Dr. Rous, was employed in these experiments. Fixation tests were done on the sera of six Plymouth Rock and two white Leghorn hens, all of which had large tumors, the tests being controlled in each instance by sera from normal hens of the same species. The antigens used were made by extracting finely ground tumor tissue with (1) distilled water; (2) normal salt solution; (3) 95 per cent. alcohol, and (4) absolute alcohol. In some cases the tests were carried out with an antigen made of tumor tissue obtained from the hen which furnished the blood; in others they were performed with an antigen made from the tumors of the other hens. The general technique was the standard method now employed in carrying out the Wassermann reaction. In none of these experiments was a positive complement-fixation test obtained.

As a further control, blood from two pigeons which had been injected subcutaneously several times with the Rous chicken sarcoma, without takes, and from one normal pigeon, was inactivated by heating for twenty minutes at 55° C. Each of these three sera was then tested and found to be neither hemolytic nor anticomplementary. The antigen used was made from the breast tumor of a white Leghorn rooster, the blood of which showed no complement fixation when tested with antigen made from its own tumor. The tumor tissue was finely ground with sand; 2 c.c. of distilled water for each gram of tumor, and 0.5 per cent. of trikresol were added; and the mixture was shaken in a shaking machine for two hours, and then placed in the icebox for seven days. On removal from the icebox it was centrifugalized rapidly for ten minutes, and the upper portion of the supernatant fluid was used as antigen. On titration this was found not to be anticomplementary or hemolytic. When the test was set up in the usual manner a positive reaction was obtained with the sera for both inoculated pigeons, much more marked with one than with the other, while no reaction was obtained with the sera from the normal pigeon. Though this experiment may be regarded as controlling the methods used, it has no further significance, because to a pigeon the fowl tumor is a foreign protein, and, therefore, naturally induces the formation of an antibody. The important point is that in any animal in which the tumor will grow the protein of the neoplasm does not act as antigen and cause the formation of complement-fixing substances. This is true of the tumors of both animals and human beings.

Conclusions.—No complement fixation could be obtained in the blood of chickens bearing the Rous chicken sarcoma No. 1.

Complement fixation was obtained in the blood of pigeons which had been inoculated with the same tumor, the correctness of the technique employed being thus demonstrated.

These observations suggest that this particular chicken sarcoma may be a true tumor, though the proof is not absolute, for complement fixation has not yet been obtained in all of the known diseases in which a filterable virus is present. It is still possible, therefore, that there is a virus inducing tumors in chickens which does not give rise to complement fixation, but this would be exceptional rather than according to rule.

Since these experiments were completed, a paper reporting similar results has been published by Bürger (*Ztschr, f. Krebsforsch.*, 1914, xiv, 526), and for this reason we have omitted detailed protocols of our experiments.

*Presented before the New York Pathological Society, March 10, 1915.

Medicolegal Notes.

Liability of the Anesthetist.—One of two physicians separately employed, who undertakes to administer the anesthetic while the other performs an operation, is held in Morey v. Thybo (C. C. A., 7th C.) 42 L.R.A. (N.S.) 785, not to be liable for the other's negligence and malpractice in doing the work, if he has no actual knowledge of it.

Penalty for Illegal Practice.—The statute providing that any person who shall practise medicine in Kansas without having received and recorded a certificate from the State board of registration and examination shall be deemed guilty of a misdemeanor, and upon conviction thereof shall pay a fine of not less than $50 nor more than $200 (Gen. Stats. 1909, Sec. 8091), is held in State v. Cotner (Kan.) 42 L.R.A. (N.S.) 768, not to create a continuing offense involving a general course of customary conduct, but to penalize each specific act of practice defined in the preceding section (Gen. Stat. 1909, Sec. 9090).

Qualification of Experts—Testamentary Capacity.—In an action to contest a will a physician who had attended members of the testator's family, but had never rendered professional service to the testator himself, testified that he had seen the testator on occasions when he had been called to treat his mother, and had observed that his facial expression was very peculiar, such as is often noted in cases of epilepsy; that the testator was very reserved in manner, and would never engage in conversation. It was held that the action of the trial court in refusing to allow the witness to state his deduction from these facts as to the mental capacity of the testator was not an abuse of discretion.—Eckman vs. Funderburg, Indiana Supreme Court, 108 N. E. 577.

X-Ray Photographs as Evidence.—In order to show the nature of the injury sustained by a plaintiff suing for damages caused by a fall in the street an *x*-ray photograph was used, purporting to show a fractured rib and an injury to the shoulder. To elucidate his criticism of this picture another witness offered an *x*-ray photograph of a five-year-old child's breast to show the location of the ribs. It was urged that this was incompetent and prejudicial. But it was held that its significance was for the jury, who were advised that it was the picture of a child and not of a man of the plaintiff's age, and it might properly be used by way of illustration, like an ordinary map, diagram, or model.—Boddington vs. Kansas City, Kansas Supreme Court, 148 Pac. 252.

MEDICAL RECORD.

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STAMMERING AND ITS RELATION TO AN ENLARGED THYMUS.

IN 1910 William Browning of Brooklyn advanced the hypothesis that stammering is associated at the start with the presence of an enlarged thymus, if not directly caused thereby. The subsequent study of twenty-five consecutive cases of stammering has tended to confirm this hypothesis. The histories of these cases cases and a complete analysis of the entire subject have been presented by Browning in an interesting and practical paper.*

The very multiplicity of the theories that have been proposed to explain the origin of stammering indicates how little is actually known about this condition. These theories regard stammering as an inherited weakness of the mechanism of speech, a developmental neurosis, an infective neurosis, an anxiety neurosis or fright inhibition, a disturbance of the cerebral or cortical speech centers, a transitory auditory amnesia, a spastic incoordination-neurosis, an ataxia of the speech mechanism, an associative aphasia, a mental tic, a disturbance of the will, a psychosis, a diseased state of the mind, etc. Browning cites numerous facts to show that stammering is not primarily a brain trouble. The subjects have shown as a rule abnormally acting speech mechanism. The condition develops at a certain period of life and practically never after youth. Stammerers may still be able to enunciate correctly in a singing or often in a whispering voice. Stammering is frequently recovered from and is rarely seen in brain affections. It is far more frequent in males than in females, which would tend to exclude the rôle of timidity or of hysteria. There is no confusion of thought for "the wit of stammerers is proverbial." There is no evidence of brain disease.

Previous work has shown that conditions in and about the upper air-tracts are of great importance in the causation of stammering. Among the conditions associated with stammering there have been noted adenoids, hypertrophied tonsils, nasal intumescence, enuresis nocturna, general hypotonia, with bad bodily carriage, shallow upper chest, palpable glands, various forms of habit spasm, and cardiac defects. There is one condition, which, according to Browning, is constantly present in all stammerers, namely, an enlarged thymus or evidence of a block in the thymic area. This is a generalization that might be regarded as one of sweeping nature if it were not made by a careful observer. The facts upon which this generalization is based are fairly well established. Twenty-five consecutive cases that all show the same anatomical abnormality and associated conditions that may be correlated with it ought to satisfy the most exacting critic. Browning's patients ranged in age between two and sixty-five years. In all of them there was unmistakable evidence of thymic enlargement. This was revealed by careful percussion. The charts accompanying the case reports show that this dullness corresponds to the upper half of the sternum and extends beyond its lateral borders, but more to the left than to the right. The dullness is relative rather than absolute, shades off gradually into the pulmonary resonance, and is usually continuous with the upper border of the heart. In some cases, usually in infants, or the very young, palpation may detect a portion of the thymus above the sternal notch. *X*-ray examination gives uncertain and inconclusive results. Prominence of the manubrium and an angulation at the junction of the manubrium and the body of the sternum have been noted by a number of observers. Dilated surface veins over the front of the chest are present in some cases of enlarged thymus, and are made prominent by exertion, excitement, or an ordinary cold. The relative immunity of females to stammering is attributed to the lesser frequency of thymolymphatism and the costal type of respiration.

The various conditions mentioned above which are associated with stammering are regarded as intimately related to the habit and as constituting with this a veritable "stammerer diathesis or complex." The lymphatic hyperplasia, including the enlarged tonsils and adenoids so frequently found in stammerers, goes hand in hand with the thymic hypertrophy. Muscular hypotonicity is one of the most constant concomitants of stammering. Recent experiments place the thymus among the glands of internal secretion which depress muscular action. A large percentage of stammerers show distinct bony anomalies, as rachitis, scoliosis, retrognathism, and a tendency to overgrowth, which fact seems to harmonize with the observation that lymphatism and the thymus are closely related to the processes of bony growth. Circulatory troubles and nasopharyngeal obstruction play an auxiliary rôle in stammering.

In what manner does the enlarged thymus tend to produce stammering? The answer is: by a reflex inhibition of the ordinary respiratory rhythm. A close analogy is furnished by the occurrence of asthma as a sequence of chronic nose and throat troubles, and more particularly of thymic asthma.

The therapeutic test furnishes the final argument in support of Browning's ingenious hypothesis. It has been well established that the *x*-rays cause a fibrosis of the thymus without completely destroying its glandular tissue. In the author's cases there was a progressive diminution in the area of thymic dullness under *x*-ray treatment and a con-

*Neurographs: A Series of Neurological Studies, Cases, and Notes. Edited by William Browning, Ph.B., M.D. Thymus-Stammer Number, Vol. I, No. 4. Brooklyn-New York: Albert T. Huntington, 1915.

comitant improvement in or disappearance of the stammering. The application of the *x*-rays demands special skill. Two to four treatments should be given at intervals of five to fifteen days, after which there should be a pause of several weeks. Two applications may suffice in the milder cases. Accessory hygienic, systemic, and local treatment may also be necessary in the individual case.

DIAGNOSTIC SIGNIFICANCE OF VOMITING IN GASTROENTERIC INFECTION.

THE most important factor in the treatment of a single symptom, such as vomiting, is the discovery of its proximate cause. This is not always an easy matter in the case of the vomiting associated with the acute gastroenteric infection of infants. In seeking this cause one may be guided by a few general principles, particularly by a consideration of the period of onset of the vomiting during the course of the disease.

In many instances the initial vomiting in a case of acute gastroenteritis or of enterocolitis is of reflex origin and may be classed with the vomiting that ushers in many other acute infectious diseases. The special indication for treatment in this condition is merely to provide rest for the stomach by withholding all food until the constitutional reaction accompanying the first few hours of onset of the disease has passed off. The initial reflex vomiting is usually not repeated. It may, however, be succeeded by the next type of vomiting, namely, that which is the result of the highly irritable condition of the gastric mucous membrane, which may be the seat of an intense congestion or of an inflammation, in either case of bacterial origin. The treatment of this type of vomiting in no way differs from that of any other type of acute gastritis as regards the withholding of food and water and the administration of gastric sedatives. But no type of vomiting yields so promptly to gastric lavage as does the persistent vomiting of acute gastroenteric infection of infants.

Vomiting that arises late in the course of the disease, or that recurs after a fair period of freedom from this symptom, must be interpreted differently from the initial or the early persistent vomiting of acute gastroenteritis. The actual causes of the late vomiting are usually unrecognized and the therapeutic measures resorted to in combating it are consequently futile. There are three main types of late vomiting, as follows: (1) Vomiting the result of meningeal or cerebral irritation from the desiccation produced by the loss of relatively large quantities of fluid by way of the gastrointestinal canal. The treatment is the administration of physiological salt solution by hypodermoclysis or by small rectal enemata. (2) Vomiting the result of an acetonemia accompanying the inanition from lack of food. This type of vomiting is relieved by the administration of alkalies by the bowel or by hypodermoclysis and often by the administration in the same manner of solutions of glucose. (3) Vomiting resulting from renal insufficiency. In this instance the treatment is identical with that of acute nephritis.

The above represent in their order of frequency the main types of late vomiting in acute gastroenteritis, but do not exclude the possibility of other types, which though extremely rare, must be borne in mind. Thus, one must consider the vomiting that ushers in a complicating or secondary infection, as pneumonia, meningitis, etc.; the vomiting of purely nervous origin that indicates on the part of the infant a disgust with the prolonged cereal feeding, and finally, the vomiting that may be characterized as agonal and that in a few instances immediately precedes the fatal termination.

THE RELATION OF THE PRACTISING PHYSICIAN TO PUBLIC HEALTH ADMINISTRATION.

THE practising physician has duties outside the sphere of his private practice, the chief of which is, perhaps, concerned with the work of local, State, and National Health Departments. His relation to work in this direction is discussed in Public Health Reports, June 11, 1915, by Dr. John W. Trask, Assistant Surgeon-General in the United States Public Health Service. It is pointed out that a principal function of the Federal health department is the control of epidemics and the prevention of the spread of disease from one State to another. This being so, it is important to consider the things essential to the work. It is impossible for any health department, be its statutory powers and available appropriations never so great, to control effectively any disease without first having information as to whether the disease is present in the community and, if present, how prevalent, and where and under what conditions cases are occurring.

There are two main classes of controllable diseases at present recognized. These are communicable diseases and occupational diseases. With but one or two exceptions every attempt at the control of communicable diseases other than by ascertaining the cases that occur, and the conditions under which they develop, has been a failure. Occupational diseases are due to industrial environment and can be prevented only by ascertaining what conditions exist which are capable of producing them in workmen. Each case of an occupational disease shows where conditions of this kind exist, for the fact that a case has developed is conclusive evidence of the presence of conditions capable of producing the disease. To ascertain where conditions exist which will produce these diseases, it is therefore necessary to know of each case that occurs, and the time, place, and conditions under which it occurs. For information regarding these the public health authorities are absolutely dependent upon the family physician. In the case of diseases due to improper living or housing conditions, an economic, social, or educational readjustment is required.

Unless the practising physician, however, is willing to co-operate loyally with the health department, the latter is greatly handicapped and its labors in the interests of public health are nullified to a great extent. Indeed the practising physician is essentially a part of the health department. As Trask says in conclusion "With the help and cooperation

of the practising physician the health department can do much to prove the truth of Pasteur's statement that it is within the power of man to cause all infectious diseases to disappear. Without the cooperation of the practising physician the health department can do little."

ENZYMATIC ADAPTATIONS.

In 1912 Ugo Lombroso published the results of a series of experiments in which he showed that no changes in the enzymatic content of the pancreatic juice can be detected after meals rich in fats, carbohydrates, or proteins. In other words, he could not confirm the observations made by Pavlov and his associates that after such meals the pancreatic ferments corresponding to the various nutrients undergo a notable increase in amount. Lombroso reports the results of his further investigations along this line in *Lo Sperimentale*, July 14, 1915. He finds that the normal defibrinated blood of the ox or dog has no hydrolyzing power when brought into contact with saccharose in vitro, but if either of the above animals has previously been treated with intravenous injections of saccharose, a slight inverting action in their blood serum can be demonstrated. The pancreatic secretion has no hydrolyzing action on saccharose, but acquires it to a slight degree after subcutaneous or intravenous injections of saccharose; and also after the ingestion of concentrated solutions of saccharose or of lactose, provided that this ingestion occurs on a fasting stomach. This circumstance considered in connection with the fact that small repeated doses of saccharose in the diet are not capable of evoking saccharose in the pancreatic juice, whereas they are capable of doing this if injected into the blood current, shows that the enzyme-evoking action of saccharose is not exerted upon the nerve terminals in the intestinal mucosa but through a direct action upon the blood. The production of saccharose can be evoked in the pancreas even after the latter is completely isolated from all nervous connections.

There is ample evidence, therefore, that the adaptive capacity of the pancreatic secretion is not dependent upon a nervous reflex but is the result of a direct chemical reaction in the blood in which possibly a hormone plays an important part. But defibrinated blood in vitro will not produce an inverting ferment when brought into contact with saccharose, which suggests the hypothesis that the living endothelial cells of the bloodvessels are an essential factor in this production, or that certain glands of internal secretion elaborate the ferment and pour it into the blood current.

A New Theory of Autoserotherapy.

The statement is often made that in certain cases of infectious disease antibodies are not produced, or not produced in sufficient quantities. In such way we explain the failure of the pneumonia crisis, the development of relapses, etc. Yet we have no proof that antibodies do not form in these cases. It is probable that they are always present and that for some unknown reason they are inert, or rather latent, and require activation by some unknown substance. Views similar to the preceding were expressed by Koenigsfeld at a meeting last winter of the Freiburg Medical Society (*Deutsche medezinische Wochenschrift*, June 17). It occurred to him that if serum containing such latent antibodies could be taken from the patient's blood and then reinjected it might become activated and would then prove an ideal serum. He tested the idea on some typhoid cases—26 in number. Into each patient he injected daily from 2.5 to 4 c.c. of the patient's own serum. The improvement, while transitory, was startling. The fever fell, the diazo reaction became negative, the mind became clear, diarrhea ceased, and appetite appeared. The average duration of the disease was from 18 to 22 days. In discussion Ziegler bore witness to the astonishing change caused by the injections, which appeared to prevent the development of complications. Berke had tested the principle in relatively benign cases of tetanus and noted the same specific influence. Of great value is the fact, if fact it is, that the patients carry a specific remedy with them.

What Evolution Lost Us.

In the *British Medical Journal* for June 26 Dr. W. A. Hollis, vice-president of the British Medical Association, lays aside his professional demeanor for the nonce and jests in polysyllables. In a discourse which he refers to as a "moral enthymeme," he takes some of the wind out of the sails of the arrogant disciples of Darwin by calling attention to a number of useful attributes which man has lost by evolution. First, to delve rather deeply into the human genealogy, there is the hydrozoan polyp which can be chopped in pieces and each segment will rehabilitate itself into a complete organism. Then there are the amphibia and crustacea which can renew limbs at pleasure, a quality which would certainly appeal to the recruiting officer in these parlous times, as would the property of molting enjoyed by some of them. Dr. Hollis laments the median eye once possessed by our ancestors and now marked only by the pineal gland. Such an organ favorably placed on top of the forehead would keep an automatic lookout for aerial invaders, while the other two eyes were attending to the routine business of everyday life. It is probable that certain of man's phylogenic forbears flew through the air, probably by means of membranes stretched over greatly prolonged hind ribs, and it is only very recently that man has been able to devise any sort of substitute for these. Now and then we see children born with supplementary ribs, mementoes of the volplaning lizard.

Typhus Mortalities.

As is well known, and as has been brought out in this country especially by the discussion in Brill's disease, typhus fever often runs a very mild course, but it always shows some mortality. At a meeting of the Royal Imperial Medical Society of Vienna in May last (*Berliner klinische Wochenschrift*, June 14) a number of practitioners reported low mortalities. Wenckebach's experience was confined to a peace epidemic in Holland in 1901-2. There were but 4 fatalities in 57 cases, 17 per cent. Granz reported that in what was at first a very deadly epidemic in a prison camp the mortality fell until it was only 2 per cent. Lindner saw a mortality of but 2 per cent. among Russian captives. The Ger-

man death rate was much higher. The most striking series is that of Skutetsky, who saw in 651 cases only 3 per cent. mortality. Teleky saw one death in 32 cases (3 per cent). There was a general consensus among the speakers at this meeting that an initial high death rate drops rapidly as soon as the measures for dealing with the disease are in full force. A higher death rate (19.5 per cent.) was reported by Tobeitz, and initial mortalities of 70 per cent. and 46 per cent. were recorded. The course of the disease is almost always mild in children, but the latter do not figure much in war epidemics.

Cell Proliferants in Wound Treatment.

Since the outbreak of the war there has been a notable silence in regard to the use of the new class of cell proliferant remedies in wound healing. There may be good reasons for this silence, such as prohibitive cost. According to some surgeons the new remedies possess no advantage over some of the old class—not even theoretical and experimental advantage. Balsam of Peru is one of our old resources which holds its own. It has even been claimed that petrolatum is distinctly a cell proliferant, and that the efficacy of Beck's paste in closing sinuses is due more to the petrolatum than to the bismuth. At Wilm's surgical clinic in Heidelberg and in the City Hospital in Schwenningen mineral oils are being used as cell proliferants (Military Supplement to *Muenchener medizinische Wochenschrift*, June 22). The subject is still in the experimental stage. It is claimed that the oil is a refined substance, so that none of its efficacy can be due to impurities. Thus far the source of the oil and the precise chemical nature have not been announced.

News of the Week.

A Warning.—Subscribers to William Wood & Company's publications are warned not to pay any money to the Cornell Educational Association of 416 North Clark street, Chicago, Ill., or to anyone representing this association, as it is not authorized to collect any money or solicit subscriptions for any of the publications of William Wood & Company. We recently published a warning not to pay any money to the National Educational Association, 130 Nassau street, New York City. The same names appear on the receipts issued by the Cornell Educational Association as are on those of the National Educational Association. Authorized collectors have proper credentials on the regular and well-known letter head of William Wood & Company. The authorization to collect appears over the signature of William Wood & Company.

Cholera in Central Europe.—The cholera situation is said to be quite grave in Austria, the minister of the interior of that country reporting that on August 19 there were 1,566 known cases of the disease in the empire. A despatch from Amsterdam, dated August 25, says that the rapid increase in the number of cholera cases in eastern Germany is becoming so alarming that a conference has been held at Thorn at which civil and military authorities discussed measures by which to cope with its spread.

The American Women's War Hospital Not to Close.—It is announced that the work of the American Women's War Hospital at Paignton, in Devonshire, England, will not be interrupted by the decision of the Red Cross to withdraw its nursing units from all belligerent countries because of lack of funds. An American surgeon has been appointed, who will have full charge of the hospital, with a nursing staff of American and English sisters.

Committee of American Physicians for the Aid of the Belgian Profession.—Dr. F. F. Simpson, Treasurer, 7048 Jenkins Arcade Building, Pittsburgh, reports the receipt, during the week ending August 28, of $10 from the Warren County, Miss., Medical Association. The total amount received has been $7,814.84; amount expended, $7,310.04, leaving a balance of $504.80.

New York City Death Rate.—During the week ending August 21, the total number of deaths was 1366 with a rate of 12.27, against 1381 deaths and a rate of 12.90 during the week ending August 22, 1914. There was an increase of six deaths from typhoid fever over those of the corresponding week of last year. The epidemic of measles is declining, the deaths from this disease having been fewer than during the corresponding week of 1914; this was the first week since March 27 that the weekly death toll of this disease was lower than that recorded last year. The death rate for the first 34 weeks of 1915 was 13.68 as compared with a death rate of 14.16 for the corresponding period of last year.

Dr. Willson's Lectures on the Heart.—Beginning with October 1 and continuing until April 28, Dr. Robert N. Willson will give his annual course of post-graduate lectures on the heart in the amphitheater of the Philadelphia General Hospital. The lectures are given every Friday afternoon from 5 to 6 o'clock and are free to all physicians and medical students.

Appointments to the St. Paul, Minn., City and County Hospital.—The following nominations for appointments to the attending staff of this hospital have been made by the medical department of the University of Minnesota: Dr. John T. Rogers, chief of the service in surgery; Drs. W. A. Dennis and A. R. Colvin, associates in general surgery, and Drs. H. B. Zimmerman and J. S. Abbott, assistants; Dr. P. B. Cook, associate in the branch of skin diseases; Drs. C. C. Chatterton and Wallace Cole, associates in orthopedic surgery; Dr. W. W. Lewis, associate in eye, ear, nose, and throat surgery; Dr. W. R. Ramsey, chief of the work in both pediatrics and contagious diseases; Dr. W. R. Beadie, associate in pediatrics; Drs. Bronson Crothers and C. E. Smith, Jr., associates in contagious diseases; Dr. T. L. Birnberg, assistant in contagious diseases; Dr. Ernest Hammes, chief of the mental and nervous disease section, with Dr. J. C. Michaels as assistant; Dr. J. L. Rothrock, chief in obstetrics and gynecology, and Dr. W. C. Rutherford, associate.

The Sanitation of the Mikvehs.—The Department of Health of New York City has for more than a year been interested in the sanitation of the Mikvehs. Through the medium of the Kehillah, the Vaad Horabbonim became interested in the problem and stimulated the formation of the Mikveh Owners Association. After a number of conferences extending over several months, plans for the sanitation of Mikvehs, satisfactory to the Department of Health, the Vaad Horabbonim and the Mikveh Owners' Association have now been completed and carried out.

Examination for Sanitary Bacteriologist.—The United States Civil Service Commission announces an open competitive examination for sanitary bacterologist, for both men and women, on September 22, 1915. From the register of eligibles resulting from this examination certification will be made to fill several vacancies in this position in the Public Health Service, for duty in the Hygienic Laboratory, Washington, D. C., or for field service, at a salary of $1,500 a year, and vacancies as they may occur in positions requiring similar qualifications. The duties of this position wll be to assist in the study of stream pollution, water supplies, and sewage disposal, and other public-health problems. Applicants should be competent to make the usual chemical and bacteriological examination of water and sewage. Graduation from a scientific course in a college or university of recognized standing or the degree of M.D. is a prerequisite for consideration for this position. Applicants must have reached their twentieth but not their thirty-fifth birthday on the date of the examination. This examination is open to all citizens of the United States who meet the requirements. Persons who desire this examination should at once apply for Form 1312, stating the title of the examination for which the form is desired, to the United States Civil Service Commission, Washington, D. C.

New York State Hospital Commission.—The Constitutional Convention sitting in Albany has voted to continue as a constitutional body the State Hospital Commission, which exercises supervision over the care of the insane. The convention rejected a substitute proposal which provided for a Secretary of Charities and Correction, with power of supervision over all State institutions, and a continuance of the Board of Charities, the Prison Superintendent, and the Hospital Commission as divisions of the Department of Charities and Correction.

Medical Appointments in Philadelphia.—The Civil Service Commission of Philadelphia announces the following examinations for positions in the Health Bureau of the Department of Health and Charities: September 16—Chief of the division of housing and sanitation, salary $3,100. September 17—Medical inspector (woman) in the division of child hygiens, salary $1,000. September 23—Assistant chief medical inspector, salary $2,400. September 24—Chief of the division of child hygiene, salary $3,000. The examinations are open only to citizens of the United States and residents of the city of Philadelphia.

Bequests to Charities.—The New Haven hospital is given a legacy in the will of the late Emma J. Knevels of New York. The estate amounts to $52,000. There are large bequests made in the will, and it cannot be determined as yet how much the legacy to the hospital will amount to.

The Second International Conference on Race Betterment was held in San Francisco August 4 to 8. The Conference discussed race decadence, the possibilities of race improvement, and the agencies of race betterment. Luther Burbank discussed "Evolution and Variation with the Fundamental Significance of Sex." Abundant, well balanced nourishment and thorough culture of plants or animals will, he said, always produce good results in holding any species or variety up to its best hereditary possibilities, beyond which it cannot carry them, and lacking which, maximum development can never be realized. But a sharp line must always be drawn between the transient results, temporarily attained through favorable environment and the permanent results of selection of the best individuals for continuing the race. Only by constant selection of the best can any race ever be improved. Paul B. Popenoe, discussing "The Natural Selection of Man," declared that there are only two ways to improve the germinal character of the race. One is to kill off the weaklings born in each generation. That is Nature's way, which we are all agreed must be supplanted. When we abandon that, we have but one conceivable alternative, and that is to adopt some means by which fewer weaklings will be born in each generation, to substitute a selective birth-rate for Nature's death-rate. That means eugenics. Dr. J. H. Kellogg proposed that the Conference institute a eugenics register which would undertake to register two classes of persons: (1) Those who, on examination in relation to personal characteristics and family pedigree, are found to measure up to eugenic standards: (2) the children born of parents whose pedigree and physical characteristics conform to the required standards. "Such a registry would be the beginning of a new and glorified human race which sometime, far down in the future, will have so mastered the forces of nature that disease and degeneracy will have been eliminated." Other speakers were Dr. David Starr Jordan of the Leland Stanford University, Dr. Ernest B. Hoag of the Los Angeles Juvenile Court, Edgar L. Hewett, Director of the United States Bureau of Ethnology, Irving Fisher of Yale University, and many others of prominence in sociological and scientific circles. The Conference was concluded with a Morality Masque, in which two hundred students of the University of California took part. This masque was a dramatic arraignment of disease and war.

Obituary Notes.—Dr. JOSEPH J. HIGGINS of New York, clinical professor of surgery in the Fordham University School of Medicine, New York, died at his home on August 22, aged 46 years. Dr. Higgins was graduated from the College of Physicians and Surgeons, New York, in 1892, was visiting surgeon to St. Vincent's and the Fordham Hospitals, and consulting surgeon to St. Mary's Hospital, Waterbury, Conn., and was a member of the American Medical Association, the New York State and County Medical Societies, the New York Academy of Medicine, the Greater New York Medical Society, the Alumni Association of New York Hospital, the Hospital Graduates' Club, and the Bronx Medical Association.

Dr. MARC FONTAINE of Spencer, Mass., died at his home on August 9, after a long illness, aged 66 years.

Dr. JOHN AMBROSE KENNY died at Wilkes-Barre, Pa., on August 10, at the age of 40 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1909. Subsequently he served as interne in St. Agnes Hospital, Philadelphia, and later in Wills Eye Hospital.

Dr. CHARLES HERBERT BRADLEY of Minneapolis, Minn., a graduate of the Northwestern University Medical School, Chicago, in 1890, a member of the American Medical Association, the Minnesota State Medical Association, the Minnesota Pathological Society, and the Hennepin County Medical Society, and a former president of the last, and at one time instructor in medicine at the University of Minnesota, died at his home on August 1, aged 50 years.

Dr. Delano Stapleton Fitzgerald of Baltimore, Md., a graduate of the University of Paris, France, in 1880, died at his home on August 8, aged 62 years.

Dr. Azro P. Willits of Burlington, Iowa, died at his home on July 18, aged 65 years.

Dr. John Francis Conway of Brooklyn, N. Y., a graduate of the New York University Medical College in 1881, lied at his home on August 9, aged 60 years.

Dr. Elmer L. Styles of New Britain, Conn., a graduate of the Cleveland University of Medicine and Surgery, Cleveland, Ohio, in 1881, died suddenly of heart disease while driving his automobile, on August 3, aged 68 years.

Dr. Charles Francis Preston Burchmore of Boston, Mass., a graduate of the College of Physicians and Surgeons, Boston, in 1893, died at his home in Winthrop after a long illness on July 26, aged 56 years.

Dr. Walter W. Wolfe of Fort Motte, S. C., a graduate of the Medical College of the State of South Carolina, Charleston, in 1879, died at a hospital in Columbia, following an operation, on July 25, aged 61 years.

Dr. Charles W. Higgins of Salt Lake City, Utah, a graduate of the Bellevue Hospital Medical College, New York, in 1867, died at his home on August 6, aged 74 years.

Dr. George W. Hackett of Ceres, N. Y., a graduate of the University of Buffalo, Medical Department, in 1895, and a member of the American Medical Association and the New York State and Allegany County Medical Societies, was instantly killed in an automobile accident on August 11, aged 48 years.

Dr. William H. Stowe of South Norwalk, Conn., a graduate of Yale University Medical School, New Haven, in 1888, president of the Norwalk Medical Association, and a member of the American Medical Association and the Connecticut State and Fairfield County Medical Societies, died suddenly from apoplexy on August 11, aged 73 years.

Dr. William S. C. Perkins of Norwich, Conn., a graduate of the College of Physicians and Surgeons, New York, in 1860, and a member of the Connecticut State and New London County Medical Societies, died at his home, from diabetes, on August 7, aged 78 years.

Dr. Joseph Meyer of Brooklyn, N. Y., a graduate of the College of Physicians and Surgeons, New York, in 1877, attending physician to St. Catherine's Hospital, and laryngologist and otologist to the Out-Patient Department, and a member of the Brooklyn Medical Society and the New York State and Kings County Medical Societies, died at the home of his son in Woodhaven, L. I., on August 15, aged 61 years.

Dr. Joseph Lawrence Hicks of Flushing, N. Y., a graduate of the College of Physicians and Surgeons, New York, in 1884, for many years attending physician to the Flushing Hospital, died at his home on August 19, aged 80 years.

Dr. Benjamin Edward Dolphin of New York, a graduate of the College of Physicians and Surgeons, New York, in 1904, assistant surgeon to the Out-Patient Department of St. Paul's Hospital, and a member of the American Medical Association, the New York State and County Medical Societies, the American Urological Association, the Association of the Alumni of the College of Physicians and Surgeons, the West Side Clinical Society, and the New York Academy of Medicine, died suddenly at his summer home in Far Rockaway, Long Island, on August 21, aged 37 years.

Dr. Charles Otto Maisch of New York, a graduate of the Bellevue Hospital Medical College, New York, in 1891, assisting visiting physician to the Post-Graduate Hospital, Babies' Wards, visiting physician to the children's department of the German Hospital and Dispensary, and a member of the American Medical Association, the New York State and County Medical Societies, the New York Academy of Medicine, the German Medical Society, and the Society of the Alumni of the German Hospital, died suddenly, at the German Hospital, on August 20, aged 47 years.

Dr. Abraham Mayer of New York, a graduate of the College of Physicians and Surgeons, New York, in 1876, visiting physician to the Lebanon Hospital, consulting physician to the Jewish Maternity Hospital, and a member of the American Medical Association, the New York State and County Medical Societies, the New York Academy of Medicine, the Greater New York Medical Society, the New York Pathological Society, and the Metropolitan Medical Society of New York, died at his summer home in Allenhurst, N. J., on August 20, aged 60 years.

Dr. Thomas F. Aiken of Boston, Mass., a graduate of the University of Pennsylvania, Department of Medicine, Philadelphia, in 1894, died at his home on August 17, aged 45 years.

Dr. Florence Huson of Detroit, Mich., a graduate of the University of Michigan, Department of Medicine and Surgery, Ann Arbor, in 1885, a member of the American Medical Association and the Michigan State and Wayne County Medical Societies, and for many years active in welfare work among women and girls, died at her home, after a long illness, on August 12.

Dr. Emily Myers Oberlin of Ann Arbor, Mich., a graduate of the University of Michigan, Department of Medicine and Surgery, Ann Arbor, in 1909, and a member of the American Medical Association and the Michigan State and Washtenaw County Medical Societies, died recently at her home, aged 58 years.

Dr. Ammi Ward Follett of Somerville, Mass., a graduate of the Dartmouth Medical School, Hanover, N. H., in 1881, former assistant superintendent of the Butler Hospital, Providence, R. I., and a member of the Massachusetts and Middlesex South District Medical Societies, died at his home, after a long illness, on August 15, aged 57 years.

Dr. Horatio N. Spencer of St. Louis, Mo., a graduate of the College of Physicians and Surgeons, New York, in 1868, founder of the *American Journal of Otology*, and editor from 1879 to 1883, professor of diseases of the ear in the Medical Department of Washington University, St. Louis, from 1881 to 1911, and a member of the American Medical Association, the Missouri State Medical Association, the St. Louis City Medical Society, and the American Otological Society, died in Atlantic City, N. J., after a long illness, on August 7, aged 73 years.

Dr. Louis Huber Schultz of Denver, Col., a graduate of the Medical College of Ohio, Cincinnati, in 1906, formerly connected with the National Jewish Hospital for Consumptives, and a member of the American Medical Association and the Colorado State and Denver City and County Medical Societies, was killed by the overturning of his automobile, on August 14, aged 31 years.

Correspondence.

DRS. KLEINER AND MELTZER MISQUOTED.

To the Editor of the Medical Record:

Sir:—At the April meeting of the National Academy of Sciences, Dr. I. S. Kleiner and the writer presented a communication, entitled, "Retention in the Circulation of Dextrose in Normal and Depancreatized Animals, and the Effect of an Intravenous Injection of an Emulsion of Pancreas Upon This Retention." This paper was published in the June issue of the Proceedings of the National Academy of Sciences, a publication which has only a small circulation. A few weeks ago we were surprised to find an article in the *New York American* stating that we had discovered the cause of diabetes and a cure for it. A day later a writer on foods published in an evening paper (in quotation marks) a statement, purporting to have been made by us: "Glucose in its natural form may be detrimental, but when manufactured is often fatal." That article contains many other nonsensical remarks. I enclose a reprint of our paper in question. You will see that we make no claim whatsoever to having found the cause of diabetes or a cure for it. Nevertheless a statement to that effect was spread all over the United States, and we are now receiving numerous letters from physicians and laymen, begging to send them the cure or to tell them what the cause of diabetes is. Similar letters are received by the Rockefeller Institute and by the National Academy of Sciences.

We beg you, therefore, to publish in your journal a statement that *our paper does not deal with the final cause of diabetes, nor does it even hint that we are on the way to find a cure for it.* We simply communicate there some scientific results which we have obtained in the course of a long series of experiments upon animals, without any reference to the practical applicability of these results.

S. J. Meltzer, M.D.

The Rockefeller Institute for Medical Research.

THE TESTING OF DISINFECTANTS.

To the Editor of the Medical Record:

Sir:—In view of the fact that the International Committee on the Standardization of Disinfectants, appointed at the last meeting of the International Congress on Applied Chemistry, cannot meet this year, owing to the war, and that this may entail a further delay of three years, we desire to call attention to one or two points which have arisen since the publication of our paper on "Approved Technique of The Rideal-Walker Test" (*American Journal of Public Health*, Vol. III, No. 6), and to submit the following suggestions as addenda to the paper referred to.

First, in view of the difficulty experienced by some workers not familiar with the technique of the chemical laboratory, we suggest that a burette, such as that described by Hermann W. Mahr, of the Board of Estimate and Apportionment, New York (*New York Medical Journal*, March 7, 1914), can be adopted in place of the dropping pipette. On the other hand we know many workers who have a decided preference for the dropping pipette originally used by ourselves and who do not see the necessity for changing this detail of the technique.

The second suggestion deals with the well-known variations in resistance offered by the standard broth culture of *B. typhosus*. To obtain the desired result in the phenol column—life in 2½ minutes and in 5 minutes, and no life thereafter—dilutions ranging anywhere between 1 in 80 and 1 in 140 may be required. We feel that this range is too great, and suggest, therefore, that the culture be rejected if it calls for a phenol dilution higher than 1 in 110, or lower than 1 in 90. Where the culture becomes so attenuated as to call for dilutions higher than 1 in 110, it can be strengthened by passage through any suitable animal. By restricting this range in dilution, the only rational objection to the Rideal-Walker test is at once removed.

A new difficulty has been introduced through the war; it is impossible now to obtain supplies of Witte's standard peptone. We understand this matter has been taken up by an American Committee, representing four prominent Laboratories, with Dr. Conn as umpire, and that this Committee is about to report in favor of a brand which is said to be equal to Witte's in every respect. In the meantime, it would be interesting to have the views of other workers. We, therefore, invite discussion on this point.

Samuel Rideal.
J. T. Ainslie Walker.

Progress of Medical Science.

Boston Medical and Surgical Journal.

August 19, 1915.

1. The Present Status of the Anti-Tuberculosis Work in New Hampshire and Some Suggestions for the Future. R. B. Kerr.
2. The Practical Treatment of Inebriety in a State Institution. I. H. Neff.
3. An Electromotor Bone Outfit and Technic of Its Use. F. H. Albee.
4. The Management of Breast Feeding, with Case Reports. C. K. Johnson.
5. The Presence of *B. dysenteriae*, *B. proteus vulgaris*, *Bact. welchii*, and Morgan's Bacillus No. 1, in the Stools of Cases of Infectious Diarrhea. C. TenBroeck and F. G. Norbury.
6. A Note on the Invasion of the Bodies of Infants by *B. dysenteriae*. C. TenBroeck.

2. **Institutional Treatment of Inebriety.**—I. H. Neff, recognizing that inebriety is a well defined condition, defines the inebriate state as follows: Inebriety is an expression of nervous weakness which is inherited—a psychoneurotic fault; founded on this weakness, manifestly a defect, is a habit one calls drunkenness. The inebriate is therefore the sum total of his personality or make-up. The author outlines the requisites of a State institution for inebriates as follows: A sufficient area of land to provide for agricultural development and for outside employment for the patients. A sufficient plant for industrial training. A tract of land of sufficient continuity so that there will be an opportunity for the segregation of the diverse cases. Adequate provision for both male and female inebriates. In the Massachusetts institution the acreage, over 1000 acres, is sufficiently large so that the above requisites have been met. The cottage or colony is the pivot center of the scheme. Three different colonies are considered. First, a hospital colony for men, which will take care of the hopeful cases; second, a detention farm colony which will provide for the more chronic and resistive type of patients; third, a hospital for women. Briefly expressed, the colony groups would care for the following types of patients: The cottages for men would receive: (1) Patients who come voluntarily or who are committed by the courts. (2) Young habitual drunkards placed on probation by the courts on condi-

tion that they spend a specified period at the hospital. (3) Suitable cases transferred on parole from the detention colony. (4) Non-criminal habitual drunkards committed by the criminal courts or received voluntarily as a condition of probation. The cottages for women would receive: (1) Patients who come voluntarily or who are committed upon application. (2) Cases placed on probation by the courts on condition that they spend a specified period at the hospital.

5. Bacteria in Stools in Infectious Diarrhea.—C. Ten Broeck and F. G. Norbury state that in order to isolate the dysentery bacillus from the stools of cases of infectious diarrhea, repeated attempts often have to be made, and the number obtained may be very few. Dysentery bacilli, of the mannite-fermenting type, were isolated from 68 per cent. of the seventy-nine cases studied. Organisms of the *Bact. welchii* type are occasionally associated with dysentery bacilli, but they are found more frequently in the cases of simple diarrhea and still more frequently in normal stools. The authors have no evidence that *Bact. welchii B. proteus vulgaris, Morgan's bacillus No. 1*, the paratyphoid bacilli, or *B. pyocyaneus* are the cause of infectious diarrhea, though these probably influence the course of the disease that is apparently started by the dysentery bacillus.

6. Systemic Invasion by Dysentery Bacillus.—C. Ten Broeck demonstrated *B. dysenteriæ* of the mannite fermenting group in the circulating blood of an infant suffering from infectious diarrhea. Eleven blood cultures made from other cases of diarrhea and cultures made from the organs of fourteen cases were all negative for dysentery bacilli, and the one positive finding is probably an accidental invasion rather than a usual feature of the disease.

New York Medical Journal.

August 21, 1915.

1. Adolescent Insanity and National Health. C. W. Burr
2. Protein Absorption as a Factor in the Causation of Cancer. J. W. Beveridge.
3. Some Implications of Psychanalysis. M. K. Isham.
4. Sodium Bicarbonate in Hay Fever. K. E. Kellogg.
5. A Health Program for New York City. H. Emerson.
6. The Use of Alkalies and Salts in Certain Clinical Conditions of Apparently Obscure Origin. A. D. Dunn
7. The Appendicular Liver. R. N. Duffy.
8. Short Cuts in Medicine. M. Schulman.
9. Medical Education and Municipal Hospitals. A. Schachner.
10. Acute Infectious Inflammations of the Throat. I. M Heller.
11. The Recumbent Position in Scoliosis. M. Strunsky.
12. Acute Intestinal Obstruction Complicating Uterine Fibromyomata. J. L. Amster.

1. Adolescent Insanity and National Health.—C. W. Burr, in discussing the prevention of adolescent insanity, states that one must stop the present tendency toward the easy life if one wished to develop a strong race and bring down the insanity rate. Moral and mental health are closely related, and the newest philosophy of life does not make for mental health. There is too much education and not enough training. There are too many people who read and there is too little that is worth reading. One hears too much of the rights of people, too little of their duties. Untold millions are spent in money and effort in trying to remove the stresses and strains of life, and relatively little in training youths to withstand stress and strain. Fortunately there are a good many cave men left, men who do not philosophize and are not learned and who of course are far from being sweetly good and superrefined, but who are firm fibred, with healthy natural instincts and mate with their kind, and train their offspring to have contempt for weakness, belief in self-dependence, respect for law, a desire for true righteousness, and love for strength and health. These cave men will by their descendants regenerate the race.

4. Sodium Bicarbonate in Hay Fever.—K. E. Kellogg has treated a series of fifty cases of hay fever during a period of three years. The first patient presented a general acidosis with a mild and transient glycosuria; the second a high specific gravity of urine with a marked acidity. Acting on the theory that the general condition served as a primary cause by reason of certain irritating qualities of the blood, making the mucous membranes hypersensitive, the author gave both patients sodium bicarbonate in dram doses three times a day. There followed such a marked relief from symptoms of rhinitis that the author felt justified in administering the same treatment to the remaining forty-eight. Reviewing the records, he finds that 90 per cent. of the patients enjoyed a marked amelioration of symptoms, and 70 per cent. complete relief after a few days' treatment; the remaining 10 per cent. were not as markedly benefited, although they all seemed to show some improvement. The improvement of the local symptoms seemed to be independent of the exciting cause. Some suffered from the inhalation of cotton weed; some, of rag weed; some, of wild rose; others of golden rod; and a few presented precedent lesions of the nasal interior. The alkali acted nearly the same in the majority of cases regardless of local or general conditions. It appeared to have a desensitizing action upon the mucous membranes. Possibly it may also have had some influence in keeping the toxins of the pollen from becoming soluble. In three cases the author found it necessary to supplement the treatment by the administration of a nasal spray of sodium bicarbonate solution.

7. The Appendicular Liver.—R. N. Duffy discusses this subject under two headings: (1) toxic hepatitis and (2) suppurative hepatitis. Soon after the onset of appendicitis, as early indeed as the second or third day, toxins elaborated in the appendix may make their way to the liver, mainly via the portal route, and there set up a toxic hepatitis. This condition was first described most clearly by Dieulafoy in 1898. A day or two after the onset of the abdominal pain in appendicitis, it may be noted that the patient is slightly jaundiced. The jaundice is rarely deep, and is usually limited to the conjunctivæ and the skin of the face. Its onset may make one doubt the original diagnosis and think of gallbladder and bile duct involvement. However, it is found that the tenderness is not over the gallbladder, but at McBurney's point. The liver is very rarely enlarged and palpation elicits practically no tenderness along its margin. The urine in these cases is of a dark reddish-brown color, suggesting the presence of bile. As a matter of fact, true bile is usually not present. When tested with fuming nitric acid the characteristic green and yellow rings of biliverdin and bilirubin cannot be seen as a rule, but a brownish disc is evident at the line of contact. Further tests prove this to be due to urobilin. The urine may further show a distinct trace of albumin and renal casts will be found in the sediment. These findings usually indicate a severe grade of appendicular inflammation; especially is this so if albumin and casts are present in the urine. The patient's symptoms may be all the while deceptively mild. Suppurative hepatitis, consecutive in the vast majority of cases to suppurative pyelophlebitis. The symptoms of toxic hepatitis develop early. The symptoms of suppurative hepatitis are later in their full development although the process is comparatively early in its inception. It is the product of microbic activity in the portal ramifications and the liver substance, whereas toxic hepatitis is due to the action of toxins alone. The picture is entirely different. Whereas toxic hepatitis is not associated with pain in the

region of the liver and the liver is not enlarged, as a rule; suppurative hepatitis, on the other hand, is associated with great pain in the hepatic area and marked enlargement of the liver. Suppurative hepatitis following appendicitis has its onset never earlier than the fifth or sixth day after the beginning of the appendix inflammation. It may follow an apparently mild attack. The patient may seemingly be convalescing well. There may be practically an entire subsidence of pain and elevation of temperature, a stage of "treacherous calm." The appendix may have been removed, say on the seventh or eighth day after the onset of the attack, but the mischief may have already started in the portal vein and then the appendectomy is futile. The chills occurring in this condition are most violent and the temperature rises high. The sweats are drenching. The liver enlarges rapidly and the enlargement may become enormous. The right lobe is usually more involved than the left. The spleen shows no enlargement. There are great hepatic and epigastric pain, much nausea, and vomiting, and diarrhea is quite a frequent complication. Jaundice may be early or late, slight or intense; the urine usually contains bile, albumin, and casts. The general symptoms are typhoidal, the tongue is dry and red. Practically all of the cases are fatal.

Journal of the American Medical Association.

August 21, 1915.

1. Benign Lesions of the Stomach and Duodenum. The Choice of Surgical Procedure with Special Reference to Late Results. C. H. Peck.
2. Chronic Deafness: The Present Status of Its Treatment. D. H. Walker.
3. Subinfection from Foci in the Pelvis and Abdomen. H. G. Wetherill.
4. The Hospital Interne Year as a Requirement for Medical Licensure. J. Ewing.
5. Intestinal Obstruction. A. McGlannan.
6. Mental and Physical Survey of Supposedly Normal Children. L. Porter, A. Huffaker and A. Ritter.
7. Rumination in Infancy. A. Strauch.
8. Operation on the Hypophysis According to Hirsch's Method. Presentation of a Case with Brain, Eye and Other Symptoms. E. C. Sewall.
9. Congenital Syphilis in the Light of the Wassermann Reaction. D. J. Glomset.
10. Report of Four Cases of Meckel's Diverticulitis. G. K. Strode.

1. Benign Lesions of Stomach and Duodenum.—By C. H. Peck. (See MEDICAL RECORD, June 26, 1915, page 1092.)

3. Subinfection from Foci in Pelvis and Abdomen.—H. G. Wetherill discusses the subject of chronic infections from local foci in the abdomen which he thinks have failed to receive the attention their importance merits. He criticizes Lane's theory of colon intoxication and his recommendation of the complete extirpation of the large intestine as hazardous and not supported by facts. The acceptance of this theory involves the admission of the permeability of the normal colon by a pathogenic organism, a theory which would appear to have been clearly disproved by Neisser. Their entrance into the circulation through damaged tissues, however, is a well-known fact, and they form foci which may become encapsulated by a fibrosis of adjacent tissues. During this process, however, the germs may be taken up by the blood and lymph channels and form foci in other portions of the body. Billings enumerates the common systematic results of such focal infection as chronic arthritis, one of the most common, nephritis, both acute and chronic, cardiovascular degeneration, chronic neuritis and myalgia. He cites among other local foci gastrointestinal ulcers, chronic appendicitis, cholecystitis and cholangeitis, and the genitourinary tract. Chronic catarrhal appendicitis may not only cause local disturbances, including digestive disorders, but may be the source of damage to the cardiovascular apparatus. It is probable that many of the pathological processes, called metastases are similar in their origin. Some recent experiments appear to prove that an abdominal disorder like appendicitis is often the result of a secondary hematogenous infection from the tonsil, and the author sees no reason why such a secondary focus in the appendix may not in turn be the starting point for extensive systemic disease. Lubarsch's recent studies show that germs can lie latent for long periods until trauma or inflammatory hyperemia enable them to produce a typical disease, and latent foci in the abdomen are not to be disregarded.

5. Intestinal Obstruction.—A. McGlannan states that the treatment of intestinal obstruction varies with the stage of the disease. Toxemia is the cause of death and is the important factor to be combated in the treatment. In the absence of toxemia the operative procedures are directed toward the removal of the obstructing cause and repair of any damage done the intestinal wall. When toxemia has developed measures must be devised for combating it, regardless of what may be done in direct attack on the obstruction. These measures are: First, enterostomy for the purpose of relieving the body of material which appears to be the source of the toxemia; second, supplying a large quantity of water, best by hypodermoclysis, in order that dehydration shall not take place, and to stimulate excretion; third, injection of suprarenal extract intravenously or with the subcutaneous water, to counteract the effect of the toxin on the heart and the blood pressure. Toxemia is the constant fatal factor in intestinal obstruction. This explains the slight effect of aseptic surgery on the mortality statistics of the disease. At present there is no certain detoxicating or antitoxic agent, and what slight improvement has been made in the results of treatment must be attributed to earlier intervention. Recognition of the disease in its early stage before the toxemia has developed and prompt operation in this early stage offer the only hope for reducing the high mortality rate of acute intestinal obstruction.

The Lancet.

August 14, 1915.

1. An Investigation of the Causes which Determine the Lie of the Fetus in Utero. W. S. A. Griffith.
2. The Treatment of Wounded by Vaccines. H. L. Tidy.
3. Hemoptysis Due to High Tension. By F. de Havilland. Hall.
4. The Treatment of Cystitis by Intravesical Injections of Lactic Bacillus Cultures. D. Newman.
5. School Medical Inspection and the British Army. G. Finch and C. W. Hutt.
6. Transient Renal Congestion. C. W. J. Brasher.
7. The Case for Symptomatic Treatment in General and for the Antipyretic in Particular, with Special Reference to Cryogenine. H. Sainsbury.

3. Hemoptysis Due to High Tension.—F. de Havilland Hall describes a group of cases which drive home the conclusion that in certain cases of hemoptysis the cause is to be sought in the condition of the vascular system rather than in pulmonary tuberculosis. It is most important from the patient's point of view that this condition should be recognized, as a different line of treatment is required in the hemoptysis due to high tension. The author advises inhalation of nitrite of amyl at the time of the hemorrhage, with low diet, and not too much liquid. When the bleeding has been arrested, then attempts should be made to regulate the patient's mode of life so as to reduce the high blood pressure. The prohibition of alcohol, the limitation of meat and salt, and a generally restricted diet are indicated. If the patient be engaged in business his hours of work should be abridged, and if the case be a serious one it may be necessary to advise that all work be discontinued for a time or even permanently. The skin should be kept active by means of warm baths, and a

daily action of the bowels, a rather loose bowel movement being aimed at, should be secured. Drugs such as the iodide of potassium and lithium hippurate should be given, and an occasional dose of calomel or blue pill is most useful in lowering tension. By these means further hemoptysis may be prevented and the patient's life prolonged, but should apoplectic symptoms threaten prompt venesection should be carried out.

British Medical Journal.

August 14, 1915.

1. On the Immediate Effects of the Inhalation of Chlorine Gas. Sir Edward Schäfer.
2. Treatment of Gas Poisoning in Transvaal Mines. A. H. Watt. L. G. Irvine.
3. Some Results of German Gas Poisoning. W. Broadbent.
4. The Isolation of Typhoid and Paratyphoid Bacilli from Feces. With Special Reference to the Use of Brilliant Green and Telluric Acid. C. H. Browning and L. H. D. Thornton.
5. Historical Note on Farr's Theory of the Epidemic J. Brownlee.
6. Tuboovarian Abscess, Intestinal Obstruction, and Ureteric Obstruction: Six Abdominal Sections: Recovery. J. D. Malcolm.
7. Inversion of the Uterus in a Nullipara Due to a Submucous Fibromyoma. R. B. Johnston.
8. Acute Septic Meningitis Due to *B. coli* Following Skull Wound. C. E. H. Milner.
9. Congenital Hereditary Absence of Some of the Digital Phalanges. D. S. Clarke.

2. Treatment of Gas Poisoning in Transvaal Mines.—A. H. Watt and L. G. Irvine state that every man who has been exposed to nitrous fumes must be kept under observation, in hospital if possible, for at least twenty-four hours. An emetic of copper sulphate, 8 grains, followed by a large quantity of water, is given, or a hypodermic injection of apomorphine. It is imperative that vomiting should be freely induced. If an emetic is given early, any other treatment except rest in bed for a day is not usually required. The onset of dyspnea and cyanosis is watched, and should moist sounds develop at the bases of the lungs bloodletting is employed, and as much as a pint may be withdrawn from a vein in the arm. This is usually difficult, as the blood is tarry and coagulates very rapidly. The authors have transfused with saline to replace some of the blood withdrawn. Atropine may be given hypodermically. Inhalation of oxygen is also useful. Should symptoms of general edema of the lungs develop, the prognosis is extremely grave. Very few recover when this stage has been reached. To illustrate the efficacy of treatment, the following case is quoted: In one of the mines under the care of one of the authors a case of gelatine was accidentally set on fire. The fumes spread through the workings, and fourteen men were "gassed." Thirteen of them immediately had an emetic, and the next day were all out of danger. One man disobeyed orders, and went home without receiving an emetic. He was sent for, but he had gone out for a stroll after having partaken of a hearty luncheon. He was found four hours after the accident, and came to hospital under protest, stating that he felt quite well. In the evening he developed general edema and congestion of his lungs, and died before morning.

4. Isolation of Typhoid and Paratyphoid Bacilli from Feces.—C. H. Browning and L. H. D. Thornton describe their method as follows: Specimens of feces should be cultured within several hours after evacuation. In cases in which feces are normally solid it is advisable to give purgatives and examine the resulting fluid motions. Make the usual smear cultures on plates of solid medium containing an indicator—for example, Endo's or MacConkey's. At the same time inoculate peptone water containing brilliant green; employ preferably a series of tubes for each specimen, but when time prevents this, use a concentration of 0.5 c.cm. of 1 in 10,000 brilliant green in 10 c.cm. of medium. The direct plates and the brilliant green peptone water cultures are then incubated; if typical colonies are not found on the direct plates, or if "likely" colonies are scanty, make subcultures (successive strokes) from the green tubes on Endo's or MacConkey's medium. These are then incubated for twenty-four hours and examined in the usual way; should typhoid or paratyphoid bacilli be present in the subcultures from brilliant green medium they usually occur as an abundant growth of typical colonies, and it is possible to proceed at once to identify them by the usual fermentation and serum reactions. In certain cases in which green resisting organisms are present positive results may be obtained only when telluric acid is employed, in addition to green, in the medium. The cultures in the green telluric acid mixture may be made simultaneously with the others, or this medium may be reserved until the other procedures have failed. Thus, should direct plates fail to yield positive results, and the green medium be overgrown (inosite fermenters), then, in further examinations of the case, employ, in addition, peptone water medium containing a mixture of brilliant green with telluric acid.

7. Inversion of Uterus in a Nullipara.—R. B. Johnston reports a case of this condition, the unusual feature being the inversion of the uterus in a nulliparous woman aged 45 years. The condition was produced by the efforts of the uterus to expel a polyp as a foreign body. Owing to its close attachment to the fundus, the tumor gradually produced a dimpling, this process extending until the uterus was completely inverted. It was reduced with great ease and quick and steady recovery from the severe shock resulted.

Berliner klinische Wochenschrift.

July 12, 1915.

Bedside Study of the Bile.—Bedark and Pribram sum up their study of this subject as follows: By means of the duodenal sound and quantitative estimation of the coloring matters and cholesterin of the bile it is possible to arrive at valuable conclusions. Finds in connection with increase in coloring matters refer to increased destruction of erythrocytes—so-called hemophthisis. A strong increase of biliary coloring matter is certain evidence of a hemophthisis, and with beginning anemia indicates splenectomy, a resource which is at once followed by a restitutio ad integrum. This association has never been shown in fistula experiments on animals. The absence of urobilin in duodenal secretion shows the absence of an enterogenous infection of the gall ducts, but the converse cannot be inferred, *i.e.* the presence of urobilin is not pathognomonic of enterogenous cholangitis; urobilinocholia may also mean insufficiency of the liver. There is a physiological breaking down of erythrocytes during menstruation, *i.e.* the ordinary destruction is increased. The cholesterin content of the blood is increased in cholelithiasis, hypertrophic cirrhosis, catarrhal jaundice, and also in diabetes and certain nephritides. In atrophic cirrhosis the amount of cholesterin is decreased. Whenever the blood content of cholesterin is increased there is diminished excretion in the bile. After splenectomy the blood cholesterin increases and the bile cholesterin decreases. In pregnancy the cholesterin of the bile sinks with each month until at term only imponderable traces are found.

Temperature Measurements by Medical Men.—Wintritz begs his readers to study carefully the statements in his article. He has practised medicine for twenty-seven years and believes that temperatures are not taken with sufficient pains nor interpreted with sufficient feeling of responsibility. He finds that most of his colleagues rely on axillary temperatures. It is now univer-

sally admitted that normal human temperature is never over 37° C. (98.6° F.). The old estimate of 37.5° C. as a "normal maximum" is too high. Anything about 37° is suspicious, and if accompanied by quickened pulse, headache, neuralgia, general prostration, thirst, anorexia, etc., fever is certainly present. If all these symptoms are absent fever is not excluded. There is no definite relationship between axillary and rectal temperatures, as a result of which we can add an increment to the former which shall then represent the norm. The said differences may be only a few tenths of a degree or as much as one to two degrees. It is true that there is an average difference of one-half to one degree, but this does not help in the individual case. The mouth temperature may be only one-tenth of a degree below normal, but only rectal and vaginal temperatures represent the actual body heat. We know that very slight local disturbances—coryza, gastric and intestinal irritation by ingesta, constipation, etc.—can affect the rectal temperature, doubtless by minimal absorption of material which can disturb the heart center, and that the patient may at the same time feel perfectly well. In other cases the patient feels poorly and complains much, yet there is apparently no temperature rise nor local foci of disease. These patients are an opprobrium, because they are usually treated by general roborants and often find their way to quacks. When a diagnosis is made it is apt to be anemia, nervous debility, or rheumatism. Proper thermometry, by showing temperature and pointing to a local focus of disease, would remove this reproach. In such cases, too, the temperature must be carefully followed up. These cases of mild toxemia often lead to acute infectious nephritis from absorption of bacteria. We are accustomed to watch for nephritis in scarlatina, along with other complications, and so in other severe illnesses. Even here, however, we often become lax during convalescence. Thermometry has great possibilities in the detection of simulation and in life-insurance examination. The author relates observations which illustrate his thesis.

Münchener medizinische Wochenschrift.

July 13, 1915.

How Can Soldiers with Weakened Vision Be Enabled to Read?—Stock refers to the provisions made for instruction of the totally blinded in new vocational work and then passes on to consider those who retain some vision but are no longer able to read. Most of the men in question have sustained transverse wounds of the skull with comminution of the bones of the orbit. The optic nerve may have been directly injured or involved in a hemorrhage or there may be various kinds and degrees of injury to the bulb—lacerations of the retina or choroid. Some weeks or months may be required before the exact degree of damage can be ascertained. If central vision is then good we need not concern ourselves with contraction of the field of vision. If there is only one eye with good central vision we need have no fear that it will be overtasked. If central vision is lost outright or reduced to one-third or one-quarter the patient becomes a subject for our efforts. Even if he is a peasant he must read the papers and such letters as he receives, although he will be as able as before to earn his living. If he has a calling which demands close work with his eyes he will be forced to change it if his vision cannot be improved. This can be done, even if vision is but one-tenth, by using ordinary magnifying lenses. But the far vision is equally defective, and telescopic lenses must be used to get corresponding results. Without prisms objects of distant vision can be magnified but twofold at most, but when prisms are employed sixfold may be reached. Many of the wounded men were shortsighted to begin with. Thus one soldier was not accepted for service until provided with certain lenses. Shot in battle he lost the sight of the right eye. The left eye gradually improved, but vision with ordinary lenses was but 5/50. As he was a theological student ability to read was paramount. By using special magnifying systems acuteness was raised to 5/10. Much practice was required before he could read fluently, and he complained of the narrowness of the visual field and lack of distant vision. In a man who had been emmetropic and had lost the sight of one eye, with the other badly crippled by lesions of both opticus and bulb, 5/50 of natural vision still remained. This was raised by magnifying systems to 5/12. As he is an innkeeper he can pursue his calling without hardship.

Yerba Maté as a Substitute for Tea and Coffee in the Field and in the Hospital.—Richter writes in praise of Paraguay tea, which he has drunk for over twenty years. Any substitute for coffee and tea must be readily made, cheap and not prone to deteriorate, must quench thirst and not stimulate, and have a pleasant taste. Large supplies of yerba maté are in the Bremen warehouses, and the price, slightly higher than before the war, is about 25 cents a pound. The tea comes both in dried leaves and powder, and an infusion is easily made, as in the case of ordinary tea. Hot or boiling water should be used and the infusion allowed to stand for ten minutes. The leaves, which are relatively heavy, fall to the bottom, and a strainer is not required. From 10 to 12 gms. makes a liter of tea. From the grounds further infusion may be made with fresh hot water. Paraguay tea may be drunk either hot or cold, plain, sweetened, or acidulated with lemon or wine. While the infusion contains some caffeine it never causes insomnia. It quenches thirst better than either tea or coffee, yet is devoid of the least bitter taste. Drunk lukewarm it exerts this thirst-quenching property to the full, hence it is not necessary either to heat or chill it. A slight smoky taste, if found disagreeable, may be removed by parching the herb in the oven.

Deutsche medizinische Wochenschrift.

July 8, 1915.

Indications for Intervention in Graves's Disease and Operative Results.—Starck has operated on sixty-nine patients with Graves's disease and has secured 30 per cent. of recoveries and from 30 to 45 per cent, of improvement. His operative mortality was 9 per cent., and some of those who were not improved by intervention became worse. In view of the prevalent opinion that a persistent thymus means a fatal outcome of operations, this organ must always be looked for, and if present it must either be resected or have its bloodvessels ligated. In operating for Graves's disease general narcosis must be the choice in the very nervous, myasthenic, psychopathic subject. The other patients get along with local anesthesia. Operation is really contraindicated when there is a status lymphaticus, but may be done with local anesthesia. In many cases a successful operation will pave the way for intensive medical treatment. In the *stadium incrementi* of the disease operation is contraindicated; intervention belongs to the stationary or latent periods. Best suited for operation are cases of Krauss's goitre heart and classical cases of Graves's disease. In the nervous-myasthenic type with little involvement of the heart operation accomplishes but little. The size of the thyroid on palpation does not constitute a factor in operative indications. Better results are expected with small, soft thyroid than large, firm organs. The blood picture likewise is not a factor in indications.

Gastroenteritis Paratyphosa.—Hake recalls that infection with the paratyphus B causes two clinical types

of disease, viz., a paratyphoid fever and a gastroenteritis; also that these infections have been associated with meat poisoning. He relates two cases which occurred in troops in which gastroenteritis paratyphosa was the diagnosis. As often happens the meat ingestion is a pure hypothesis. We know now that the paratyphus B occurs in nearly all our nutriment. The two soldiers, although in a garrison, upon a common regimen, were the only ones to be attacked. Prompt isolation, in the author's opinion, prevented an epidemic, as the disease can surely be spread by contact. In the first case the disease began sharply with chills, hoarse voice, diarrhea, and vomiting. The spleen showed no enlargement. The extremities were cyanotic. Cholera morbus was at first suspected (the paratyphus form), but the state of the pulse and temperature and the absence of rice-water stools spoke against this presumption. The Widal was negative in this patient. The case ended fatally and the diagnosis of paratyphus infection was not in doubt. This patient had subnormal temperature throughout. The second patient, who recovered, was taken ill rather insidiously, first having diarrhea and colic, for which he received opiates. As he did not mend the diagnosis was made of simple gastroenteritis, altered later to dysentery. He had fever, and a positive Widal, while the paratyphus B was found in the urine and stools. A negative Widal by no means excludes paratyphus infection (the author refers of course to clumping the paratyphus B). When true cholera is simulated the prognosis is grave, but subnormal temperature does not necessarily aggravate the prognosis. Sudden onset with diarrhea and vomiting suggests a choleriform infection as well as acute poisoning. Colitis seems to be always present in all paratyphus B infections. The clinical types vary much. In one case local symptoms predominate and we see acute gastroenteritis and cholera-like symptoms, pseudo-dysentery, etc. In another, ordinary typhoid is simulated by a combination of local and general symptoms. In a third type we see an extensive bacterio-toxemia—a sepsis with metastasis throughout the body.

Deutsche medizinische Wochenschrift.

July 15, 1915.

Dihydromorphin and Diacetyldihydromorphin.—Kolb has been testing these morphin derivatives as substitutes for morphin. He first sought to learn the dose of hydrated morphin, and made use of operated goiter patients for this purpose. In this way he found that with hydrated morphin twice the dose of ordinary morphin is required. In regards to quality of action this appeared to be the same in hypodermic exhibition but hydrated morphin cannot well be given by mouth for it has a marked tendency to cause vomiting. In fact it could well be used as an emetic, were it not for the fact that its action was both slow and distressing. It no doubt acts by causing pylorospasm in a much higher degree than does morphine. In the protracted use hypodermically of hydrated morphin there was no demand for an increased dosage; in other words it is not habit forming. As is well known diacetylmorphin is heroin, and the anthor also tested hydrated heroin. This is well tolerated both by the mouth and hypodermically under conditions: *i.e.* up to a certain dosage vomiting is rare—as rare as with morphin; above that dose, however, it begins to be common. Hydrated heroin, like hydrated morphin, is not a habit-forming drug. The two drugs have been used throughout to fill the indications for morphin.

Angina Pectoris and Raynaud's Disease.—Schott of Nauheim states that war has introduced new clinical pictures of diseases. This is true especially of diseases of the circulatory system, with or without a nervous component. Infections, febrile affections, attack men who have been undergoing incredible hardships. A soldier, aged 37, had a clean record in most respects. He had always drank considerable beer. A mason by trade, his hands and feet had never been cold during the winter. He bore the hardships of war well. His work was driving a munition wagon and the dust given off from the explosives was irritating to the air passages and at last became a hardship. He constantly coughed, sneezed and spat up mucus tinged by the yellow and green explosive material. His fingers now began to show the symptoms of beginning Raynaud's disease. The troop surgeon allowed him to stop at intervals to warm his hands, but nothing was of any benefit and when blebs developed on his fingers and he could no longer feel anything he was laid off permanently. Examined in the Reserve Hospital he was found to be well nourished, weighing 176. There was no fever. The lesions were limited to the fingers and hands and the toes. The *x*-ray showed that the bony skeleton was still intact. The nervous system was normal, aside from the sensory disturbances in the extremities. In about three weeks thoracic symptoms developed. The patient was found to have the lungs which characterize stone cutters and other workers in dust and this was explained by his trade of mason. The state of the heart and vessels was highly complicated and repeated examinations were made before a diagnosis could be reached. Both the radial and ankle pulse were at times imperceptible and there was a marked asymmetry. A full radial on one side would be associated with absent radial on the other. The cardiac finds also showed irregularity. The area of dullness, the heart sounds, etc., were inconstant. As the composition of the explosive was a secret no exact information could be obtained about a possible chronic intoxication. Picric acid could be excluded through the spectroscopic finds in the blood. It was finally assumed that nitrites were in part the offending agent and it was shown that nitrobenzoic acid formed from nitrotoluol was able to cause the syndrome from which the patient suffered. Some of the symptoms, such as precordial pain on climbing stairs could be summed up as stenocardia, due apparently to beginning arteriosclerosis. These yielded to nitroglycerin and diuretin. Arteriosclerotic angina was, however, associated with the vasomotor or functional type. The same combination of the functional and organic was also evident in the Raynaud's disease. The extreme instability of the heart, aorta and arteries, as to form and function, seemed to be a direct result of the chronic intoxication; but Schott, despite his experience in circulatory pathology had never before seen such manifestations.

Tonsillar Extract in the Treatment of Diabetes.—G. B. Farmachidis concludes on the basis of animal experiments and clinical observation that an extract of the faucial tonsil named by him "glycolytic amygdalin" has a definite therapeutic value in simple glycosuria and in diabetes mellitus. The extract is administered by mouth.—*Riforma Medica.*

Cardiac Stimulants and the Coronary Arteries.—Sakai and Saneyoski find that toxic doses of strophanthin produce a contraction of the coronary arteries, but that moderate or therapeutic doses have no such effect. Likewise therapeutic doses of caffeine and diuretin cause no coronary constriction; on the contrary they produce, although not constantly, a dilatation of the coronary arteries.—*Archiv für experimentelle Pathologie und Pharmakologie.*

Insurance Medicine.

Value of Blood Pressure Readings in Examinations for Life Insurance.—The value of systolic blood pressure readings in the selection of life insurance risks has been demonstrated, but Dr. J. W. Fisher, medical director Northwestern Mutual Life Insurance Company, Milwaukee, Wis., presents the reasons for this conclusion. To begin with there was comparatively little information to be had as to what constituted a normal systolic blood pressure. Therefore, when, in 1906, the Northwestern Mutual Life began to use the sphygmomanometer, their first effort was to establish average readings at the various ages. Clinicians had considered a systolic pressure of 170 or 180 mm. as of little significance, but the figures which were obtained by the study of 13,000 readings in 1911 showed that these figures were much too high.

Within the last year (1914) the correctness of the averages obtained has been verified by the medical department of the Mutual Benefit in a series of 4325 cases and by 2000 or more additional readings of the Northwestern Mutual Life. The statistics here given were compiled from the 19,339 readings mentioned above: Age 15-20, showed an average pressure of 119.85; age 26-30, an average of 123.65; age 41-45, an average of 128.56; age 51-55, an average of 132.13, and 56-60, of 134.78.

At the present time a blood pressure reading is required of all applicants, irrespective of age or amount of insurance applied for. Up to May, this year, 405 applicants, under age 40, who had a persistent systolic pressure of 15 mm. or more above the average for their respective ages, without any other impairment recorded on the blank, were rejected by the Northwestern Mutual Life. Between the ages 40 and 60 similar rejections numbered 1036.

The company accepted 2661 risks, ages 40 to 60, between 1907-1910, with an average systolic pressure of 142.43 mm., which show a mortality about the same as the general average mortality of the company for the same period. Of this number up to August 1, 1913, the actual deaths were 85, while the expected deaths, according to the actuaries table, should have been 172.326—a per cent of actual to expected of 49.33. According to the recent medico-actuarial table, the expected mortality of this same group is 113.966, giving a per cent of 74.58, using this group as a basis. The Northwestern's average mortality is only about 80 per cent of the medico-actuarial table.

During the same period, 1907-1910, 525 applicants of all ages were granted insurance whose average systolic pressure was 152.58 mm. This group, designated Group A, showed a mortality of over 30 per cent above the general average of the company. There were thirty-three deaths up to August 1, 1913. The expected deaths, according to the actuaries table, was 42.799, a per cent of actual to expected of 77.10.

Another, Group B, of 1970 lives, all ages, with an average systolic pressure of 161.44 mm., showed a mortality almost two and one-half times greater than the company's general average mortality. These cases were all rejected. Of these, as far as could be determined, 83 died. There may have been more, for all the rejected applicants could not be followed. The expected deaths, according to the actuaries table, were 67.200, the actual deaths 83, a per cent of 121.51.

Group B may be divided into two classes: C, 1082 with no impairment except the high systolic pressure—average 159.90. D, 888 with high systolic pressure and one or more impairments—average 164.77. These impairments included the following conditions: Arteriosclerosis, heart murmur, heart hypertrophy, albumin and sugar, or either alone, albumin and casts, nervous symptoms, etc. In Class C there were 40 deaths. The expected deaths, according to the actuarial table, were 34.778, a per cent of actual to expected of 115.02. Class D showed forty-three actual deaths. The expected deaths, according to the actuaries table, were 32.422, a per cent of actual to expected of 132.63.

Accordingly, the mortality was greater in the class where one or more impairments, besides the high systolic pressure, were found; but where the high pressure was the only impairment, the mortality was more than twice as great as the company's general average for the same period.—*Lancet-Clinic*, Feb. 18, 1915.

The Relations Between the Life Insurance Agent and the Local Examiner.—In a paper read before the Medical Life Insurance Section of the Texas State Medical Association, Dr. P. H. Scardino says the examiner enjoys a triple relationship with company, applicant, and agent. Consequently he is in a fair way to enjoy the wrath of all three. Primarily, the life insurance examiner is in the employ of the company. Therefore, the benefit of a doubtful risk is always given to the company.

Fairness, promptness, and courteousness to company and agent are watchwords for the examiner. The agent is entitled to all due respect, promptness, and courtesy for he is the producing end without whom a life insurance company would soon fall by the wayside.

Every applicant should receive a good thorough examination, repeated examinations if necessary, so that we may be doubly sure we are not rejecting a good risk.

The diplomatic physician always secures a reluctant applicant and sends him away contented. He will further protect the good natured rivalry between agents, and will not leave applications lying around on his desk, where rival agents will have every access to them.—*Texas Medical News.*

The Endowment Policy an Incentive to Live.—At a meeting of the Life Underwriters' Association of New York in the Hotel Astor last spring Arthur Hunter, actuary of the New York Life Insurance Company, read part of a report on mortality in the United States compiled recently by an investigating committee appointed by forty-three of the leading life insurance companies of America. It had been found, among other things, that the mortality rate among women who took out twenty-year endowment policies was lower than among women who took out ordinary life policies.

This fact, Mr. Hunter said, appeared to support the theory of the influence of mind over matter in producing longevity. "The woman who expects to receive the principal of her insurance if she lives twenty years," he said, "generally determines to live twenty years and get it, whereas the woman who has insured herself for the benefit of heirs has no incentive of the kind."

Book Reviews.

AN INDEX OF PROGNOSIS AND END-RESULTS OF TREATMENT. By Various Writers. Edited by A. RENDLE SHORT, M.D., B.S., B.Sc. (Lond.), F.R.C.S. (Eng.) Captain R.A.M.C., Hunterian Professor, Royal College of Surgeons; Examiner in Physiology for the F.R.C.S. Hon. Assistant Surgeon, Bristol Royal Infirmary; Lecturer on Physiology University of Bristol. Price, $7.00, cloth, net. New York: William Wood & Co., 1915.

AN Index of Treatment and an Index of Differential Diagnosis have already been published and have been accepted by the medical profession as works of unusual value, so that it is quite in the order of things that an Index of Prognosis should be brought out to supplement the earlier works. The principal aims of this work are: (1) To set the results, and particularly the end-results, of various methods of treatment in such a form as will enable the practitioner to obtain a fair, unbiassed, reasoned opinion as to the prospects of securing for his patient permanent relief, and also to note the risks of such treatment. (2) To furnish data by means of which, apart from the question of treatment, one may seek to arrive at an accurate forecast of what will probably happen to the individual patient. In the execution of the plan Dr. Short has been assisted by an able band of collaborators, and the scheme has been carried to a successful issue. The task has been by no means light, involving a great deal of tedious investigation. Of course the main reliance in compiling this work has been placed on statistics, as such is the only satisfactory way of expressing end-results. Statistics have been gathered from several sources and have been carefully revised so as to admit of as little error as possible. The result fully justifies the effort made necessary to render the work authoritative, and it should for some time to come supply a ready and reliable book of reference with regard to prognosis.

THE THEORY OF PSYCHOANALYSIS. By Dr. C. G. JUNG, of Zurich. Nervous and Mental Disease Monograph Series, No. 19. Price, $1.50. New York: The Journal of Nervous and Mental Disease Publishing Company, 1915.

DR. JUNG has been closely connected with psychoanalysis for many years. This monograph of his is intended not only to show the evolution of the subject since it was originated by Freud and Breurer; but it also offers free criticisms, and certain more or less original formulations which, he says, "Present the observed facts more adequately than is the case in Freud's method of statement." The subject matter was presented originally in the form of Lectures to Physicians at Fordham University, in September, 1912, in an "Extension Course." As arranged in chapters, the titles are as follows: Consideration of Early Hypothesis; The Infantile Sexuality; The Conception of Libido; The Etiological Significance of the Infantile Sexuality; The Unconscious; The Dream; the Content of the Unconscious; The Etiology of the Neuroses; The Therapeutic Principles of Psychoanalysis; and Some General Remarks on Psychoanalysis. As an example of change in the theory of psychoanalysis, since first promulgated, the writer recalls the fact that the doctrine that hysteria, as well as other neuroses, has its root in the so-called traumata of earliest childhood, was abandoned by Freud himself about fifteen years ago and replaced by a totally different one. Also the method of analysis beginning with symptoms is not used by the regenerated psychoanalyst of today. Again the term "libido," as used by this author, has broadened in significance from that of sexual craving, simply into the more general sense of every passionate desire. We mention these things more especially for the critics of psychoanalysis, in the hope that a careful study of Jung's book may lead to the reading of other recent literature on the subject, and ultimately to a change of heart towards a subject which is doing more in the advancement of our knowledge of the psychoneuroses and certain psychoses than anything else at the present day. The author states that "Wherever really sincere and thorough investigations have been carried out it has been possible to corroborate his (Freud's) observations." But, "Excessive sexuality, sexual abuse of children, or very early sexual activity in childhood, were later on seen to be of secondary importance." The trauma "owes its efficacy to the nature of the soil upon which it falls." Jung strongly advances the energic theory of the libido and says that the task of psychoanalysis is "to search for that hidden place where the libido dwells, and where it is as a rule inaccessible to the patient." Psychoanalysis is a method which "discovers those places or functions where there is too little or too much libido, and restores the just proportions." We should like to quote further and make an analysis of the book, but lack of space prevents. The book is interesting and valuable. It is a slight deviation from pure Freudism, perhaps, but the author disclaims that his criticisms are a "falling away" or a schism. On the contrary his object has been "to open a path towards the scientific treasures of psychoanalysis for those who have hitherto been unable to possess themselves of psychoanalytic methods, whether through lack of practical experience or through distaste of the theoretical hypotheses."

NURSING AND CARE OF THE NERVOUS AND THE INSANE. By CHARLES K. MILLS, M.D., Professor of Neurology in the University of Pennsylvania; Neurologist to the Philadelphia General Hospital. Third Edition. Revised by the Author, assisted by N. S. YAWGER, M.D., Instructor in Neurology in the University of Pennsylvania; Assistant Neurologist to the Philadelphia General Hospital. Price $1.25. Philadelphia and London: J. B. Lippincott Company, 1915.

THE first edition of this little book for nurses appeared in 1887 and contained at that time rather fuller suggestions and directions for nursing nervous conditions than most of the manuals on general nursing. It comprised Dr. Mills' lectures on this special subject, to the nurses of two training schools, and contained information as to the care of nervous patients, and also as to the use of massage and electricity. In the present edition new material has been introduced on epilepsy, insanity, and fibrosis, and a chapter on hydrotherapy. The aim of the author has been, he says, "to recall facts regarding nursing obtained by experience." The book if used by attendants on insane patients will be found of most value when studied in connection with more general works on nursing.

RADIOGRAPHY, X-RAY THERAPEUTICS, AND RADIUM THERAPY. By ROBERT KNOX, M.D. (Edin.), M.R.C.S. (Eng.), L.R.C.P. (Lond.), Hon. Radiographer, King's College Hospital, London; Director, Electrical and Radiotherapeutic Department, Cancer Hospital, London; Hon. Radiographer, Great Northern Central Hospital, London; Captain R. A. M. C. (T.) 4th London General Hospital (in charge of *X*-Ray Department). With sixty-four plates, two hundred and forty-six illustrations in the text, and a frontispiece in color. Price $8.00. New York: The Macmillan Company, 1915.

THE recent advances in our knowledge of radiotherapy have necessitated a complete revision of our previous ideas, and, consequently, the scrapping of most of the older textbooks. The English practice in radiography is very well presented in this volume, which is sufficiently comprehensive to enable anyone to develop a satisfactory technique, to produce good radiographs, and, after some experience, to interpret them fairly. The directions for treatment are also sufficient to enable an intelligent worker to do such things as can be accomplished by radium and the *x*-rays. The first portion of the book is given up to a very full description of the technique of the production of Röntgen rays, the equipment, the construction of tubes, the apparatus, and the methods of localization, and, finally, an interesting series of studies of various pathological lesions, chiefly in the bones. A good deal of space is also devoted to lesions of the thoracic viscera, especially in the diagnosis of aneurysms. Here there are brought out a number of points with which the American radiographer would do well to familiarize himself. The use of the fluorescent screen is insisted upon for a proper study of gastrointestinal lesions; yet there are a great many laboratories in this country in which no such screen is available. The last portion of the book on the therapeutic use of radium and *X*-ray is very properly conservative, as might be expected from one who has given much treatment and has followed the cases and seen the disease recur and the patients die. The photomicrographic illustrations of the changes produced in tumors and other tissues by radiation are very satisfactory. A useful glossary completes this extremely practical volume.

Society Reports.

AMERICAN GYNECOLOGICAL SOCIETY.

Fortieth Annual Meeting, Held at White Sulphur Springs, West Virginia, May 18, 19, and 20, 1915.

THE PRESIDENT, DR. THOMAS J. WATKINS OF CHICAGO, IN THE CHAIR.

(*Concluded from page 377*)

Primary Cancer of the Female Urethra: Plastic Work and Late Results.—Dr. H. S. CROSSEN of St. Louis said that, in order to determine the proportion of cases of cancer cured by operation, he had tabulated the operative cases found in cursory examination of the literature as follows: Cases subjected to radical operation, 25; cured (3 years) 8; probable cures (2 years), 3; recurrences known, 8; results not shown, 6. Thus it would sems that of the treated cases about one-half were cured. That was a very encouraging showing, considering the fact that lymphatic metastases took place directly in the deep glands within the pelvis. On account of the direction of the lymphatic drainage, the first metastases made recurrence certain, for the affected glands were beyond reach. In the series tabulated, some of the operations were not very extensive, the operators removing only one-half or two-thirds of the urethra. The large proportion of cures was probably due to the fact that in the urethra an area of irritation caused symptoms very early, and thus led to investigation in diagnosis and radical treatment while the disease was still in a comparatively early stage.

Dr. LEWIS S. MCMURTRY of Louisville thought the chances for a radical operation being successful were very much endangered by the natural delay in making a diagnosis. He ventured to say, that nearly all cases reported had been primarily operated upon as urethral caruncle, and the malignant character of the growth had been lost sight of until the patient had been under treatment for caruncle for some time, and then failure of this treatment and extension of the growth had impressed the surgeon with its true character. If those cases were taken very early, and diagnosed promptly, the same as cancer in other portions of the genito-urinary tract in women, the results would be much better from complete excision.

Dr. FREDERICK J. TAUSSIG of St. Louis stated if we included all cases where the history pointed very strongly to primary growth of the urethra and conditions at the time of examination showed a cancer involving the urethra and surrounding tissues, we would find the reports very much more favorable. He had occasion about three months ago to remove a small nodule from the urethra of a woman, fifty-three years of age, and his pathologist examined it a long time before he made up his mind it was not malignant. The epithelial proliferations in the urethra closely simulate early cancer, and he had the impression that probably a certain number of those cases that had been reported as cures were not really cancers.

Dr. JOSEPH BRETTAUER of New York City had had but one case of primary carcinoma of the urethra. He had seen several cases of carcinoma of the external genitals and had published a series of 5 cases. Carcinoma of the female urethra was the most dangerous and malignant of all carcinomata he had encountered. Every one of the cases he had published was operated radically. It was exceedingly difficult, if not impossible, to differentiate between early carcinoma of the urethra and urethral caruncle. It was more guesswork than anything else.

Dr. HIRAM N. VINEBERG of New York City stated that one of the cases reported by Dr. Crossen was one to which his name was attached, and he could vouch for the genuineness of that particular case. The specimen was examined by two good pathologists and both made the diagnosis of carcinoma. The woman after operation was free from the disease for three years. She was still free from recurrence, it now being ten years since the operation was done.

Dr. J. RIDDLE GOFFE of New York City related two cases on which he had operated, removing the urethra.

Dr. WILLIS E. FORD of Utica, N. Y., said his first case of primary cancer of the urethra was in a doctor's wife who lived in northern New York. The growth, which was about as large as a walnut, obstructed the passage of urine. He removed the urethra to such an extent that he thought he left but very little of it. He did a purse string, closed up, and the patient got retention of urine. The growth returned within six months. Since that time he had seen half a dozen cases, and with the exception of primary cancer of the clitoris, he thought it was the most rapidly fatal of all cancers he had ever seen or had had anything to do with.

Prolapsus of the Uterus.—Dr. HERMAN J. BOLDT of New York City stated that before deciding upon a particluar operation, it was well to consider whether future offspring was desired by the patient or not. From his point of view, it was perfectly justifiable to give the patient an opportunity to express her wish in that respect, and for them to consider in connection with such a wish the justifiability of granting it. The patient should have a voice in this matter. A simple vaginal hysterectomy for prolapsus of the uterus should have no place in their domain of work, since by it a vaginal descensus could not be cured. During the child-bearing period and the uterus in not more than the second degree of descensus, so that perhaps the cervix came down nearly to the vulva, he knew of no surgical intervention which answered an equally good purpose as a ventral suspension by the round ligaments *á la* Gilliam, combined with a plastic operation upon the pelvic floor, but not with too much narrowing of the vaginal canal. If properly done, a permanent cure would result in ninety per cent. of the cases, unless a subsequent pregnancy should undo the result of the operation. Patients who had a marked descensus, partial prolapsus, and complete prolapsus, in whom no further offspring was expected, might be treated by a vaginal operation with the expectation of getting a good result. A properly executed vaginal operation would overcome the displacement of the uterus and vagina, as well as any existing cystocele and rectocele. Personally, he preferred the radical vaginal fixation. The technique must necessarily vary with the individual case. In patient who had a complete procidentia of the uterus and vagina, and of which no further use of the vaginal canal was to be made, as very old women, or widows who did not expect to marry again, they could do an operation which would guarantee an absolute cure, namely, a total extirpation of the uterus and the vagina, columnizing the vaginal tract by circular sutures, an operation that was comparatively simple, and an absolute guarantee as to permanent results.

President's Address: "What Has the American Gynecological Society Done for Gynecology?"—Dr. THOMAS J. WATKINS of Chicago gave a review of 683 papers which had appeared from time to time in the 39 volumes of Transactions of the Society, and said that all of those contributions were valuable additions to gynecological literature.

A Precise Method of Choosing a Time for Operation in Pelvic Inflammation of Tubal Origin.—Dr. FRANK F. SIMPSON of Pittsburgh said it was an axiom in pelvic and abdominal surgery that, in competent hands, almost all infections formerly thought imperatively to demand surgical intervention even at the height of the disease, could be easily converted into conditions suitable for elective work. Practically the only exceptions to this rule were traumatic injuries, intestinal obstruction, perforative lesions of hollow viscera, and some cases of appendicitis and of tubal pregnancy. In his judgment the questions of mortality, or post-operative morbidity, and the smoothness of convalescence depended almost entirely in competent hands upon a strict adherence to the following postulates: 1. The patient should have recovered from her acute illness and should have regained a satisfactory margin of reserved strength. 2. The temperature should not have risen above normal a single time for a minimum period of three weeks. 3. There should have been no marked or persistent rise of temperature following a careful bimanual examination. 4. The inflammatory exudate surrounding the focus of infection should have been completely absorbed. No one of sound judgment would think of choosing as a subject for elective operation, a patient acutely ill from pneumonia, typhoid fever, scarlet fever, etc. The same principle applied to those suffering from the effects of bacterial poisonings generated in the pelvic structures. As pelvic infection of tubal origin rarely killed, most operations for its relief should be done only at the quiescent or elective period. The temperature should not have arisen above normal a single time for a minimum period of three weeks. This was an em-

pirical rule based upon the belief that it frequently required a minimum period of three weeks of absolutely normal temperature for Nature to destroy all bacteria and to restore the affecteed tissues to the normal. All operators of experience knew the serious technical difficulty confronted when intestinal wall and other structures were still infiltrated and friable—stitches torn out, raw surfaces could not be folded in, peritoneum could not be glided over denuded areas, and serous and bloody oozing from infected surfaces tempted one to the use of drainage and invited adhesions, intestinal obstruction, fecal fistula, hernia, etc. An analysis of the first 456 of his series of 856 consecutive abdominal sections was made in a paper read at a meeting of the society in 1905. A study of the records of 400 additional abdominal sections done in part or in whole on account of inflamed tubes showed that there had never been an exudate, or that the exudate had been completely absorbed, 340 times with only one death and without postoperative complications as a consequence. An exudate of variable extent was present at the time of the operation in 60 cases. In 44 instances it was slight. In this series there were 2 deaths and 20 others had a stormy convalescence. In the remaining 16 cases, there was a marked exudate. Two of these patients died. The remaining 14 were seriously ill after operation. Where the exudate was marked at the time of operation, the death rate was 12½ per cent. Where the exudate was slight, the death rate was 4.6 per cent. Where there was no exudate the death rate was less than 1/3 of 1 per cent. It was evident that in the series of cases analyzed a more rigid adherence to the four postulates given would have resulted in a material reduction in the death rate. It was clear, therefore, that the only safe time to operate was when the patient had a fair margin of reserved strength, when she was not acutely ill, and absolutely no inflammatory exudate would be opened into the free abdominal cavity.

Dr. Joseph Brettauer of New York City said when we went back ten or fourteen years and compared the sense contained in the papers read at that time with the sense of the paper read to-day, we marvel at the discrepancy. He had heard members of the society read papers the gist of which was to operate as soon as they saw the patient, exudate or no exudate, if they could remove the tube. If they could not pack the entire pelvis with iodoform gauze and drain, they said it was preferable to remove the diseased organ. He did not remember the exact death rate after this interference. He had never done anything else except to follow the practice as outlined by Dr. Simpson. Not only did we minimize the death rate by conservative measures, but we decreased the number of patients where we found an operation necessary. Many of these patients did not need an operation in the case of purulent collection in the tubes or in abscess formation. The pathological and anatomical end results were a tubo-ovarian cyst, a closure of the tube with adherence of the ovary, breaking through of the follicle into the tube with a resulting tubo-ovarian cyst, which, in a great many instances never required an operation because there were no symptoms, and it was detected often by mere accident.

Dr. John O. Polak of Brooklyn, N. Y., said he applied the plan that had been outlined by the essaylst eight or nine years ago and followed it to the degree of overconservatism, but he thought he had saved hundreds of organs. He had been surprised in opening these cases to find how perfectly the pelvis had regenerated, not only as regards functional ability, but as to the actual possibilities. For instance, he had seen cases after three or four years absolutely clear up and pregnancy had occurred after mixed infection. Such a paper as this should be brought to the attention of surgeons and general practitioners as we could appreciate what Nature would do in cases of pelvic inflammation.

Dr. Thomas J. Watkins of Chicago said that he agreed with Dr. Simpson, with the possible exception that sometimes it seemed of value to operate very soon after these patients had acquired a complete immunity to the infection. They had taken the temperature and the white count with the idea that there would be some advantage in operating before the adhesions became thoroughly organized. They had made some observations on this, and it was quite safe to conclude that the increased amount of raw surface resulting from operating as soon as immunity had occurred was so much greater than the raw surfaces which remained after operating, if the adhesions had become somewhat organized so as to make the advantage in favor of the later operation. The number of adhesions encountered in operating at an earlier period were undoubtedly greater, many of them being absorbed more readily than they were during a later period.

Dr. Dougal Bissell of New York City said he was in perfect accord with everything contained in this paper, and his conclusions regarding the subject dated back several years, the result of an unhappy experience in the Woman's Hospital when he was an intern. The mortality from persistent operations upon cases of acute pyosalpinx and pelvic inflammations was very high, and with increased experience he refused to operate on these cases, and in following that practice his mortality had been very low ever since.

Dr. J. Wesley Bovee of Washington, D. C., said as soon as Dr. Simpson told him of his method of treatment, he adopted it, and in conjunction with the leucocyte count, he had followed it very thoroughly with the exception of two classes of cases. In the tubercular cases he would operate at once. In these one could hardly expect nature to bring about a successful cure. In the other class he had markedly gone afield, and that was in the acute gonorrheal cases. He was not yet ready to report on his work in this regard. He had not seen the abdominal conditions after this procedure, but he had sterilized the vagina and vulva with iodin and the interior of the uterus by injecting it, the vagina and the Fallopian tubes, opening the abdomen, separating adhesions, painting all raw surfaces thoroughly, but not normal peritoneum, with iodin, putting in drains down to the cul-de-sac before he opened the abdomen, and then draining through the cul-de-sac of Douglas, and he had been pleased with the results. He had done this in the acute cases with a temperature of 103.6°. For the cases that were more subacute and with lower temperature he did not think the plan was feasible.

Dr. H. S. Crossen of St. Louis said one had more or less difficulty to determine when to operate upon a mass that had passed the acute stage and was in the subacute or chronic stage. It might be two months or two years since the acute infection took place, and it was a question whether to do an abdominal operation or not. We could often determine a gonorrheal infection, and it was safe to operate within three months afterward or two months after sterilization. If it was a streptococcus infection, it was never safe. Streptococcic masses were in many instances found self-sterilized. On the other hand, there had been other cases reported in which the infection had lasted as long as six or even twelve years.

Some Points in the Diagnosis of Ectopic Gestation.—Dr. George Tucker Harrison of Charlottesville, Va., said the diagnosis of ectopic gestation often presented few difficulties, but at other times, as all gynecologists must admit, there was no problem in the whole range of gynecological diagnosis so difficult as the establishment of this pathological condition. One error of diagnosis must be carefully guarded against, and that was to assume that the case was one of hematocele, when in point of fact it was a tubal pregnancy, located in Douglas' cul-de-sac. Such a case he reported some years ago. The deep situation of the fetal sac in Douglas' cul-de-sac and the rough uneven surface above stimulated the characteristic phenomena of an accumulation of blood in the posterior pelvic cavity. Before he saw the woman she had suffered a chill, followed by fever. When she came under his observation the temperature was 105°. His diagnosis was hematocele which had become infected. A posterior colpotomy was performed and to his surprise, on entering the cavity with the finger a fetus of four months was discovered. Fearing a fatal hemorrhage the placenta was not removed, but treated by continuous irrigation. The patient ultimately made a good recovery. To mistake uterine pregnancy, the uterus being in a position of lateral flexion, for a tubal pregnancy would seem to be utterly unjustifiable, and yet such mistakes had been made by some competent men.

Dr. Arthur H. Curtis of Chicago said in the diagnosis of tubal pregnancy, also in certain instances of uterine pregnancy, in which it was difficult to ascertain the exact condition of affairs, he wanted to mention possible enlargement of one ovary. This was due to the presence of a corpus luteum. The enlargement of the ovary due to the presence of a corpus luteum in the case of tubal pregnancy was no greater oftentimes than was that in association with normal menstruation, but it was great enough so that the ovary was noticeably

enlarged and felt about the size of double that of the normal.

Dr. PHILANDER A. HARRIS of Paterson, N. J., said one should not place too much reliance on the physical examination of the pelvis in any stage of pelvic congestion, because he did not know of any pathological state in which one would find a greater variety of conditions existing, owing to the fact that when we had ectopic gestation to deal with it was likely to present varied conditions and symptoms in different patients. He had come to think therefore that the important thing we must do was to get at the primary history. We needed this, as well as the initial symptoms of ectopic gestation, to make a diagnosis of the condition.

Dr. HERMAN J. BOLDT of New York City said the correct diagnosis of ectopic gestation was by no means always easy. A condition that had given most trouble and which made the diagnosis difficult had been that in which we had a virulent inflammation of the adnexa. He knew of no condition, so far as the history and the objective symptoms went, which was so likely to lead to error in diagnosis as that.

Types of Carcinoma of the Uterus.—Dr. LAWRENCE W. STRONG of New York City said endometritis did not appear to be an etiological factor in carcinoma uteri. The condition itself was ill-defined and no causal relationship had been proved. It was customary to call a carcinoma which adhered to the glandular form an adenoma destruens and to speak of the secondarily solid one as adenocarcinoma. This led to the idea that an adenoma destruens was not a carcinoma in the true sense, while in reality it was a carcinoma from the start. Adenocarcinoma was a rather poor term because it suggested a combination of adenoma and carcinoma. Carcinoma glandulare was the best designation for this type. Benign adenomata of the uterus did not exist except in the form of adenoma polyposum. Glandular tumors not on the surface were carcinomata from the start. The general teaching of the present was that tumors grew exclusively from their own cells, never by the conversion of the normal cells at the margin or elsewhere into tumor cells. In looking over the figures of the hysterectomies at the Woman's Hospital, New York, in the last three years it was somewhat surprising to find 86 cases of cervical carcinoma as against 46 of the body, roughly, 2 to 1. This had no broad significance, for the operability of corporal was far greater than collum carcinoma. However, the proportions found in his laboratory suggested certain things. It might be that in examined cases some carcinoma of the body were overlooked on account of their lesser accessibility to the eye. Then, also, accidental microscopic discoveries of corpus carcinomata were more frequent than collum carcinomata. It might be that the corpus carcinomata would appear to have an increased prevalence in the future when curettings were more systematically examined. A wedge-shaped excision including normal tissue was to be preferred for a diagnostic specimen in suspicious cases of carcinoma colli. A frozen section was not desirable in collum carcinoma, since a suitable piece might be removed without anesthesia a few days prior to the operation, allowing careful imbedding. No likelihood of implantation metastasis would result in the few days intervening. The objections to frozen sections at operation in suspected collum carcinoma were those of frozen sections in general. In the case of curettings from the corpus, a frozen section should never be attempted. The tissue was too frail for manipulation and gross inspection was a reliable factor in interpretation.

Dr. JOHN G. CLARK of Philadelphia said as one realized the enormous changes the endometrium underwent during the twenty-eight cyclic days, the variations were so extreme and so closely simulated in many instances pathological processes, that the mere question of a hasty diagnosis while the patient was on the table by frozen section was a hazardous one, and he believed would do as much harm as good. Dr. Strong pointed out the importance of not laying too much stress on the frozen section, and that of itself was of great practical value to us.

Dr. FREDERICK J. TAUSSIG of St. Louis said in the cases at the Barnard Cancer Hospital in ten years they had had 150 cases of cancers of the female genital tract. Of that very large percentage, full three-fourths or four-fifths of the cases were invariably late cancers. They did not find more than two or three cases in which the tumor lay primarily in the corpus or body of the uterus. They had had cancers of the cervix which had gradually extended up into the fundus, but of cases that started in the fundus and made a large tumor and broke into the peritoneal cavity, they had not had more than two or three cases.

Dr. HERMAN J. BOLDT of New York City said the unreliability of frozen sections was brought home to him by a well illustrated example three or four years ago when he suspected the presence of carcinoma, and he sent a piece of the tissue to the laboratory at the time and waited for the report. The report of the laboratory came back to the effect that he had a benign condition to deal with, and the result was he did not do anything except the plastic work which was necessary. A week or ten days later the laboratory sent a report with an apology for having made an error in diagnosis, based on the fact of the frozen section, and that it was not reliable. The condition was malignant and he had to do a more difficult operation than he would have done at the start.

Technique and Experimental Application of Hard Rays for Deep Roentgen Therapy.—Dr. LEWIS GREGORY COLE of New York City said in the treatment of desperate cases of cancer which were bound to die, he had increased the amount of the highly penetrating screened ray until he was giving twelve to sixteen Hampson units or three to four times the standard erythema doses through each port of entry. When these large doses were given care must be observed that the areas should not overlap, and scar tissue should be protected from getting the full force of the ray. In one case which had been diagnosed as mediastinal sarcoma he gave twenty treatments through twenty ports of entry, each one being 3½ inches square on the surface. Each treatment was given with an 8-inch parallel gap, 10-ma. circuit, 6 inches distant from the skin, 4 minutes time, dose 12 to 16 Hampson units. With the old type of tube and without screen or cross-fire, six Hampson units was about the limit that could be applied to the skin. If this were directed to a tumor 6 inches below the surface only, about one-sixteenth of the energy would reach the tumor, therefore the tumor would receive about 3.8 of one Hampson unit. With this mediastinal tumor 12 to 16 Hampson units measured beneath the filter were applied to the surface every day except Sunday. One-fourth of that or an average of 3½ Hampson units was applied to the growth itself at each treatment, and twenty ports of entry were employed for each series; therefore 3½ times 20 or 70 Hampson units were applied during the first series, and by the time the first series was completed the skin had so far recovered that he repeated the procedure, beginning the second series within ten days after the first series ceased. With each dose of this series about twelve Hampson units reached the tumor mass. Twenty more exposures were given, making sixty Hampson units, making a total of 130 Hampson units applied to the tumor itself, more than 150 times the amount that could have been applied without the high penetration rendered possible by the Coolidge tube, the screen, the cross-fire method of exposure. Two months later a third series of twenty treatments was given, making a total of 190 Hampson units applied to the tumor mass as compared with about one or one and a half Hampson units that could have been applied to them with the standard tubes without the screen or cross-fire.

Roentgen Therapy in Uterine Fibroids and Uterine Hemorrhage.—Dr. GEORGE E. PFAHLER of Philadelphia drew the following conclusions: (1) Roentgen therapy must be looked upon as a very efficient adjunct to the armamentarium of the gynecologist, and while the ray should be applied by the Roentgenologist we should at the same time work hand in hand with the gynecologist. (2) Deep Roentgen therapy stops the hemorrhage associated with uterine fibroids. This is followed by a gradual disappearance of the tumor. This atrophic process may extend over several years and continue long after the cessation of treatment. (3) The treatment of metropathic hemorrhage is almost uniformly successful. (4) Uterine hemorrhage occurring at the menopause, when not due to malignancy, will usually respond very quickly. There should be an increase in weight and an improvement in the blood condition following the treatment, and when this does not occur suspicion of malignancy should be aroused. (5) Some good results can be obtained in inoperable carcinoma. The deep Roentgen therapy should be especially recommended as post-operative treatment in call cases.

Dr. HOWARD C. TAYLOR of New York City said he would like to know if, in the treatment of idiopathic hemorrhages which occurred in young women Dr. Pfahler was sure there was not some permanent injury

done to the ovaries. It would seem to him that with an organ as delicate as the ovary there were a certain number of cases in which pregnancy had subsequently taken place, and on account of some injury the offspring had not been as perfect as it would be in other instances.

Dr. Joseph Brettauer of New York City said as to the future of young girls in whom he had tried the *x*-ray treatment, the result had been beneficial. There was no cessation of menstruation, but in one case there was delayed menstruation. Instead of menstruating every two weeks, the girl menstruated every five or six weeks in very moderate amount.

Dr. John G. Clark of Philadelphia said he was definitely in favor of *x*-ray treatment in women over forty, and particularly those approaching the menopause. As Dr. Pfahler had said, these cases with hemorrhage of the menopause had been singularly satisfactory cases to treat, and these patients had been extremely grateful for having been saved the hazard of an operation.

Dr. Thomas J. Watkins of Chicago said he would like to ask Dr. Pfahler if there was any evidence to show that the *x*-rays produced intraperitoneal adhesions.

Dr. Pfahler said that, in answer to the question of Dr. Taylor with reference to possible subsequent injury to the ovary, he confessed that he could not answer it absolutely. He knew, however, that the ovary, like the testicle, had wonderful power of regeneration. With regard to Dr. Watkins' question concerning intraperitoneal adhesions, he did not know that any intraperitoneal adhesions would be produced by the *x*-ray, but according to investigations that had been made, many of these intraperitoneal adhesions had become absorbed as the result of *x*-ray treatment and the uteri had become freely movable.

Bladder Function after Confinement and After Gynecological Operations.—Dr. Frederick J. Taussig of St. Louis said while there were gradations of deficiency in bladder function after confinement and operation, we could for practical purposes divide patients into four groups: (1) Those who showed at such times no appreciable difference from normal micturition. (2) Those who while able to void urine spontaneously did not for a day or two empty their bladders completely. (3) Those who required catheterization one or more times in the first few days, but were then able to void urine without further trouble. (4) Those with prolonged interference of bladder function, who, even when finally able to void urine after several days of catheterization, were able to expel only a part of the bladder contents. The character of the operation, the form and amount of the anesthetic, the age of the patient, the nervousness of the individual, and the degree of sensitiveness of her bladder mucosa, were all factors that to a greater or less extent came into play in producing urine retention, and the object of the gynecologist should be to regulate his therapy as far as possible in accordance with the probable factors in his case.

Laboratory Diagnosis of Chronic Infections of the Urinary Tract in Women.—Dr. Arthur H. Curtis of Chicago drew the following conclusions: (1) Chronic infections of the urinary tract can be best diagnosed by one who is actively engaged in clinical work, including cystoscopy and in laboratory study. Careful correlation of clinical findings and laboratory methods, with extensive modifications in cultural technique to meet individual cases is essential. (2) The source of even small amounts of pus in the urine should be investigated; the place of its formation should be definitely localized through the assistance of ureteral catheterization. (3) Persistent pyuria in the absence of a gross bladder lesion is almost invariably due to kidney disease. (4) In those frequent cases of bladder irritability which yield clear, bacteria-free urine, cultures from the traumatized ureteral canal, or from the introduction of a probe into Skene's ducts, may demonstrate the cause of infection. When bacteria are widely scattered or grow with difficulty, a mixture of the urinary sediment with blood followed by making a large number of ascites-blood agar tubes, of high dilution, result in conditions favorable for the development and isolation of the bacteria present. (5) Experience teaches that the chief lesions in urinary tuberculosis are usually renal. In obscure cases laboratory diagnosis is facilitated by the use of potassium iodide, tuberculin, kidney massage, limitation of liquids, repeated examinations of fresh specimens after high power centrifugation, Petroff's cultures, and the injection of a series of medium sized guinea pigs. (6) There is seemingly a tendency to put undue stress on functional urinary tests at the expense of careful routine examination.

The Advantage of Kelly's Method of Cystoscopy in Women.—Dr. Hiram N. Vineberg of New York City said Kelly's method of cystoscopy was so easily learned and so free from errors in interpretation, that it formed the method *par excellence* for the gynecologist, who had neither the time nor the vast experience necessary to become an expert in the use of the prism cystoscope. Further, in addition to being an easy method of diagnosis, it formed at the same time a ready means of making topical applications directly to the diseased areas and for the removal of foreign bodies and small growths.

The Use of the Galvano-Cautery Knife for Excision of Mammary Tumors for Microscopic Diagnosis.—Dr. J. Wesley Bovee of Washington, D. C., said shortly after installing the Downe's electrothermic angiotribe in 1903, he began experimenting with it in the treatment of the uterus and of the breast. For galvanocauterization of the advancing cervical cancer, he devised a cooling vaginal speculum that had proven very efficient and in breast tumors localized and only suspicious of malignancy he applied the galvanocautery for excision of the growths, or removal of portions of doubtful tumors for microscopical examination. In this work carried out in many cases he had found but one objection to it when properly used. This consisted of the slowness of the cautery knife when the breasts had been large. This led him to change the technic somewhat. To economize in time he adopted the plan of cutting the tissues for a short distance with a sharp knife, and with the flat sides of the cautery knife, immediately sealing to a considerable depth the sides and bottom of the wound. The use of the knife was again resumed to be promptly followed by the cautery as before. This process had been continued until the tissue desired was entirely removed, leaving behind a crater with charred boundaries. The hot oil that was fried from the tissues during this procedure was taken up promptly with small pledgets of cotton of gauze in the grasp of forceps and at once discarded. The wound was now covered carefully and the report of the microscopical investigation awaited. If the tissue was reported to be malignant a radical operation was at once performed. If it was reported to be benign the surgeon might yet decide, from a consideration of the clinical evidence, to perform a radical operation. If the operation was not to be extended, the wound margins were trimmed of all cooked tissue and the proximal portions of severed milk ducts and the wound closed completely with sutures. The J. Collins Warren operation he had performed satisfactorily with the knife and cautery.

The Treatment of Pyelonephritis in Pregnancy.—Dr. Raleigh R. Huggins of Pittsburgh said experiments led to the conclusion that ascending infection reached the kidney through the lymphatics more frequently than was formerly supposed. If this was correct, much might be learned from a careful search for the primary focus. This might be found in the bladder itself. Owing to the intimate relationship between the lymph system of all abdominal viscera, and that of the kidney, the primary infection might lie in the Fallopian tubes, appendix or the gall-bladder. In severe cases the diagnosis was usually made without difficulty. The evidence of toxemia, high leucocytosis, pus in an acid urine, with the presence of colon bacilli in pure culture were symptoms which were most suggestive. When pain was a prominent feature, pleurisy, infection of the gall-bladder, salpingitis, or stone in the ureter or kidney must be excluded. There was usually a pronounced rise in the temperature and chills. If not contraindicated, cystoscopy with catheterization of the ureters had the same field of usefulness here as a diagnostic measure that it had in the non-pregnant. The important factor in the recognition of this complication of pregnancy was to remember that in the presence of the above symptoms it was the condition most likely to be found. He had been impressed that the treatment in some instances required careful judgment. The mild cases were usually self-limited and responded to rest, proper diet, and urinary antiseptics. Irrigation of the pelvis of the kidney should be done if the infection did not yield to simple measures. Severe pyelitis was always a danger for both mother and child, and if the clinical manifestations did not subside promptly under the above treatment, then one ought to consider nephrotomy or the interruption of pregnancy. When surgical measures were not employed in some manner, death not infrequently occurred.

Postoperative Renal Infection.—Dr. GEORGE GRAY WARD of New York City said that in many instances of obscure and apparently unaccountable elevation of temperature, with concomitant symptoms of septic absorption occurring later in the course of a postoperative convalescence, were cases of renal infection, and they were much more frequent than was formerly believed. In the majority of cases these renal infections were of hematogenous origin and were due to the colon bacillus. In studying the reports of cases of this disease one was struck with the frequency with which they followed some operative procedures. This was not strange when one remembered the probable causative factors and the mode of infection. The preponderance of evidence, the result of both clinical and experimental research, tended to prove that the large majority of such renal infections were hematogenous in origin, although some cases might be caused by an ascending infection, either by way of the periureteral lymphatics or by extension up the lumen of the ureter. There were three types of infection, depending upon the degree of virulence. They were: (1) Cases which were mild in character. The patient was not severely ill and yielded to the thorough flushing of the kidneys by the ingestion of water, formaldehyde, proper diet and rest. The virulence naturally varied according to the particular organism, the condition of the kidney, and the general bodily resistance of the patient. (2) Cases in which the kidneys contained numerous septic infarcts, and minute or microscopic foci which were superficially situated in the cortex of the organ. Decapsulation or incision with drainage usually resulted in recovery. (3) The fulminating type which was characterized by a profound toxemia, and which was rapidly fatal unless a nephrectomy was done. Fortunately this type of the disease was usually unilateral. If operation was necessary, nephrectomy should not be done unless there were indications for it, as shown by the appearance of the kidney. A decapsulation or nephrectomy with drainage was sufficient in many cases as shown by numerous reports, especially in the colon bacillus infections. He reported one case of severe colon bacillus infection which evidently first attacked one kidney and then the other, and in which decapsulation with drainage resulted in a complete recovery.

AMERICAN SURGICAL ASSOCIATION.

Annual Meeting Held at Rochester, Minn., June 9, 10, and 11, 1915.

DR. GEORGE E. ARMSTRONG OF MONTREAL, PRESIDENT.

The Incidence of Heredity As a Factor in the Causation of Goiter.—Dr. JOHN E. SUMMERS of Omaha read this paper. He said that heredity and variation could not be regarded separately. We had to consider first the probable cause of goiter, and then, if possible, apply the most generally accepted principles of heredity, as apparently evidenced in the common occurrence of goiter in several or many members of a family. Many observations pointed to the conclusion that goiter was caused by a toxin generated by a microorganism which was introduced in drinking water, and multiplied in the intestinal tract. The disease had been produced experimentally in man and animals, and in the Salmonidæ fish, and from these latter transmitted to animals. In the modern sense an infectious disease could not be inherited, but familial goiter, more particularly when the members of the family lived in widely separated neighborhoods, could, as must so-called hereditary syphilis, be explained as derived from the infective state of the parents, and was strictly an inheritance. Serological research in this disease, in the opinion of the writer, would extract a toxin showing, as in the Wassermann reaction, a latent stage of the thyroid disease. From an hereditary standpoint the disease, as passed down from parent to offspring, might not be the same in each, because elements determining the possibilities and types of growth in one offspring might be dominant and in another recessive (Mendel's Law).

Dr. ALBERT J. OCHSNER of Chicago said that when there was a reason for increased activity in the trophic conditions of the body, as for instance, during pregnancy, or when the bony skeleton of the female increased gradually, as at the time of puberty, and sometimes during other physiological conditions, we found a very distinct increase in the size of the thyroid gland. He mentioned an instance of a town in Switzerland, where the drinking wells were abandoned and thereafter the drinking water obtained from the side of the valley, which was composed of granite rock, with the result that the incidence of goiter was decreased in the children from 59 per cent. to 2 per cent., and he suggested that this 2 per cent. might be accounted for either by heredity or by the surreptitious drinking of well water.

Dr. CHARLES H. MAYO of Rochester, Minn., said that he considered heredity in goiter a subject worthy of consideration and that although in some cases this was very marked, it was not yet as important in America as in the goiter regions of Europe. He considered that the bacterial theory, as advanced by McCarrison, must be considered with the theory of heredity by presuming that various members of a family would be subject to the same infections. As the thyroid was a defense gland, its activity was increased by various infections and infections had a family tendency.

Acute Cholecystitis Complicating Typhoid Fever.—Dr. HOWARD A. LATHROP of Boston read this paper. He said that acute cholecystitis, due to the typhoid bacillus, was an uncommon complication of typhoid fever. He reported the case of a man moderately sick with typhoid fever during the fourth week, who had signs of perforation, and on opening the abdomen there was found a perforation of the gall-bladder that contained bile-stained pus, but no gallstones. The man made a slow but uninterrupted convalescence. Typhoid bacilli was probably present in bile in all cases of typhoid, but acute cholecystitis did not arise without some exciting cause such as biliary stasis of the cystic duct or irritation from gallstones, which had been found in about 20 per cent. of the cases. Bile possessed no antiseptic action upon pyogenic bacteria. Typhoid bacilli reached the bile through the circulation and not by direct ascension from the duodenum. The symptoms were the same as in any acute case, but they might be obscured by the general condition of the patient. This complication should always be kept in mind as a possibility. Many patients recovered spontaneously, but the presence of a gall-bladder tremor was an indication for operation in order to avoid future perforation.

Abscess of the Liver in Typhoid Fever.—Dr. A. E. HALSTEAD of Chicago reported this case. In a recent review of one thousand cases of typhoid fever from the records of the Cook County Hospital of Chicago, Dr. Halstead found not a single case of typhoid liver abscess. In 1911 Eberts reported one case of his own and collected twenty-nine from the literature. In reviewing the literature since 1911, Dr. Halstead had not found a single case. In the autopsy records of 1,200 fatal cases, reported by Holscher, twelve were found in which foci of infection were present in the liver. In the cases reviewed by Eberts, in only twelve of the thirty was the *B. typhosus* isolated. In four there was a mixed infection, and in only eight was a pure culture demonstrated. The author's patient was a man, aged 39. The patient had an ordinary attack of typhoid fever, of moderate severity. The temperature reached normal at the end of thirty days, and remained nearly normal during the succeeding twenty days. At the end of this time he was discharged from the hospital and returned to his home, still complaining of the pain in the right hypochondrium. After being home for one week, his distress became so great that he returned to the hospital. The temperature was about normal on admission, but the leucocyte count had risen to 22,000. The liver was still large and excessively tender on pressure. Diagnosis of abscess was made, and he was referred to Dr. Halstead for operation. An incision below the costal margin exposed the liver, on the superior surface of the right lobe of which an indurated mass, the size of a man's fist, was found. Incision evacuated about ten ounces of thick yellow pus. The abscess cavity was entirely surrounded by liver tissue. The gall-bladder lay a considerable distance from the cavity toward the median line and appeared to be normal. The cavity was drained in the normal manner. Recovery without any complications ensued.

Dr. CHARLES N. DOWD of New York said that in order to obtain the best results in dealing with cases of typhoid perforation the physician and surgeon must be in close association and that every case of typhoid fever should receive particular attention from both the medical and surgical interne. He did not believe that pain, tenderness, and rigidity were the characteristic symptoms of typhoid perforation, since if such were the case the condition would be more quickly diagnosed. He

called attention to three elements which added greatly to the difficulty of diagnosis of typhoid perforation, namely, the apathy of the patient, the limited outflow of intestinal contents, and the location of the perforation, usually in the ileum, deep in the abdomen. The apathy of the patient was self-evident; the limited outflow of intestinal content was probably due to a very small perforation appearing in an almost empty intestine. The fact that the general location of the perforation was in the lower ileum well away from the parietal peritoneum was an important point. The parietal peritoneum had been shown to be supplied with sensory nerves, but the intestinal coating had nerves only from the sympathetic system; hence the explanation of the lack of pain in many perforations occurring in typhoid fever. Dr. Dowd believed that in order to obtain better results in such cases, a certain number of patients, even though they did not show severe symptoms, should be operated on for the purpose of diagnosis.

Dr. L. L. McArthur of Chicago related some anomalies met with in the four cases upon which he had operated for perforation in typhoid fever. One of them was a case of suppurative peritonitis supposedly from typhoid perforating ulcer, but a perforated typhoid mesenteric gland was found. In another case he found a perforation of the ileum, twelve inches from the valve, and also a perforation on the anterior surface of the ascending colon. After fifteen days of satisfactory convalescence the patient developed a perforated typhoid cholecystitis; this patient made a good recovery. He advocated strongly drainage in all cases of laparotomy for typhoid perforation.

Dr. Howard Lilienthal of New York stated that in all cases complicated by distention, hemorrhage as well as perforation was to be feared. In cases of hemorrhage he suggested the use of blood segregation by ligation of the thighs; he claimed that a reduction in blood pressure of from 40 to 60 mm. of mercury could thus be obtained, but called attention to the fact that the patient must be carefully watched in order that the blood pressure may not fall low enough to cause syncope. He advocated the use of this method by the interne in all cases of hemorrhage while awaiting the arrival of the surgeon.

Dr. A. V. Moschcowitz of New York said that in hospitals frequently the burden of diagnosis rested upon the shoulders of the interne rather than upon the visiting physician and called attention to the fact that, as a rule, the interne was not very conversant with the symptoms or signs of typhoid perforation unless he had been fortunate enough to have served during an epidemic. He called attention to another point in hospital work, namely, the great amount of time lost in obtaining consent for operation, it frequently being impossible to gain this from the stuporous patient, and he advocated that consent for operation (should this become necessary) should be required from all patients of typhoid fever upon their admission to the hospital.

Dr. James F. Mitchell of Washington, D. C., reported a series of cases of typhoid fever at the Johns Hopkins Hospital during the year 1900, at which time there was a standing order throughout the medical wards that the resident surgeon as well as the resident physician should be called whenever a typhoid patient had pain in his abdomen. In this series there were seven perforations disclosed by laparotomy with three recoveries; there were a few instances of operation where no perforation was found. There was not a single case of perforation that went unoperated upon and the longest time which elapsed between perforation and operation was a little over twenty-four hours. Those cases which went to twenty or twenty-four hours were accompanied by hemorrhage and for this reason the perforation was obscured. He called attention to the fact that in those days there was usually too much interference and that he believed that when operation was necessary as little as possible should be done.

Dr. H. B. Delatour of Brooklyn reported the results in nine cases of operation in typhoid which had come under his personal care; five of these patients recovered. He also reported a case operated upon for acute cholecystitis, for which no cause could be found at the operation but from which a culture taken from the gall-bladder showed the typhoid bacilli, and the history subsequently obtained showed that the patient had had typhoid fever seven years previously. In regard to appendicitis occurring during typhoid, he stated that in his experience, where the appendix became involved in the early stages of typhoid it was seldom perforated, but where it became involved in the later stages, it was more apt to go on to perforation.

Dr. M. L. Harris of Chicago called attention to the fact that in cases of typhoid perforation the patient was suffering from an acute general infection as well as from an acute peritonitis, and recognizing this fact in his last two operative cases, he opened the abdomen as quickly as possible under local anesthesia, closed the perforation, left the abdominal cavity wide open, and placed the patient in a permanent bath, with the water in the tub and abdomen free to each other; both patients recovered.

Dr. John Bapst Blake of Boston emphasized strongly that in very sick cases the perforation should not be closed but should be left open, thus practically forming an enterostomy; this would diminish the general toxicity, decrease the intestinal distention, and compel abdominal drainage; it would also save a little time in the operation.

Dr. K. A. J. Mackenzie of Portland, Ore., reported a case of supposed typhoid perforation in a child of 8 years in which it was found that enlarged lymph nodes were responsible for the symptoms. These surrounded the appendix and together with that organ were removed. Three months later symptoms of acute obstruction developed and operation revealed an ileal intussusception which was relieved. During the last three years the patient developed symptoms of chronic intestinal obstruction and operation revealed a loop of ileum adherent by a thick band to the anterior abdominal wall; this band was divided and the patient recovered. The interesting point in this case was the fact that at the original operation the crisis took place immediately upon removal of the large typhoid lymph nodes. The speaker stated that he had operated in four cases of typhoid perforation with one recovery.

Dr. A. J. Oschner of Chicago called attention to the possibility of reinfection with typhoid bacilli from the gall-bladder, and reported a case. He recommended that in any case of acute cholecystitis during an attack of typhoid fever, good results would be obtained by placing the patient on exclusive rectal feeding, giving an ounce of concentrated predigested food dissolved in three ounces of physiological salt solution every four hours and the administration of large quantities of salt solution by proctoclysis.

Dr. Dean Lewis of Chicago reported a case somewhat similar to that mentioned by Dr. Mackenzie, in which the symptoms of acute appendicitis were found to be due to enlarged ileocecal lymph nodes. In this case the appendix was removed but the lymph nodes were left, and a blood culture made the following day showed the paratyphoid organism. In this case also the crisis immediately followed operative interference. He referred to another case in which the symptoms were supposed to be due to the appendix, but removal of this organ was followed by a recurrence of the attack, resembling a perforation of a duodenal ulcer or an acute cholecystitis. A blood culture showed the paratyphoid organism. The patient was sick for seven weeks with paratyphoid, recovered, and then had several attacks simulating gallstone colic, but these attacks were accompanied by little or no temperature and no jaundice A cholecystotomy was performed, the gall-bladder found white and thickened, no gallstones were found, and the bile appeared normal, but the paratyphoid organism was grown from a culture taken from the bile. Following drainage of the gall-bladder, Dr. Lewis said, the attacks had disappeared and the organism disappeared from the stools.

Dr. J. Ewing Mears of Philadelphia stated that in 1888 he presented a paper before the American Surgical Association entitled "The Propriety of Surgical Interference in Perforating Typhoid Fever Ulcer," and at that time only four cases were recorded in the medical literature, in all of which a fatal result had occurred. In this paper of twenty-five years ago attention was called to the value of making an artificial anus, to be relieved later by an operation, should the patient survive. The claims for this procedure were that it facilitated the free escape of fecal contents and gas, thereby adding to the quietude of the patient and securing rest to the intestines. He advocated that in all cases of operation laparotomy with the production of an artificial anus should be the method employed, and under the additional knowledge gained during the intervening years, he still held this opinion.

Dr. F. W. Parham of New Orleans reported a case of typhoid fever in a boy of eleven with interesting and

unusual complications. The perforation occurred in the third week of an atypical attack of typhoid. Laparotomy was performed and the perforation was closed by nature; there was some free exudate. Four days later a subhepatic abscess appeared which was opened and drained. Forty-eight hours later clonic spasms occurred in the right side, localizing trouble on the left side of the brain. Without anesthesia and with the patient presenting a pulse of 170 an osteoplastic flap the size of the palm of a hand was reflected and a piece of bone removed. A wet pia was found beneath the dura from which smears were made but no organisms were found.

Dr. HERBERT A. BRUCE of Toronto referred to a complication of acute phlegmonous cystitis of the urinary bladder appearing in typhoid in the fourth week which necessitated suprapublic drainage and later the removal of large pieces of mucous membrane from the interior of the bladder because of blocking of the tube. He also alluded to a case of perforated typhoid ulcer operated on eighteen hours after perforation in which a subphrenic abscess developed two weeks later, requiring operation and followed by recovery.

Dr. FRANCIS T. STEWART of Philadelphia reported 42 cases of perforation with 14 recoveries. The patients operated on within the first twelve hours gave 50 per cent. of recoveries. He called attention to the fact that many perforations occurred in the lower ileum, that is, in the pelvis, hence rigidity was often absent in the early stages, but tenderness might be elicited by vaginal or rectal examination.

Dr. JOHN B. ROBERTS of Philadelphia called attention to the possibility of volvulus complicating typhoid fever, and stated that he had operated in one such condition in which he was convinced that perforation was the cause of the symptoms and in which the patient recovered.

Dr. JOHN H. GIBBON of Philadelphia stated that at the Pennsylvania Hospital there was a rule that whenever a typhoid patient developed pain in his abdomen, the chief resident physician was called and a member of the surgical staff was always summoned first, before the medical chief was notified. In this way some delay was avoided. He called attention to one case operated upon by Dr. Harte in which one perforation was found in the appendix and three in the ileum; the patient had three distinct relapses after perforation, and yet recovered. Dr. Gibbon also cited two cases in each of which there were five perforations found at the time of operation.

Clinical Notes on Splenectomy.—Dr. H. Z. GIFFIN of Rochester, Minn., reviewed in a general way the clinical characteristics of fifty-eight cases of splenectomy in the Mayo Clinic since 1904. One of the patients was alive and well 8 years after operation. In this instance the history was analogous to that of splenic anemia, while the spleen showed pathologically a lymphocytic hyperplasia, not, however, with any definite evidence of malignancy. In this instance there was a clinical history similar to that of splenic anemia, while pathologically the spleen showed endothelial proliferation. Many types of splenomegaly were necessarily represented in this series and any classification of the cases was, of course, open to discussion and criticism. Seven patients with pernicious anemia have been operated on since August, 1914, with one operative death, two patients were at present in the hospital, while three of the patients showed marked temporary improvement. The series included one case of acute febrile non-septic splenomegaly which was analogous in its clinical course to Egyptian splenomegaly, and one case in which splenomegaly was associated with an extremely high eosinophile count. Splenic anemia was, in his experience, most favorable for surgical treatment. The operative risk was relatively low and the prospect for a return to normal health excellent. Removal of the spleen in non-gummatous splenomegaly and in anemia associated with syphilis, Dr. Griffin stated, had been attended with excellent results in two instances.

Pathology of Spleens Removed for Certain Abnormal Conditions of the Blood.—Dr. LOUIS B. WILSON of Rochester, Minn., read this report. The study, he said, was a continuation of a previous report which covered the pathological examination of 26 spleens removed at operation or autopsy in the Mayo Clinic between November 14, 1905, and November 1, 1912, from patients on whom a more or less positive diagnosis of splenic anemia had been made, and of two "wandering spleens" removed at operations within the same period. The present preliminary report covered the examination of 31 more spleens removed at operations between December 3, 1912, and June 9, 1915. Further study of the several groups would be reported later. The cases had been studied clinically by Giffin, whose grouping was observed in the abstracts of the pathological protocols given. Pathological analyses of 15 cases clinically diagnosed splenic anemia were given. The average age of the patients at the time of operation was 36 years. The average duration of symptoms was 32 months. The average weight of the spleen was 1,130 gramms. This was a little higher than the average weight (975 gramms) of the spleens reported in 1913. The average of the two groups was 1,045 gramms. Few of the specimens equaled the weight given by Lyon[5] who has stated that the average weight was 62 ounces (1,060 gramms). This discrepancy was probably due to the fact that the Lyon's figures were drawn largely from autopsy reports, while ours were from operative material, the spleen continuing to enlarge until death. In general the change in the shape of the spleen was not so marked as the change in size. In other words, the hypertrophy was evenly diffused except in those cases in which infarcts had occurred. The maintenance of the notch was important from the standpoint of clinical diagnosis.

Surgical Considerations of Splenectomy.—Dr. W. J. MAYO of Rochester, Minn., said that the safety of splenectomy depended on careful separation of the attachments of the spleen and the delivery of the organ without injury to the vascular pedicle. A longitudinal incision was made through the upper half of the rectus muscle, extended obliquely along the costal margin about an inch and one-half from it and up toward the ensiform cartilage. The longitudinal part of the incision might be carried down to any desired length. Adhesions especially over the upper pole were occasionally vascular. It was best to separate these vessels with the fingers as close to the spleen as possible. Sometimes the adhesions were so strong they must be divided by a cutting instrument. The bulk of the vascular attachments (vasa brevia) in the gastrosplenic ligament could be delivered with the spleen, the stomach being partly withdrawn from the abdomen before separating the ligament. In a large, adherent spleen the deep vascular connections might anastomose with the vessels along the spine and the crux of the diaphragm. These must be separated before the spleen could be eviscerated, hemorrhage being controlled by a carefully adjusted gauze tampon. The application of this gauze tampon temporarily to control bleeding from the deep attachments was very important as the success of hemorrhage could not be seen and controlled until the spleen had been removed. The tail of the pancreas, if present, should be separated from the splenic pedicle, its bleeding points ligated, and the gland dropped back. In three splenectomies the speaker had tied off a portion of the tail of the pancreas with the splenic pedicle without any harm resulting. Usually the vascular pedicle could be cleared and ligated in sections. The arteries should be tied first but all vessels should be tied before any portion of the pedicle was cut. If the pedicle was short, it might be grasped with elastic rubber-covered clamps, thus avoiding damage to attached viscera, such as the gastric wall, until the vessels could be secured. The two-forceps method of ligation was very satisfactory: two forceps were placed three-fourths of an inch apart on the pedicle and the spleen cut away without regard to back bleeding. A catgut ligature was thrown around the pedicle below the proximal forceps which was then loosened and the ligature tied in the compressed area, while the distal pair of forceps steadied the pair and prevents retraction. A second ligature made the pedicle secure. Closure of the splenic space was important if there was any oozing of blood. Compression with the temporary tampon would seal the smaller vessels in a few minutes but deep in the wound other vessels might require further treatment. With catgut on a small curved needle, the raw space beginning at the tied splenic vessels was closed as well as possible by catgut sutures which compressed the bleeding vessels. The mortality depended more on the condition of the patient than on the technical difficulties of operation. But 5 of the 57 patients subjected to splenectomy died in the hospital, and autopsy showed that two of these deaths were from preventable causes—hemorrhage and sepsis.

(To be continued.)

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BLOOD TRANSFUSION.

INDICATIONS AND TECHNIQUE.

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BROOKLYN, N. Y.

THE paramount interest in the technique of blood transfusion in the past few years has stimulated me, in addition to a good many others, to focus my attention to this important subject.

It is my purpose, in this communication, to bring together the various methods of blood transfusion and briefly to allude to some contrasts between the complicated inaccurate and unscientific apparatuses of the past and that of the ideal simple devices of to-day.

From a study of the literature and from observations of the practice by different men, I have obtained certain impressions of many of the numerous methods of blood transfusion now in vogue.

In addition to the authorities with their respective methods, which will give a panoramic impression of the subject, I will refer to some of my own ideas and work on the subject in hospitals, in outside private practice, and in my office.

Periodically, since the knowledge of the circulation and the value of blood has been established, different clinicians have advised blood transfusion with the hopes of saving life, or to hasten a patient's recovery. As early as the days of Columbus, when there was no conception of anything like a circulation of blood, we find in the book of "Savonarola's Life and Times," published 1859-61, Vol. I, page 151, the nature of the means employed to attempt the prolongation of the life of Pope Innocent VIII, who died in the month of July, 1492. Every means of restoring his exhausted vitality had been tried in vain, when a doctor proposed to attempt his cure by means of a new instrument for the transfusion of blood. Two or three healthy young men were obtained who volunteered their blood to save the pontiff. The patient was bled and the blood which escaped was injected into the veins of the young donors; when the blood had circulated a short time the young men were bled and the blood was transfused to the veins of the pontiff. The donors died after the phlebotomy without saving the life of the patient.

Though transfusion was an ancient tradition a German surgeon, Jean Daniel Meyer, claimed in 1667 to have been the first man to perform the operation.

In 1615 Libavius advocated arterial transfusion by means of a silver tube passing from a blood-vessel of the donor to one of the recipient.

In 1665, Lower of Oxford bled animals to a condition of syncope and then resuscitated them by injection of blood from other animals.

The first authoritative description of a transfusion was done by Denis, professor of philosophy and mathematics in Paris, 1667. He injected ten ounces of lamb's blood and cured his patient. His fortunate experience was imitated with disastrous results until transfusion of blood was finally prohibited by law in France.

The early failures were due to disregard of the physiology of blood *per se* and to the use of cumbersome complex mechanical appliances.

In 1825 James Blondell of London bled dogs until pulse and respiration ceased, and proved conclusively that animals apparently dead could be resuscitated by transfusion at the end of three or four minutes, but that if the operation was delayed for more than five minutes, it proved of no value. Russel of Suffolk is said to have cured a case of hydrophobia by opening the veins of the patient, allowing blood to flow, and then transfusing the blood of several lambs.

The use of blood from lower animals was soon after found dangerous and abandoned for human transfusion.

The methods practised in the first half of the last century had a good many fatal results, so that three of the foremost surgeons at the time—Von Bergmann, Senn, and Da Costa—openly objected to blood transfusion and advocated physiological salt solution intravenously in its place, except in cases of poisoning by illuminating gas. Their expressed opinion acted as a temporary stay to the performance of the operation; but it soon became apparent that salt solution could not replace blood in every instance where living blood was essential. Normal salt solution does not contain the element necessary to the nutrition of the brain cells damaged by shock, nor does it contain red blood cells for patients that must be brought out of gas poison, nor fibrin ferments, nor fibrinogen essential for hemophilia, nor the protective substances that resist infection.

Blood transfusion therefore is essential as a surgical therapeutic measure when more red blood corpuscles are wanting to supply nourishment and oxygen carriers to stimulate the blood forming organs, to increase the coagulability of the recipient blood, or when a transfusion will tide a patient over an emergency in order that some other therapeusis may be of value.

Indications for Blood Transfusion.—Blood transfusion is a cardiac and central nervous stimulant. The operation must not be performed as a last resort.

Anemia.—1. Primary: Acute loss of blood in healthy individuals from traumatic, accidental, after operation, removal of tonsils, etc., puerperal, postpartum, placenta previa, after abortion or miscarriage. In menorrhagia, metrorrhagia, menopause, ectopic pregnancy, ruptured Graafian follicles,

*Read before the Surgical Society of Brooklyn, N. Y., April 1, 1915.

Chronic loss of blood in hemorrhage from gastric ulcer, typhoid ulcer, tuberculous ulcer, dysentery, hemorrhoids, epistaxis, pulmonary lesions, renal hematuria, from unknown causes.

2. Secondary: Tuberculosis, sarcoma, cancer, pellagra, anemia from unknown causes, splenic anemia, cirrhosis of the liver, malnutrition.

Cases of bad surgical risks are benefited before and during the performance of the operation.

Shock: Prevention and treatment.

Destruction of corpuscles in illuminating gas poisoning, pernicious anemia. (Begin in the early stage of the disease and give repeated small quantities.) Poisoning by coal-tar derivatives, by substances producing methemoglobin.

Pathological hemorrhage: Hemophilia, melena, neonatorum, scorbutus, purpura hemorrhagica, Henoch's purpura, obstructive jaundice with slow coagulation time, cholemia.

Obscure pathology: Idiopathic epilepsy, mental depression, chlorosis.

Toxic conditions: Bacterial: Rheumatic fever with malignant endocarditis hydrophobia; eclampsia, toxemia of pregnancy; tonsillitis with petechiæ and anemia; delirium from toxemia or severe hemorrhage; metabolic.

Contraindications.—1. Whenever hemolysis is taking place. 2. Severe infection in the cachexia of cancer. 3. Uremia. 4. Acute hyperthyroidism. 5. Diabetes.

In his latest book, on "Emotions," Crile says: "If all the brain of an animal be removed by decapitation its body may live on for at least eleven hours if its circulation is maintained by transfusion, while an overtransfused animal may live many hours, days even, after the destruction of the medulla."

By what method then is transfusion easily accomplished? There are six kinds of transfusions, with three successful methods:

1. Direct method by means of: (*a*) Suture of vessels. (*b*) By the use of cannula interpolated in the blood stream. (*c*) By the use of cannula bringing intima to intima.

2. Indirect or interrupted method: (*a*) Needle and syringe. (*b*) Receptacle, containing anticoagulants.

3. Combination of the direct and indirect method: Valve and syringe.

4. Auto-transfusion: the driving of blood from the periphery to the center, the heart, and brain in order to maintain circulation, *i.e.* bandaging limbs in post partum hemorrhage.

5. Reciprocal transfusion is the exchange of an equal volume of blood between patient suffering from a febrile disease and one who is convalescing from that disease, the blood of the convalescing being supposed to contain an antitoxin.

6. Peritoneal and subcutaneous injection of blood.

In the direct method of transfusion a vessel of one person is united to a vessel of another person by suture or tube.

Suture of vessels, bringing intima to intima, has been practised and described by Murphy, Carrel, and Guthrie. Its advantage is that vessels of different sizes can be united. Before attempting vessel suture it is essential for the operator to acquire laboratory experience to become familiar with technical difficulties which may arise before one could feel safe of carrying out a successful transfusion.

The method of interpolating a cannula in the blood stream is the procedure of Brewer and Leggett, who used glass paraffinized tubes.

The advantages of this method are the simple technique, and that it can be used in very small vessels. The objection to its use is production of emboli, as a result of trauma from the tubes, and as a result of back currents due to the uneven calibers of the vessels.

J. F. Corbett modifies this by the use of a gold tube, with or without rubber connections. This has the advantage of the glass tube in that it is less liable to injure the intima and is more easily retained. It accommodates itself to a wide range in the size of vessels.

The two-piece tube of Bernheim has the advantage over single tubes: it can be managed by two operators, while one half is inserted in the donor, the other half can be introduced into the vessel of the recipient. Donor and recipient can be prepared in different rooms, and afterward the donor is wheeled into the recipient's room, the two are placed in opposition, and the two halves of the cannula are joined.

The cannula method which brings intima to intima in contact was originated by Tansini, improved upon by Queirolo, again revised by Payr, and finally brought to our attention by Lepinasse and Eisenstadt. It is represented by the Crile method. This has been modified by Janeway, Ellsberg, Buerger, Soresi, and a number of others. In this method the blood vessel must be cuffed over the cannula. The operation is of a major character and difficult to perform.

The direct method generally necessitates dissection of the vessels for several inches; it is not as easily performed as the description of each method makes the impression on the student; it destroys the vessels used of both donor and recipient; it requires expert surgeons to perform the operation, and does not offer scientific accuracy as to the quantity of blood transfused.

Before a practical method of measuring the amount of blood flow was devised, the surgeon was compelled to rely upon clinical signs for an index of the amount of blood transfused. Blood pressure, pulse rate, appearance of the patient, time that the blood has or is supposed to have flowed, increase of homoglobin were his guides.

Having at our disposal several simple, safe, and accurate methods of measuring the amount of blood flow transfused, it is but natural that no one would continue to travel in the dark when brilliant searchlights are within reach.

The up-to-date method that deserves consideration is the rejuvenated indirect syringe cannula of Lindeman. Von Ziemssen reported numerous cases, over twenty years ago, in which transfusion was successfully employed by such a method. It consisted in having one operator thrust a needle through the skin into the veins of the recipient, while another operator performed the same action on the donor. Three glass syringes of 25 c.c. capacity were kept constantly in action, one being filled with blood from the donor, the other being emptied into the veins of the recipient, while the third was being washed out with sterile salt solution by a third person before being again applied to the needle in the donor's vein.

By this procedure Von Ziemssen was able to transfer any desired amount of unaltered blood and to measure it accurately. Moritz (*Münch. med. Woch.*, 1911, 58, 393) emphasized the advantage of

the method and introduced some improvements in the technique which facilitated the puncture of the vein.

Lindeman, two years ago, using the same principle, devised a set of cannulæ by the aid of which even small veins may easily be entered and the danger of wounding the intima is reduced. To Lindeman, therefore, belongs the credit for having Americanized the syringe method.

Those who have seen him do a transfusion must admit that all other methods hitherto in vogue are placed in perpetual shadow. The ease with which the syringe and cannula can be handled is impressive to all who know the difficulties and failures of all previous existing methods.

Although his syringe method appears simple, some of our able surgeons and physicians of manual dexterity claim that (1) It is not easily performed; that the cannula is frequently displaced from the vessels of both donor and donee, and that it is either pushed in too far, or being shoved back and fourth by the frequent application of the tip of the syringe. (2) The blood frequently clots in the syringe, unless it is rapidly transferred to the donee. (3) In the effort to displace the air from the filled syringe, a considerable quantity of blood is lost. (4) The syringes can be used again only after they are thoroughly washed, which necessitates an extra nurse for the purpose. (5) From twelve to twenty syringes are recommended, requiring an investment of $100. (6) The cannulæ must be flushed with salt solution to prevent clotting before the next syringe-full of blood is ready, thereby injecting an unnecessary quantity of useless fluid in the recipient. (7) The assistant must be as expert as the operator for the successful performance of the transfusion.

To overcome these difficulties experienced in the syringe cannula method, several physicians interested in blood transfusion, notably Hustin, Weil, Lewisohn, and Zingher have reverted to the abandoned practice used in the nineteenth century of adding various chemicals to prevent the coagulation of blood, such as carbonate of ammonia (10 grs. to 1 oz.), magnesium citrate and sodium citrate, 0.2 per cent. (1 c.c. of a 10 per cent. sol. to 10 cc. of blood, or 2 grams to 1000 c.c. of blood). Hirudin or extract of leech has been used by Satterlee and Hooker to rinse out specially devised apparatuses to prevent coagulation of blood, with good results.

The main advantage one may find in using medicated blood is that the recipient is not necessarily brought in proximity with the donor, and that the method is as simple as the injection of a solution of salvarsan. The objections, however, are well stated by the very men who advocate the addition of drugs for prevention of coagulation, namely that sodium citrate may cause transient polyuria; faint crenation of red blood cells, or rouleaux formation. Other objections are that, after storing blood five days in an ice box a mold has been found on it, so that it cannot be used; excessive doses cause cramps in guinea pigs. Furthermore we must add: exposure to air, dust, and germs while drawing it into the receptacle; chilling and reducing the temperature of the blood to that of the room temperature before it is injected into the recipient; blood which has been stored in an ice-box for further use must be warmed to that of the body temperature before being infused into the recipient; idiosyncrasy to the drug may prove harmful. The advocates of sodium citrate claim that hirudin is not easily obtained and is poisonous.

In a personal conservation Dr. Lewisohn has assured me that this method of adding 0.2 per cent. solution of sodium citrate to prevent coagulation of blood, is perfectly harmless to the system. Apparently, the return to agents which will prevent coagulation of blood is the confession of the want of a proper instrument that will enable one to do a blood transfusion with ease, accuracy, and rapidity.

Kimpton and Brown devised a paraffined tube composed of a glass cylinder with a specially curved cannula, and a method whereby suction or pressure may be applied for withdrawing or injecting blood. The vessels of both donor and recipient are dissected out, properly prepared, and incised. The top of the tube is inserted into the vessel of the donor, blood withdrawn, and immediately transferred into a similarly prepared vessel of the recipient.

The disadvantage of this method is that the glass tube requires special preparations. It has to be paraffined, baked in an autoclave, and is likely to be broken, so that several have to be kept in readiness to meet an emergency. Furthermore the blood is brought in contact with the foreign body which forms fibrin and plugs the needle and tube. A similar paraffined glass tube as the Kimpton Brown is that of Nelson M. Percy.

L. J. Unger has described a new method in the *Journal of the A. M. A.*, February 13, 1915. The instrument consists of a stop-cock which connects a syringe for blood to the donor, and a syringe for saline to the recipient; then by turning the cock the syringe with blood is immediately connected to the recipient and the syringe with saline to the donor. The cock has four outlets to which is attached rubber tubing of various sizes—the recipient and the donor's rubber tubes are paraffined. The instrument is supported by a stand to hold the cock stationary and to permit of its being adjusted to various heights in conformity with the levels of the veins. The stand is fixed to a table and by raising, lowering, or rotating the pedestal to which the instrument is attached connections to the cannulæ can be made.

We must be mindful that an instrument to be of universal value in rural districts as well as in the city, must have attachments which can be replaced with ease. The rubber tubes, two of which are paraffined, cannot be sterilized with safety. The paraffine dries, cracks, and chips off in time. The arrangement to fill the recipient with a quantity of saline solution has the same objection as the simple syringe cannula method.

When a quantity of saline must be added to the volume of blood given to the recipient, we either give an excessive amount of fluid and overtax the heart, or we give an insufficient quantity of blood in cases that require a maximum dose. Saline solution is not objectionable when given to a patient who needs it—when salt solution however can improve and cure the patient, no blood transfusion is indicated. On the other hand when pure undiluted blood is essential, the addition of salt solution is not desirable.

With the hope of finding an ideal method to perform blood transfusion with ease, accuracy, and safety, which would overcome all objections found in other methods, I have devised a valve made of steel, nickel, brass, silver, gold, or glass. It is in

reality a combination of a direct and indirect method for transfusion of blood. The valve consists of a central body with two arms going in opposite directions, and weighs two ounces.

The central part is cylindrical, 1½ inches long

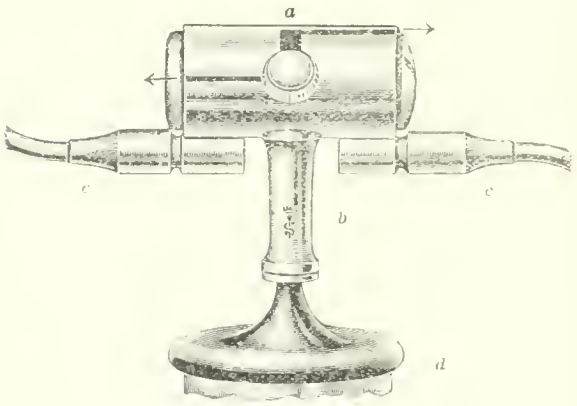

Fig. 1.—Transfusion apparatus. *a*, Cylinder; *b*, stem; *c*, *c*, arms; *d*, syringe.

and ½ inch in diameter. The middle of the upper surface of the valve has a thumb-screw arrangement which moves the interior metal filling of the valve back and forth within a play of ⅜ of an inch. The same back and forth movement can be arranged by a thumb-screw attached to the side of the valve instead of on the upper surface.

The interior metal filling of the valve has two grooves equal to the size of the lumen found in each arm. From the center of the under surface of the valve a cylindrical hollow stem passes down one inch long. The lumen of the stem is just large enough to receive the tip of a record syringe holding 10 c.c., 20 c.c., or 50 c.c. of fluid.

The two arms going in opposite directions are bent like an italic letter S, and begin from the under surface of the valve; one extends outward and downward until it reaches a point 1½ inches below and 2 inches away from the valve; the other extends outward and upward until it reaches a point 1½ inches above and 2 inches away from the valve. The total distance from the tips of the two arms is 5½ inches in length and 3 inches in width.

The two arms are hollow, of equal lumen, and are continuous with the grooves found in the interior metal filling of the valve. The tips of the two arms fit exactly to a cannula and needle used for transfusion or any needle which fits a record syringe. The two arms of the valve may be of rubber instead of metal to render it flexible.

By moving the thumb-screw arrangement of the top or side of the valve back and forth, the current of blood, or any fluid, can be directed into one arm or the other.

When one arm is open, the other arm is closed, and when the thumbscrew is placed in the middle of the ⅜ of an inch play the current is stopped from both arms. Either arm can be used for donor or recipient.

The distance in the length and width of the distal ends of the arms of the valve is approximately the distance between the median basilic or cephalic veins of two adults arms placed alongside each other.

Other vessels, such as the external jugular or saphenous, can be connected with the valve with the same ease as the vessels at the bend of the elbow.

The alternate action of the valve is of advantage to the recipient by preventing a continuous large volume of fluid from suddenly overtaxing the heart. During aspiration the heart has a chance gradually to distribute the added amount of blood without much exertion, thereby obviating cardiac dilatation.

There are a number of cannulæ on the market. Those which were devised by Lindeman consist of an inner fine hollow needle which passes through a middle cannula, this in turn telescopes with an outer cannula and the inner needle is 5 mm. longer than the middle cannula.

The cannula of Kaliski is an ordinary aspirating trochar and cannula; it pierces a bridge of heavy steel which raises the cannula hub sufficiently far from the skin to permit of the coupling of the syringe and its attachment without disturbing the position of the cannula in the vein.

The Unger cannula resembles that of the Kaliski, except that instead of an obturator, a hollow needle passes through the cannula.

To overcome some of the difficulties encountered in handling and steadying certain cannulas on the market, I have devised a special one. Two sets are necessary, one for the donor, and the other for the recipient. There are three parts to each set which consists of a cannula, a hollow needle, and an obturator. The needle and the obturator fit snugly and telescope in the cannula. The obturator and cannula are of equal length, 2⅝ of an inch, the hollow needle is ¼ to ½ of an inch longer than the cannula and is slightly grooved and beveled to a fine point. The proximal ends of the needle and obturator are capped with stationary thumb-screw caps. The cannula is capped with a receiver to fit the free ends of the arms of the valve or any record syringe. The caliber of the cannula is the same as the arms of the valve and the same as the tips of a record syringe.

One-half to three-quarters of an inch from the distal end, the cannula is encircled by a ring 1 mm. in thickness, and a second similar ring is placed 1 mm. away from it. The space between the encircling rings is just wide enough to receive a suture of silk, linen, or catgut which is temporarily placed by passing through the skin of the donor or donee to hold the cannula stationary in position, thereby preventing it from being shoved back and forth during aspiration and injecting of blood, or any fluid.

Operation.—The valve, cannulæ, needles, and obturators are sterilized by boiling, the same as other instruments before operation. One, two, or three record syringes of any kind which will fit the can-

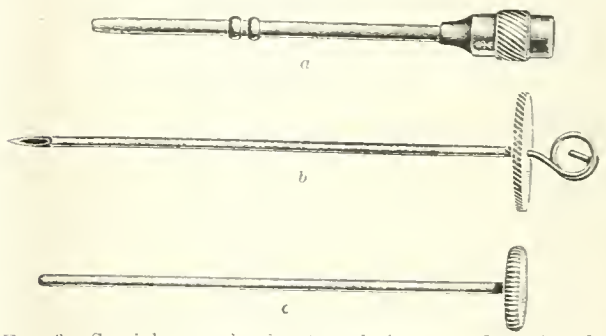

Fig. 2.—Special cannula for transfusion. *a*, Cannula; *b*, needle; *c*, obturator.

nula, usually 20 c.c., can be sterilized, either by boiling or by immersing it in 95 per cent. alcohol for a half hour and transferring it afterwards to a basin with warm normal salt solution.

The vessels usually selected are the median

basilic, or cephalic, the external jugular, or saphenous veins.

The area of operation is properly shaved, disinfected, and coated with tincture of iodine. A tourniquet consisting of a light weight rubber tube is applied and allowed to be on the donor during the entire time of the transfusion, but it may be temporarily loosened if the donor complains of numbness of the fingers and hand. The tourniquet must be applied to constrict the venous circulation but not the arterial. The patient's arm is prepared the same as donor's, tourniquet applied until cannula is inserted into the vein and then removed.

Donor and patient are placed in the recumbent posture on separate tables, at right-angles, head to head, with the donor's left arm against the recipient's right arm. Both arms are stretched to their full length resting on a small table, placed in the angle formed by the two long tables. The eyes are covered with a towel. Both long tables should be preferably of the adjustable kind for

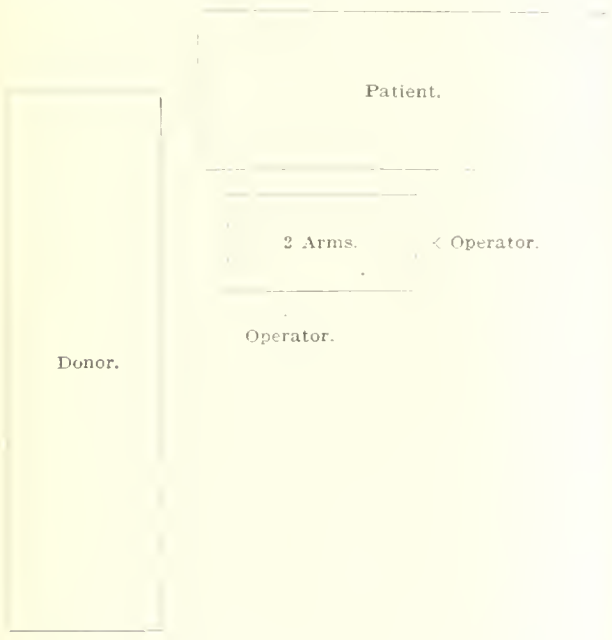

FIG. 3.—Arrangement of tables for donor and patient

Trendelenburg or Fowler's position, so as to permit combating either syncope or acute cardiac dilatation. The donor's table should be about a foot higher than that of the recipient; this helps to increase the flow of blood by gravity. One operator manages the donee, another operator manages the donor. The operators are standing or sitting near the small table.

The arm is gently massaged in the direction of the tourniquet, which helps to fill up the vein. Stretch the skin in the direction of the veins to be punctured by grasping the forearm with the palm of the left hand under the arm, using the thumb to steady and stretch the vein. With the right hand grasp the cannula telescoped by the needle, beveled point upward, between the index and middle finger, with thumb on the midle cap. Push the needle and cannula through the skin in toward the hand of the donor, and the shoulder of patient, and enter the lumen of the vein for about ¼ to ⅜ of an inch; then withdraw the needle a short distance to prevent puncturing the vessel wall, and continue to drive the cannula into the lumen of the vein until the ring on the cannula meets the skin and prevents it from going further.

Blood will be noticed coming alongside the needle; withdraw the needle, and if the cannula is not against the wall of the vein, blood will flow freely; then insert the obturator. Pass a suture through the skin and tie it between the two rings of the cannula to prevent it from slipping out. If blood does not flow freely through the cannula withdraw it slowly about ¼ to ½ inch, which often establishes the flow, proving that the tip was occluded by a valve or the wall of the vein. Do not aspirate or force saline through the cannula to ascertain if the cannula is in the lumen of the vein, it will infiltrate the tissues and distort the position of the vessel, so that another puncture of the vein will become necessary.

Donor and recipient can be operated upon in different rooms until this stage of the operation. The donor's table is now rolled into the recipient's room and the two tables are adjusted as described above.

Having placed the donor and recipient cannulæ in position remove the obturators and adjust the opposite ends of the valve to the receivers of the cannulæ, by a slight turn, to make them fit snugly.

Fill a 20 c.c. record syringe with warm saline solution and force the air from both arms of the valve before adjusting them to the cannulæ. Place the thumb-screw of the valve in the direction of the donor's arm. Commence to draw, very slowly, the piston from the record syringe and fill the syringe with blood, change the thumbscrew toward the recipient's arm, and empty the syringe with blood rapidly. Continue to alternate the directions of the thumbscrew, filling and emptying the syringe without removing the same from the valve, until the desired amount of blood has been transfused.

No saline solution is necessary for injection during the transfusion, one syringe is all that is required for the entire operation. It is, however, advisable to have two or three syringes in readiness in the event of unforeseen difficulties.

Difficulties may arise from slight tilting of the cannulæ of both donor and donee, which brings the tips of the cannulæ against the wall of the vessel. Proper steadying of the cannulæ by the assistants will prevent such occurrence.

When changing a syringe I have found it advisable to have it filled with saline solution and to allow some of the solution to pass into the donor and donee to ascertain whether or not the cannulæ are in the lumen of the vessels. By this method no blood is lost, and no air is present in the syringe.

I have by this method transfused 23 cases, 6 at the Jewish Hospital of Brooklyn, 2 at the St. Mark's Hospital, New York; 6 at the People's Hospital, New York; 1 at my office, 5 at the patient's home, and 1 each at Long Island College Hospital, St. John's Hospital, and the Swedish Hospital.

Before performing blood transfusion by any method, it is advisable, except in urgent cases, to make a Wassermann test of both donor and recipient, agglutination and hemolysis test; blood pressure, pulse rate, and cardiac examination. Blood examination as to number of red and white corpuscles, hemoglobin and coagulation test; complete urine examination. Operator and assistants should insure perfect asepsis as in the preparation for a major operation. Donors should not be stout, nor over 40 years of age, and free from disease.

When the veins are small, or in fatty individ-

CASES

Referred By		Patient's Name	Date	Age, Years	Donor	Quantity Transfused, C.C.	Place	Disease
Dr. J. B. Bogart	Case 1	Sussie N.	December 21, 1914	34	Husband	320	Jewish Hospital	Traumatic hemorrhage from right kidney.
Dr. G. S. Wolf	Case 2	Bessie K.	February 1, 1915	34	Alien	135	People's Hospital, New York	Ruptured, extrauterine pregnancy.
Dr. J. M. Polisar	Case 3	Jacob R.	February 3, 1915	29	Alien	300	People's Hospital, New York	Epistaxes several times a week for two years.
Dr. J. M. Polisar	Case 4	Jacob R.	February 26, 1915	29	Alien	320	At my office	Ditto.
Dr. J. B. Bogart	Case 5	Sussie N.	March 2, 1915	34	Husband	320	At her home	Anemia following traumatic hemorrhage.
Dr. Adolf Granet	Case 6	Hinde G.	March 17, 1915	60	Nephew	200	St. Mark's Hospital, New York	Septic cellulitis of arm (to overcome post oper. shock).
Dr. J. M. Polisar	Case 7	Nathan R.	March 20, 1915	25	Alien	100	People's Hospital, New York	Purpura hemorrhagica.
Dr. Adolf Granet	Case 8	Hinde G.	March 25, 1915	60	Alien	300	St. Mark's Hospital, New York	Chronic suppurative anemia.
Dr. S. Tirman	Case 9	Selina R.	April 2, 1915	50	Alien	135	Jewish Hospital, Brooklyn	Carcinoma of breast; anemia.
Dr. Leon Louria	Case 10	Bertha K.	April 3, 1915	60	Alien	100	Jewish Hospital, Brooklyn	Pernicious anemia.
Dr. Wm. K. Jacobs	Case 11	Julius S.	April 13, 1915	10	Father	225	Jewish Hospital, Brooklyn	Purpura hemorrhagica.
Dr. Sol. Rottenberg	Case 12	Annette K.	April 15, 1915	39	Alien	300	People's Hospital, New York	Post partum hemorrhage, t xemia.
Dr. John O. Polak	Case 13	Mrs. M.	April 23, 1915	30	Husband	400	Long Island College Hospital	Post abortum sepsis.
Dr. J. A. Kinnear	Case 14	Mrs. Antoinette S.	May 13, 1915	23	Father	300	At her home, Toronto, Canada	Post abortum sepsis.
Dr. M. N. Ratzan	Case 15	Joe G.	May 21, 1915	5	Father	140	At his house.	Pernicious anemia.
Dr. Chas. M. Bellows	Case 16	Mr. C.	May 16, 1915	76	Alien	400	At his house.	Anemia.
Dr. Chas. Fisher	Case 17	Dora L.	June 12, 1915	31	Sister-in-law	500	Swedish Hospital, Brooklyn	Post-operative shock.
Dr. Lewson	Case 18	Mrs. R.	June 14, 1915	40	Alien	200	At her home	Puerperal sepsis.
Dr. Leon Louria	Case 19	Mr. E.	June 29, 1915	29	Alien	500	Jewish Hospital, Brooklyn	Anemia.
Dr. A. Granet	Case 20	Max P.	July 4, 1915	9	Alien	100	People's Hospital, New York	Intestinal hemorrhage.
Dr. Morris Korshet	Case 21	Mrs. K.	July 8, 1915	52	Alien	100	People's Hospital, New York	Anemia.
r. Chas. Fisher	Case 22	Mrs. K.	July 9, 1915	46	Alien	200	St. John's Hospital, Brooklyn	Post-operative shock.
	Case 23	Simon K.	August 23, 1915	28	Alien	240	Jewish Hospital, Brooklyn	Pernicious anemia.

uals, it may be an advantage to cut down and isolate the vein for about a half to one inch, using novocaine or cocaine to infiltrate the tissues, or spraying ethyl chloride locally.

The valve will enable one to perform blood transfusion after a little practice, with ease, accuracy, and safety. There will be no loss of blood to any appreciable amount, nor will it be necessary to fill the patient with a volume of salt solution during the transfusion.

Nurses to wash syringes during the transfusion can be dispensed with and no dozens of syringes are necessary.

The formerly considered major operation for transfusion of blood will be, by the use of the valve, converted into an operation of minor character which can be carried out in the doctor's office or in the patient's home, without a nurse and with one assistant.

By the use of the valve there will be no need of medicating the blood in the hope of preventing coagulation.

In addition to the use of the valve for blood transfusion it could be used in place of the Potain syringe in paracentesis, etc. The cannula may be used for salvarsan injection, subdermic saline injection, etc.

In conclusion, I desire to state that I will cheerfully demonstrate and explain the instrument to surgeons desiring to use it in any case requiring blood transfusion. The instrument is manufactured by Kny-Scheerer Co., New York.

700 St. Marks Avenue.

PROPHYLAXIS IN DEMENTIA PRECOX AND OTHER PSYCHOSES.

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In the Medical Record of May 29, I endeavored to emphasize the fact that the early recognition of the precox type of individual and prophylactic measures were of paramount importance if we are to lessen the number of that class admitted to our institutions. It is well known that the majority of the hopelessly insane are of that type.

At this point the question arises, "Why do those, who contribute literature on mental and nervous diseases avoid or ignore the importance of prophylaxis in this condition?" Rational mental teaching has shown its value in hysteria and in many neurasthenic and psychasthenic states. Is there not a possible application of its principles to the very early stages of dementia precox, and, if so, what are the sources to which we must look for help?

I will not go farther in answering the first part of my question, other than to say that the teachings of Freud seem to have taken complete possession of these writers with the result that psychoanalysis is considered as offering the best hope for decreasing the number of this class of patients, and a possible prophylaxis in this condition is entirely lost sight of. While psychoanalysis is, no doubt, of great benefit, and has resulted in complete cures in selected cases of hysteria and neurasthenic conditions, its value in dementia precox is extremely doubtful. Its application to these cases in many instances has resulted in distinct harm to the patient, depending upon the fact that many of them have reached a fairly comfortable mental state, and when the psychoanalyst breaks up their adjustment, bringing ideas to the surface which are intensely disagreeable and loathsome to the patient, and suggesting strongly, almost to the point of hypnotism, that he has been guilty of various sexual perversions, many of them become suicidal or their condition is anything but benefited by the treatment.

The cases of undoubted dementia precox which have been cured or in any way benefited by the psychoanalytic method, are so few in number that the success of this method is far from encouraging, and writers on mental and nervous diseases would accomplish greater results if they turned their attention to prophylaxis.

The reason that psychoanalysis has met with such poor success in dementia precox, and has been fairly successful in hysteria and neurasthenic states, is due to the wide difference in the two conditions. This difference, while not readily apparent in the early stages, is nevertheless of great importance when the prognosis of the two conditions is considered. Dementia precox being a de-

teriorating psychosis going on to complete dementia, the psychoanalyst has a greatly impaired intellect with which to deal when the case comes under his care, due to impaired judgment or reasoning power. This makes it extremely difficult, if not impossible to gain the patient's cooperation.

On the other hand, hysteria and allied conditions may show hallucinations and delusions, but the progressive deterioration is not present, and the psychoanalyst meets with greater cooperation and a correspondingly better result is obtained.

The fact should not be lost sight of that dementia precox, as well as other abnormal mental conditions, is a disease and consequently has an etiology. Greater effort should be made to obtain information relative to the cause of this condition and thereby facilitate prophylaxis.

At present it is believed that the factors largely responsible in the causation of dementia precox may be grouped under three heads, viz., "Dementia precox in the immediate or remote ancestry, alcoholism, and abnormal personality."[1] Under the last division would be included "crankiness" and marital incompatibility. However, in addition to the above causes, recognized authorities on mental diseases[2] have called our attention to the great importance of the present school system as an etiological factor in exhausting the limited potential with which this type of individual is endowed.[3]

The first three etiological factors will be seen to deal with the remote and immediate ancestry, and the fourth with the early childhood and development of the individual.

It is obviously impossible in this paper to give more than a superficial discussion of these etiological factors and the prophylactic measures indicated. The removal of the first factor in the causation of this condition is the most difficult, and the result will depend largely upon the thoroughness of the campaign of education referred to later in this paper. "The right of a child to choose his parents" is a statement of greater importance than appears on the surface and applies directly to the subject under discussion.

The large amount of literature on eugenics that has flooded the professional and lay press during the last few years has already done great good by causing legislation along these lines, and, most important of all, it has been the means of directing the attention of the public to the fact that there are more important factors than sentiment to be considered when one is choosing a life partner.

The second factor, or alcoholism, is, without doubt, of great importance. Its common use as an aphrodisiac has, no doubt, been responsible for many a child being born with that "limited potential," which caused the "stranding on the rock of puberty."

It is difficult to obtain positive proof of its effect when used as an aphrodisiac, should conception occur, because of the inability to estimate the time of conception. It is well known that the offspring of a woman who has been addicted to alcoholics during pregnancy is very likely to be mentally defective.

When it is known that acute alcoholism causes a temporary loss of function of the higher conscious centers, as judgment, reasoning, moral sense, etc., and in the chronic alcoholic, causes a permanent loss of these higher intellectual functions, it is quite within the bounds of reason to believe that a man, or more especially a woman, addicted to alcoholics is quite likely to have one or more of his or her children turn out to be mentally defective. In many instances the alcoholism is but a symptom of neurasthenia, or of a dementia precox at a more advanced age, to which it in turn has contributed, and established a vicious circle which has left its impress in heredity. The removal of alcoholism as an etiological factor, like heredity, depends upon acquainting the public with its evil and far-reaching effect upon the human race. At least ignorance can no longer be the plea, and the medical profession will, in a measure, have discharged its duty to humanity.

The next etiological factor is the parent with an abnormal personality or pathological character, or the so-called "crank." As stated, we also have, under this heading marital incompatibility due to the inability of one or both parents to adapt themselves to commonsense relations.

Another subdivision of the pathological character is the class which may be termed "derelicts" themselves in all probability suffering in some slight degree from dementia precox coming on later in life. Many of these belong to the alcoholic class, and, after reaching manhood, they are unable to keep up the struggle and are forced to drop out and be content with small clerical positions.[4] On every hand we see this type, and they represent the semi-failures of life. This class is, no doubt, responsible for many cases of dementia precox in our institutions to-day. Marital incompatibility is a frequent cause and could be avoided if parents were informed of its importance.

The above etiological factors deal entirely with the parentage of the child, and successful prophylaxis will depend upon the extent the medical profession interests itself in educating the public. When one pauses to think that the individual having any knowledge of these things is the exception, he will not hesitate to join in the campaign of education and thereby hasten the day when the parents of these unfortunate patients cannot accuse us by saying, "I never knew" or "If I had only known."

The last etiological factor, or the present school system, is considered of great importance, and I believe that the best opportunity to accomplish immediate results in prophylaxis is in this field.

The root of prophylaxis of mental and nervous diseases lies in proper mental and moral hygiene for the young, and the physician as well as the educator and sociologist is properly looked to for the technical advice by the intelligent portion of the community, which needs to have its mind set at rest on various questions regarding their education.

The present public school system, with its unnecessarily crowded curriculum and the forced application of all types of intellects to the same subjects, without regard to their probable usefulness in the life of the individual or of the individual's adaptability, exercises a pernicious influence on the mental development of the child. Particularly is this true in the education of girls. They are compelled to apply themselves to the study of subjects to which they are temperamentally unfitted, thereby hastening their mental exhaustion, especially if their original amount of potential is less than normal, due to their being of a precox makeup.

An additional factor in the mental breakdown of the female patient is higher education. In institutions for mental and nervous diseases, where

statistics have been compiled, it has been found that the majority of women patients are those that have attempted difficult mental tasks and have pursued a course of study much better suited to the masculine mind. This common disastrous effect of strenuous mental application is due to the fact that woman, in the centuries past, has not had the mental training, due to the semi-slavery in which she has been held.

Another point to be considered by teachers and educators to-day is how to secure for the backward child adequate education in the public schools through separate courses of instruction suited to his capacity, in place of subjecting him to the vain struggle of keeping up with the brighter pupils, and also adopting a special curriculum for girls, suited to their future needs and their mental makeup.

The number of public measures in which we might profitably engage, although a formidable one, is only a part of what there is to be done, but persistent work directed to but one of them could hardly fail to be productive of much benefit to the community, and the physician, whether he be psychiatrist or family practitioner should, by means of the home, the press, and the school impart the results of his study to the community, not forgetting that the purely scientific side of the problem is useless, unless associated with practical effort and the production of a working plan. Among the thousands of patients who are to-day in institutions throughout the country there are many brilliant hopes buried, largely owing to a lack of knowledge of what some people need in the way of social and personal hygiene. It is the duty of the physician to familiarize himself with the etiological factors in these conditions and impart his information to the public, as in the prophylaxis of all diseases, our hope of eradication depends upon the education of the public.

Logically the lead in this movement should be taken by our national health organizations. At present we have the United States Public Health Service with a special department on mental and nervous diseases. This department is doing good work in the field of mental medicine. We also have the National Committee for Mental Hygiene which has been instrumental in the organization of many State societies for mental hygiene.

The medical colleges have, of recent years, become aware of the importance of mental disease and are devoting more time to its teaching. In keeping with the activities of the medical profession to-day, there is no doubt but that the greater effort of these organizations will be directed toward the prevention of mental disease rather than the treatment. With these factors at work as a nucleus the time is not far distant when the public will be as well informed regarding the etiological factors in the psychoses as they are at the present time, regarding the causation and prophylaxis of typhoid malaria, diphtheria, etc. Not until then can we hope for any marked diminution in the number of admissions to our institutions for the insane.

The only hope in sight for checking the increase of insanity lies in prophylaxis, and the neurologist and the family physician have exceptional opportunities for observation and study of its initial stages, at which time, alone, it is possible to avert or defer the attack. It is through the neurologist that the public should be informed of the indications of its approach and the means of warding off the attack, or at least protecting the individual and the community. It is for him to urge the adoption of public measures for the early treatment of the disease by the separate care of such patients among the poorer classes, either in wards of general hospitals or in special psychopathic hospitals. I will state here, that the old idea of considering an individual suffering from a psychosis as guilty of an offense against the community and committing him to an institution by criminal proceedings, thereby branding him for life, is a relic of barbarism and a disgrace to a civilized nation. Such an idea is but a relic of the days of grossest ignorance concerning mental disease, the days before Pinel started the movement which awakened the profession and the world to the fact that an individual suffering from mental disease is not possessed of devils or guilty of any criminal act, but is sick, mentally sick in the same sense as one becomes ill from any other disease.

Thanks to a few enlightened minds who have seen the injustice of this method, several state legislatures have recently passed voluntary commitment acts and thereby set an example which other states should lose no time in following.

Another promising field for public preventive work lies in the temporary supervision, protection, and relief, by means of charitable aftercare associations of poor patients, who are discharged from hospitals for the insane as recovered or convalescent. In this way alone can we hope to prevent relapse or prolong the intervals of sanity between attacks, that are inevitable. This plan is being followed out by New York with gratifying success and should be the method adopted by all of our institutions.

Eugenics—the practical application of facts learned in the study of heredity—is one of the most recent undertakings for race betterment, dating back little more than twelve years, while that branch of it relating to heredity in mental defects and diseases was taken up scarcely more than five years ago, research work therein being confined to this country and Germany.

From the results already obtained we can see how important to our descendants is a complete knowledge of the transmission of insanity and mental defect by heredity. For many years the popular mind has associated insanity with heredity. This belief has been confirmed by modern investigation so far, at least, as to assure us that heredity is by far the most important single factor in the causation of certain forms of mental disease.

To ancestors afflicted with feeblemindedness, with dementia precox, and other mental disorders, numerous mentally defective or mentally diseased descendants have been traced in many of the families that have been investigated, while in a few of the cases examined, where one party to the marriage was normal (and presumably of normal ancestry) the other being insane, some normal children resulted.

The result of investigations of heredity in mental diseases and defects down to the present time entirely justifies the statement that it is highly undesirable that the feebleminded, epileptics, and those with certain types of insanity should have children.

Looking at prophylaxis from the standpoint of a citizen of the United States, who does not wish to see his country made the dumping ground for

all sorts of mental defectives, who propagate other defectives, and in a short time become a burden to the state and nation, I cannot emphasize too forcibly the great importance of recognizing the defective and future precox before he is admitted to this country.

In closing my article, I will here give a few very important suggestions published in a recent report on the Alien Insane in the Civil Hospitals of New York State.[5] It is recommended:

(A) That, as an aid to existing methods, there should be stationed at the ports of embarkation United States medical officers, who should take part in the examination of the intending immigrant.

(B) That there should be stationed upon each ship bearing immigrants to this country United States officials, either physicians or nurses, or both, who should observe the aliens from time to time and report to the immigration officials, upon arrival, those apparently suffering from psychoses or mental defects.

(C) That a larger number of medical officers should be detailed to Ellis Island and other large ports, and that these physicians should be men trained in the detection of mental diseases and and defects.

(D) That there be provided large detention hospitals in which suspected cases could be isolated for a longer or shorter period until proper investigation could be made as to their mental condition.

(E) That the time during which deportation can be effected under Federal warrant be lengthened to five years or longer.

(F) That the testimony of competent alienists as to mental condition be taken as sufficient authority for the issuance of Federal warrants of deportation, if other conditions admit.

(G) That the law, instead of providing that the authorities show that the causes of the alien's psychosis existed prior to his landing, should provide that the alien should show that the causes of his psychosis arose subsequent to his landing, thus putting the burden of proof upon the alien rather than upon the state.

(H) That the steamship companies which bring immigrants to this country be made responsible for the mental condition of the immigrants, as well as for the physical condition. In other words, the steamship companies shall make careful investigation into the family history and general surroundings of the proposed immigrants at their homes in order to determine that there is no hereditary taint.

(I) There is need for the employment at the ports of entry of more trained alienists. These officers have to devote much of their time to examinations for physical diseases and defects. That the force of alienists has been insufficient is shown by the increase in the number rejected on the mental examination whenever in the past additional alienists have been assigned to duty at Ellis Island.

(J) As far as possible, physicians skilled in the detection of mental diseases and defects should be selected from the candidates for admission to the United States Public Health Service.

(K) Physicians in this service should be detailed for training at hospitals for the insane in order to insure a greater number of alienists. This was done at one time, but was discontinued some six years ago.

(L) The three foregoing recommendations can be put into effect without legislation except the necessary appropriations for pay and allowance for the additional officers needed. Unless these things are done much of the legislation recommended for the detection of the insane in the mental defectives at the ports of entry will be ineffective.

(M) Employment and careful training of a sufficient number of interpreters for this part of the medical examination is needed. A difference of opinion as to which department of the Federal government should employ such interpreters has prevented their appointment. This is a trivial matter, compared with the great importance to the states which bear the burden of the alien insane, of providing such urgently needed assistance.

In conclusion, I will say that I am well aware that this article adds nothing to what has already been written on the subject, nor was it written with that end in view, but rather with the sincere hope that it might be the means of arousing the medical profession to a full realization that present methods of attacking the psychoses have not achieved results and the admissions to our institutions are on the increase.

If this is thoroughly understood and appreciated, all will agree that it is imperative that increased efforts along the line of prophylaxis are absolutely necessary if we are to achieve results of any consequence in our attack upon the psychoses.

To us, who associate daily with these unfortunates, and witness their pitiful state, realizing the possibilities wasted, the blasted hopes and ruined careers of those who might now be leading happy and useful lives, to us is brought most forcibly the necessity of doing something to diminish the steady stream of admissions of this unfortunate class.

No physician can feel that he has discharged his full duty to humanity until this result is achieved.

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PNEUMOCOCCIC INFECTION OF THE THROAT.

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THE pneumococcus has long been recognized primarily as the most frequent infectious agent in pneumonia of the lobar type. While other organisms have been isolated, occasionally in pure culture and frequently as mixed infections, the *Diplococcus lanceolatus* of Fraenkel and Weichselbaum, described in 1886, is considered the specific etiological factor in 90 per cent. of cases[1]. There are several facts, however, which complicate the etiological significance of the pneumococcus and make it necessary to presuppose what is generally accepted, accessory causal factors, such as diminished

resistance and local changes in the respiratory system favoring infection. In the first place, it is a well known fact that the pneumococcus appears in the sputum of healthy normal individuals and is not to be considered an abnormal inhabitant of the mouth and throat[3]. It may very likely be that the pneumococcus, found in the mouth and throat cavities of apparently healthy persons, belongs to one of the less virulent strains or races of pneumococci, as it has been shown by investigation that there are a number of different strains or races, varying in degree as to the severity of toxic effects[2, 3].

Again, so-called pneomococcus carriers appear from time to time in the case of persons who may have suffered from pneumonia some months before and in whose mouth or throat cavities the presence of the pneumococcus may be discovered only by accident[2, 3]. Such an instance was recently observed by a colleague, Dr. Walter H. Sanford:

A robust individual who had had pneumonia a year previously and who consulted the physician for the relief of a cough. The latter almost disappeared under treatment, but two weeks later, on a second examination, the patient was again coughing more or less constantly and expectorating a pinkish tenacious mucous which seemed to come from the trachea and larger bronchi. The sputum when stained seemed to be an almost pure culture of pneumococci. He had no fever, felt quite well and seemed in good physical condition aside from the cough. Examination of the chest was practically negative, there being heard only a few rales beneath the sternum. The cough yielded readily to treatment, and a second smear showed only isolated pneumococci. There was evidently a slight degree of bronchitis, but the patient did not appear to be ill and only consulted a physician largely because of the peculiar expectoration.

Although pneumonia may be regarded as the most usual result of a pneumococcic infection, yet other portions of the body are attacked with varying frequency. As complications of a pneumonia, or more rarely as apparently primary conditions, conjunctivitis, pleurisy, empyema, pericarditis, endocarditis, meningitis, otitis media, osteomyelitis, arthritis, and peritonitis[1], may be mentioned. Cases of ulcerative endocarditis without pulmonary lesions have been not infrequently observed[1]. Pneumococcic septicemia, about which there has been some difference of opinion as to frequency of occurrence, certainly may be proven in severe pneumococcic infections[4, 8]. Recently a case of extensive destruction of the vulva and adjacent tissues[5], probably due to pneumococcic infection, was reported.

Inflammations of the nasopharynx, due to the pneumococcus are, according to the literature, rather rare but important, especially from the standpoint of prognosis. Walb[4] has called attention to numbers of cases of a febrile affection which have occurred at Bonn during the last few years and which seemed to be typically influenza. In none of the cases, however, was the influenza bacillus found but, on the contrary, the pneumococcus proved to be responsible. The lesions were in the nasopharynx and at times involved the ear and the sinuses of the nose.

A few instances of a septic condition of the throat of pneumococcic origin are on record, some of which have shown a peculiarly fatal course. Tweedie[6] reported "three fatal cases of pneumococcal infection of the throat." Two of the cases, called by the author "asthenic" were rather chronic conditions, lasting several months, while the third, called "sthenic" ran a comparatively rapid course, lasting about ten days. All three showed extreme resistance to all forms of treatment and no cause, apart from the presence of the pneumococcus in the throat, could be ascertained. The organism appeared in large numbers in pure culture on the swabs or sputa. The first two cases showed practically nothing abnormal in the nose, ears or pharynx. There was an inflammation of the cartilages of the larynx, accompanied by a purulent discharge, which abounded with pneumococci. A phlegmonous condition of the neck added to the marked dysphagia. The third case showed a generalized subacute nasopharyngitis and a severe cellulitis of both submaxillary and submental regions. In none of the cases did incisions in the neck disclose pus. A postmortem examination in the third showed a small necrotic area about a half inch in diameter in the depths of the right submaxillary lymph glands. Blood and cerebrospinal fluid taken after death proved sterile.

Theisen's[7] cases, which recovered, were accompanied by severe edema of the pharynx, including tonsillar region, soft palate, and uvula, in several the epiglottis being involved. There was naturally severe dyspnea. Incisions failed to discover pus. Active treatment with hexamethylenamine internally in large doses and cold antiseptic sprays was used. While there was a mixed infection in several of these cases, the pneumococcus predominated in all.

Two cases, which came to the writers' attention recently and which provided the text for the present paper, seem to illustrate a peculiarly fatal type of pnemoococcic infection of the throat. The first was a private case of Dr. William B. Gibson, of Huntington, L. I., who kindly furnished his notes on the same.

Case I.—L. B. Age 43, an Italian contractor, of temperate habits and remarkably good physique, was taken ill on April 8, complaining of the usual symptoms of grippe, with slight sore throat. His family history is negative, mother being still alive, father dying at the age of 56 of some cardiac lesion. On April 9, he had an intense sore throat, temperature being 104°. There was no peritonsillar abscess, but the whole phraynx was deeply injected. It was with difficulty that the mouth could be opened. On the morning of the tenth, the physician saw him very early. He complained of difficulty of breathing. There appeared to be no obstruction in the throat. At the base of the right lung, a few crepitant rales were heard, apparently the first stage of a lobar pneumonia. Numerous pneumococci were found in a smear of the sputum. An injection of antipneumococci serum was made. At noon, when it was intended to give another injection, he was very restless and distressed, face suffused and temperature 105°. At 3:00 P.M. he continued restless and delirious, failing rapidly and dying at 4:00 P.M. Pulse was very full and tense up to noon of the day of death. No autopsy.

Case II.—J. W. White; age 79 at death; single; nativity Germany; a domestic servant. There is very little information available about the patient's early life. She had been an inmate of a State Hospital for the Insane for about thirty-four years, being at the Long Island State Hospital some twenty years, then discharged, working four years as a domestic servant, and on May 15, 1901, being recommitted, this time to the Kings Park State Hospital, Kings Park, N. Y.

She was always quiet, rather simple and childish in manner, for many years giving one the impression of marked constitutional inferiority or imbecility. However, from her past history of hallucinations of sight and hearing, some ideas of persecution, a general attitude of indifference and apathy, with disorientation, memory defects and the like, she was classed with the dementia praecox group. For a number of years, she had been very obese, weighing at the time of death 209 pounds, her height being 4 feet 11 inches. Aside from this excess of adipose tissue, there had been nothing to

call attention to her physical condition. She continued to be up and about the ward, helping with the mending, until about April 9, 1915. At that time she had a chill, complained of sore throat, and was put to bed. As there had been a number of cases of follicular tonsillitis on the ward, this was suspected to be her ailment. On examination, a peculiar intensely congested and edematous appearance of the mucous membrane, involving the uvula, anterior pillars, tonsils and a portion of the roof of the mouth, the border of which seemed sharply defined, differentiated it from follicular tonsillitis. Subjectively, the patient complained of considerable dysphagia and a choking sensation, although she seemed able to swallow fluids quite easily and her respirations were normal. The constitutional symptoms were not marked, the temperature being only 101° at the beginning, which was the highest fever, respirations 26, pulse 110. She had some laryngitis, with hoarseness of the voice.

She was given a gargle of peroxide of hydrogen one part, water four parts, and internally sodium salicylate, and calomel one grain in divided doses, followed by magnesium sulphate. For the nine days following she never appeared very ill. She remained in bed most of the time, but when necessary, walked to the water section. She developed a small area of cutaneous redness, swelling and induration in the submental region, which, however, was slight, did not spread, had not the characteristics of erysipelas and, after treatment by ichthyol ointment, disappeared in a couple of days. The congestion of the pharynx continued as described, but did not extend. Neither ulceration nor membrane developed. Treatment seemed to have little or no effect, yet the whole condition, so far as subjective complaints and constitutional symptoms were concerned, seemed rather trivial. After the first day, her temperature varied from 99° to 100°, there being a slight rise in the evening, the pulse and respiration bearing the usual relation to the fever. At no time were there symptoms referable to the chest, there being no cough, dyspnea or pain during respiration, and physical examination of chest, although not satisfactory on account of extreme obesity, seemed to be negative. Following gargling of the throat on April 17, she expectorated, without coughing, considerable thick mucoid material. A smear stained by Gram method showed pneumococci. She had taken milk freely, also fruit juices, until April 18, when she showed some anorexia. She took sufficient nourishment, however, after a little urging and seemed as well as usual. On the 19th, she went to the water section as usual in the morning and assisted in her treatment, co-operating in gargling her throat. At 9:30 A.M., however, she had a sudden violent chill and severe dyspnea, dying before a physician could be summoned.

Necropsy performed eight hours postmortem: Body is that of a very obese white female, 154 cm. in length and weighing 200 pounds. Pupils are equal and regular in outline; no malformation, deformities or evidences of injury.

Ventral Section: Abdomen: Full, rounded and pendulous; panniculus 5-8 cm. in thickness; abdominal muscles thin, but of good color. The omentum and mesentery are loaded with yellow fat; there are no adhesions throughout the abdominal cavity and no fluid exudate; diaphragm normal. The appendix is free throughout and measured 8 cm.; meso-appendix well formed. Thorax: Chest inclined to be barrel-shaped; mammæ pendulous; subcutaneous fat thick; pectoral muscles normal. The lungs are voluminous, and with the heart, completely fill the cavity. They are free from adhesions and there is no fluid in the thoracic cavity.

Circulatory System: Pericardium: The sac is surrounded by much fat; internally there are no adhesions or excess of fluid. Heart: 395 gms.; much fat on the surface; myocardium feels soft and flabby and is friable; cavities are dilated and swollen with fluid blood; valves show nothing of note. Vessels: Coronaries are thickened, but show no calcification; aorta shows numerous small calcified areas; no varicosities. Lymphatics: Lymph nodes show no hyperplasia; thoracic duct normal.

Respiratory System: Trachea and bronchi appear congested, and there is much mucoid exudate. Right Lung: 370 gms.; pleural surface smooth. There is a small amount of congestion and edema present; no signs of consolidation and substance crepitates throughout. Left Lung: 375 gms.; similar in all respects to the right.

Alimentary System: Esophagus: Normal. Stomach: Somewhat distended with gas and contained a small amount of light colored semifluid material; mucous membrane presents no congestion or hemorrhagic areas. Intestines: Normal. Liver: 2090 gms.; surface is smooth; no scars or adhesions; capsule not thickened; on section the tissue is soft and friable; light in color and has a greasy feel. Gall Bladder: Contains a small amount of tary bile and six small facetted stones. Pancreas: 70 gms.; light colored and soft. On section the tissue is almost entirely replaced by fat.

Genitourinary System: Right Kidney: 145 gms.; capsule not adherent or thickened; pelvis large and filled with fat; cortex thin; pyramids well made out. Left Kidney: 168 gms.; similar to the right. Ureters: Normal. Bladder: Walls are thickened; lining membrane covered with mucous. Uterus and Appendages: Further than atrophy, nothing of note.

Ductless Glands: Spleen: 260 gms.; capsule is smooth and shows slight thickening in small scattered areas; on section pulp is soft. Adrenals: Present central softening. Thyroid: Not examined. Pituitary: Normal in the gross.

Head: Scalp: Covered with a good amount of grey hair; normal thickness and stripped easily from the bone. Calvarium: Normal. Dura Mater: Thickened and very adherent to bone and slightly so to pia along median fissure. Pia Mater: Not thickened and no exudate. Brain: 1290 gms. before dissection; 1280 gms. after dissection. There is no apparent atrophy in the gross; surface pattern is regular; no areas of softening or gliosis; ventricles smooth; small amount of fluid; choroid plexuses normal; on section nothing of note. Basal vessels are sclerotic, but not calcified. Spinal Cord: Not removed, but upper portion appears normal.

Bacteriological Examination: Smears of mucus in both bronchi, stained by Gram's method and pyronin, showed numberless pneumococci. Smears from cut section of the lungs disclosed no organisms.

Anatomical Diagnosis: Obesity. Chronic external adhesive pachymeningitis. Slight chronic internal adhesive pachymeningitis. Cerebral arteriosclerosis. Slight pulmonary congestion and edema. Slight acute bronchitis. Cardiac dilation. Fatty degeneration of heart muscle. General arteriosclerosis. Fatty infiltration of liver. Cholelithiasis. Slight acute splenitis. Fat renlacement in pancreas. Central softening of adrenals.

In conclusion, it would seem that these two cases are examples of an acute pneumococcic infection, in which the toxic effects were far more severe than the symptoms or local physical signs would lead one to infer. It must be admitted, however, that case number two presents other features postmortem which were undoubtedly important as accessory causes, but the general symptoms and physical signs would seem to justify the opinion that the acute pneumococcic infection acted as the primary and important cause of death.

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Syphilis and the Abderhalden Reaction.—G. Sangiorgi and M. Trossarello find in contradiction to the results obtained by certain American observers that the Abderhalden reaction has no value in the diagnosis of syphilis. This is the case whether the antigen employed is obtained from the human being or whether it is derived from the rabbit.—*Pathologica.*

THE RELATION OF LANDRY'S PARALYSIS TO POLIOMYELITIS.*

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In 1859 Landry described the following characteristic symptom complex: Individuals who up to the time of their illness have been in perfect health develop a flaccid paralysis in the lower extremities, preceded by a general malaise and paresthesias in the affected parts. Within a few days the muscles of the trunk and then those of the upper extremities become involved in the same manner. And finally the muscles of deglutition, articulation, and respiration become paralyzed, and the patient dies of respiratory failure within a few days or weeks. Exceptionally some cases present a mild degree of these phenomena and survive without leaving any residual paralysis. In these cases the muscles last affected are the ones first to recover their function. He points out that there is no atrophy of the muscles and no electrical changes in them, and that he found no pathological changes upon autopsy.

A great many cases, however, have been reported that vary from the first description. Muscle atrophy with electrical changes is frequently observed, sensory disturbances are not uncommon, involvement of sphincters is at times reported, and a unilateral or bilateral facial palsy of Bell's type has been described.

Owing to the more advanced methods of examination the conception of the etiology and pathology of the disease has undergone marked changes. Although Landry was inclined to ascribe the affection to a toxic process, Westphal first demonstrated this to be a fact. The fact that in the majority of cases there are an enlarged spleen, swelling of the lymph glands, hemorrhagic foci in the lungs and intestines, and a nephritis points to a toxic or infectious process. Chantemesse and Ramon observed a large number of cases of paralysis, clinically not dissimilar to Landry's, in an epidemic form at an institution for the insane, suggesting a possible infection. Baumgarten found in one case *Bacillus anthracis* in the blood, and Curschmann cites a case in which typhoid bacilli were found in the spinal cord, of which pure cultures could be grown. Centanni found in a case of interstitial neuritis bacilli in the endoneural lymph spaces. Eisenlohr reports a case of Landry's paralysis due to a mixed infection. He found *Staphylococcus pyogenes* and *Staphylococcus cereus albus* in the spleen and sciatic nerve. In another case he found several types of bacilli. Remmlinger found *Streptococcus longus* and Marinesco diplococci which were partially enclosed in leucocytes. In a case of Marie and Marinesco a bacillus similar to that of anthrax was found in the blood. A virulent pneumococcus was shown to be present in the cases of Roger and Jesué, and of Courment and Bonne. Macnamara and Bernstein grew a tetracoccus from the blood and cerebrospinal fluid of their case, and Sheppard-Hall a streptococcus from his case. F. Buzzard isolated a coccus from the dura which produced a flaccid paralysis in animals. Wochenius found *Staphylococcus pyogenes albus* in the spleen and peripheral nerves.

In recent years, on the other hand, cases of Landry's paralysis have been reported in which no germs were found. Such cases are reported by Seifert, Schultz, Thomas, Kapper, Workman, Hunter, Burghart, Mosny and Moutier, Pfeiffer, and E. D. Fisher.

No less uniform is the pathology of this disease. Not only in former days but also in recent years the microscopical findings were negative in some cases as reported by Ormerod and Prince, Seifert, Kapper, Hun, Girandeau-Levy and others. Goebel and Burghardt report cases with very slight changes. In some cases disseminated foci of an inflammatory character were found in the bulb only; in others again exudates with capillary hemorrhages in the spinal cord only. Wappenschmidt has placed particular weight upon hyaline thrombi in his case as tending to prove the theory of Recklinghausen and Klebs that they are due to the action of bacterial toxins. In a few instances a marked swelling of the axis cylinders in the anterior pyramids was noticed. Widal and Le Sourd mention a neuritis of the roots as the only change.

Since the peripheral nerves began to engage the attention of investigators of these cases, some authors have been able to demonstrate extensive neuritic changes as the basis of this disease. Dejerine and Goetz, Nauwerck, Barth, Ross, Putnam, Klumpke, Boinet, Rolly, Pelnar, and E. D. Fisher report such types.

In recent years the majority of cases reported have been characterized by myelitic or rather poliomyelitic changes in the cord and midbrain, namely, by a perivascular and pericellular infiltration of various types of cells, hemorrhages, thrombosis, and softening. In no few instances, however, a combination of the neuritic and poliomyelitic changes were reported, as in the cases of Krewer, Mills-Spiller, Guizetti, and Knapp and Thomas. In these cases, Krewer argues, the inflammatory process of the peripheral nerves is extended to the cord and bulb, and thus gives rise to the symptom complex of Landry.

With such a varying etiology and pathology of a disease a uniform nosological character can certainly not be thought of. The disease may follow diphtheria, pneumonia, typhoid, variola, anthrax, influenza, and manifest itself as a puerperal polyneuritis. Some even report cases that developed after cystitis with uremia, others claim alcohol and syphilis as etiological factors, and a few have observed the affection to follow traumata complicated by septic cellulitis.

No less important is the fact that we do not know the point of entrance of the germ, nor have we any proof of its manner of dissemination. Furthermore, there is no evidence to show whether the toxin alone or the virus, or both, are responsible for the changes in the tissues.

Poliomyelitis.—The symptomatology of this affection is by no means uniform. In all cases, it is true, fever is the first symptom, but only one-third are accompanied by gastrointestinal disturbances. Headache and pain along the spinal column are as a rule a constant accompaniment. Meningeal symptoms are present in a large majority of cases. Stupor is rare; the intellect is clear.

The focal symptoms, as we all know, are not uniform. We have come to recognize the spinal, cerebral, bulbar, pontine, cerebellar, and mixed types. In the spinal type we have, of course, the flaccid paralysis of one or more extremities, with marked atrophy and reaction of degenera-

*Read before the New York Neurological Society, June 1, 1915.

tion, according to which segments may be involved. It is rarely of an ascending character. In cases that end fatally we hace a simultaneous involvement of the bulb and spinal cord. The cerebral cases, it is quite obvious, result in a spastic hemiplegia, with or without epileptiform convulsions. The purely bulbar or pontine types yield cranial nerve involvement. A peripheral facial paralysis is the most common result. Ataxia and tremors, with nystagmus, we find in the cerebellar cases. In the mixed types the symptom complexes vary with the site of the lesions. Some authors described a polyneuritic type, but this is rare, and was observed only in large epidemics. And finally a large percentage of so-called abortive types are recorded.

That its etiology is uniform no one will gainsay. The disease is preeminently an infantile one; it occurs in epidemic form; and shows very definite seasonal variations in its incidence. We all agree that it is both infectious and contagious. Flexner and Noguchi have definitely proven that there is a distinct coccus that produces the disease. Many important data about the character of the virus are available. I have established the fact that the nasopharynx is the point of entrance into the system.

The pathological changes of poliomyelitis are uniform in every case. It matters not what part of the central nervous system is affected. And that is true of clinical and experimental cases as well. Macroscopically, there is a pronounced hyperemia of the cord and meninges. The vessels of the brain are congested, and there is always a fair amount of edema of the brain and cord. There is little, if any, increase of the cerebrospinal fluid. On section the brain and cord have a moist, translucent, edematous appearance, and the gray matter of the cord is often swollen so that it projects above the level of the white matter. Frequently punctate hemorrhages can be discerned with the naked eye. The virus, as has been established, is propagated by the lymphatic system, and we have, therefore, foci of congestion and edema in various glands.

Histologically the disease is characterized by a perivascular, interstitial, and pericellular infiltration of round mononuclear, polymorphonuclear and endothelial cells. The ganglion cells involved are those of the anterior horns, Clarke's columns, spinal ganglia, nuclei of the cranial nerves, basal ganglia, and the cortex. Chronologically the perivascular lymph spaces of the pial vessels in the anterior longitudinal fissure of the cord and the pericellular lymph spaces of the spinal ganglia are the first ones to be involved. This has been experimentally demonstrated as early as on the third day after infection. This infiltration follows along the sheaths of the central vessels of the cord into the anterior horns. The vessels of the white matter do not escape the invasion. Furthermore, there may be a diffuse or simply focal infiltration. The capillaries are engorged. Hemorrhages are always present.

Since we have a definite species of bacterium to deal with in this affection, it is imperative that we show whether the germ or its toxin is at work, or both. It has been established by experiments and clinical observation that, whatever exotoxin there may be, it is a negligible quantity and of no great toxicity. Nor is the endotoxin very toxic. I have succeeded in liberating the endotoxin, and found that the product of a suspension of a virulent virus, of which 0.1 c.c. did bring a monkey down in six days, would kill a rabbit of 900 gm. only when injected with 15 c.c. Clinically we have cerebral symptoms of a mild type, which are due to a hyperemia, and not excessive toxemia.

And lastly, the cytological findings in the blood and spinal fluid of cases of poliomyelitis are so typical that for a time those were thought to be the criterion of the affection. The blood presents quite early in the disease a leucocytosis, with a predominance of mononuclears. The spinal fluid in the early stage is clear, and contains 85 per cent. or more lymphocytes. The cell count may range anywhere from 30 to 900 cells per cubic millimeter; its globulin content is increased, and its reducing property of Fehling's solution is intense. I, therefore, conclude that:

1. Landry's paralysis is a clinical entity with varying pathological changes. These may be primarily in the peripheral nerves, and confined to them, or they may be myelitic only, and again neurocellular.

2. Poliomyelitis is a pathological entity with varying symptom complexes. There may be flaccid paralyses, with muscle atrophy, or spastic paralysis, or cranial nerve involvement, also ataxias and tremors, or mixed types.

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MEDICAL COLLEGES RESPONSIBLE FOR MANY SPIRIT AND DRUG ADDICTS.

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It has been observed that some professors of therapeutics who enthusiastically praise opium, its alkaloids, cocaine, and coal tar derivatives for their good effects, are literally training a certain number of students to become addicts in the future. Statistical studies of inebriates and drug takers, particularly among the medical profession, indicate that a certain number began to drink and take drugs during the time of medical training. Years ago this was more common than at present. The

old-time teachers used to urge students to test personally and otherwise many of the drugs, so as to have some actual data concerning their effects. In later times the professors often refer to their own experience in hospitals, of the effects of certain drugs, to show that the statements in the textbooks are reliable. A medical teacher, now dead, for years gave lectures on opium and its alkaloids, cocaine and its possibilities. He described personal experiments with them on himself and others, and their effects, in such a graphic, entertaining way, that many of the students became fascinated. Years afterwards he resigned and died later, when it was ascertained that he was a drug addict. A study was made of the students who graduated under his teaching for a period of ten years, and it was found that a number of them every year became literally spirit and drug addicts. Another teacher of considerable eminence extolled these drugs and in a textbook which he wrote there was little said of the danger from their use, but very graphic descriptions were given of the good effects following their narcotic action. It was noted that a number of the graduates of this college became drug takers, and the inference was clear that his vivid teachings and praise of the action of the drug was responsible for this. This undoubtedly exists to-day, although probably very much less than formerly. The modern textbooks on materia medica and therapeutics give evidence of this in the detailed descriptions of the action of narcotics, with very brief reference to their possible dangers.

Not long ago alcohol was considered a stimulant of pronounced value and its use was urged in almost every condition of disease with little or no reference to any dangers from this source. Now alcohol is seldom mentioned as a drug and little or no reference is made to the dangers from its excessive use. In four of the largest and most prominent medical schools in this country the teachers of therapeutics and practice say very little about its value except in certain diseases, and nothing of its dangers. Opium and its alkaloids receive a much more detailed study, some with great exactness, but there is the same hesitancy and conservatism about the possibility of being injured by it. It is safe to assume that these colleges are teaching substantially what is taught in other colleges and implying by their teachings that excessive use of any of them is largely a matter of moral lapses which it is not the province of science to discuss.

A recent example is probably not unsual and in all probability it explains the early death of a number of good men. A physician and teacher of unusual eminence became an invalid at 45 and confessed to have taken spirits and opium at nights for many years and yet no one suspected his addiction. It was found that he began using drugs on the advice of a teacher to overcome disordered conditions and derangements of digestion and had continued it with more or less secrecy up to the time of his final collapse. The use of spirits and drugs among teachers is not uncommon. At college banquets this is confirmed by the habits of the professors who drink or abstain without evident care for their example. In some colleges there are students' banquets in which the professors join, there is little change. All drink as in olden times. In others the opposite prevails. Professors who write textbooks for the students indicate very clearly their own private convictions concerning spirits and drugs, not so much by what they say as by what they leave unsaid.

In 1913 a canvass was made of the habits of teachers in over forty different colleges in the large cities where several thousand students were studying. In every one of these colleges there were so-called moderate drinking professors. In only a few were there distinct total abstainers who asserted their views on this subject with positiveness. The other were noncommittal, and while apparently temperate men in the sense of abstaining from spirits and drugs, treated the whole subject as of little or no importance. The former ridicule and sneers which greeted total abstainers and persons who refused to take any spirits have passed away.

Forty years ago the late Dr. N. S. Davis always concluded his course of lectures on practice at the Rush Medical College with a special lecture on the dangers of alcohol and the necessity for its cautious use. These lectures were considered by many as a sort of a joke and tolerated as the fad of a good man. Years afterwards at his death there were many testimonials from his students all over the country that these were the most valuable talks and had helped them more than anything else he had said. From 1790 to 1808 Dr. Rush gave one or more lectures every year on the same subject in Philadelphia and these became condensed into a book which was the first medical literature on the subject. From that time up to the present it is startling to think how few if any the medical men have ever considered the dangers of spirit and drug taking of sufficient practical interest to make it the subject of teaching to medical students. The fascination of new topics along bacteriological lines and new surgical procedures have overshadowed almost every other subject and the student at graduation, however learned he may be in these particulars, has little or no training concerning the practical facts of spirit and drug poisoning. He must pick these up outside and failing to do this opens a door for quacks, who find a rich field for practice. A very large proportion of the medical graduates of to-day know but very little more than the symptoms of acute poisoning from narcotic drugs and by what means they can be overcome. They accept the theory which directly or indirectly is supported by the professor and family physician on questions of alcoholism and drug taking as extreme views that are more or less unreliable. The laymen and reformer and even a few physicians who urge the danger of spirit and drug taking are not expressing scientific views but only impressions that are unverifiable. The student discovers that alcohol, taken on social occasions and at banquets, gives a certain exhilaration that is very pleasing. Later he realizes that narcotic drugs have a sort of comforting, quieting effect on his brain and organism that are equally pleasing. From this he reasons that these are all excellent drugs, that it is only the misuse of them that is perilous, and often this fact makes a permanent impression on his whole life. For a time, if the circumstances are favorable and the opportunities present themselves, he makes continual experiments to find the safe use of these drugs in his own personal experience, not only in his practice but for his own general comfort. After a time the first effects wear off and only painful sensations follow. Then there may be conditions of immunity in which spirits or drugs may be taken a long time, but

sooner or later some intercurrent disease breaks out with chronicity and death, which is ascribed to exposure, while the real causes are overlooked.

This is by no means an uncommon experience. The diseases and disabilities of physicians in middle life are very often associated with and proceed directly or indirectly from some form of spirits or narcotic drugs taken on special occasions to relieve special conditions. Often they begin this in early life, particularly when medical students, and use the drugs off and on, until finally they are used continuously. Not unfrequently, physicians awaken in early or middle life to the fact that they are unable to extricate themselves from what they term the habit of drinking or using drugs. They make great efforts to overcome this and if successful realize how much loss they have caused to their vitality, and permanent lowering of efficiency both physical and mental.

Medical colleges are certainly at fault for not incorporating the great questions of alcoholism and drug taking among the topics which they teach their students to be familiar with. Physicians should be trained to understand the degenerations that come from the continuous poisonings of narootic drugs, and their effects on mind and body, cumulative and concealed. These are topics which are pressing for solution, and laymen and philanthropists often look in vain to learned physicians for instruction and help on these great questions.

Many exact scientific studies into the causes of disease come back to alcohol and drugs as primary and distinct factors. How to prevent and treat these causes is a purely medical topic, requiring medical training and skill to discern the real causes and conditions and train the mind and body to overcome them. If the therapeutists in colleges would associate, with their excellent lectures instruction on narcotics, the dangers which are likely to follow from indiscreet use, also the susceptibility of certain organisms to become diseased by these agents, they would supply a great want which physicians everywhere realize. Innumerable medical men in every section of the country are consulted by laymen as to what can be done to relieve the sufferings of the victims of alcohol and other narcotics and what measures can be used to prevent their development and growth, but they are utterably unable to give anything more than the most general counsel, and that is not always of a practical character. Many physicians turn these cases over to quacks, believing that there is a large moral element in their conditions which irregulars or clergymen can treat as well as they. This is fatalistic and is followed by an increased army of degenerates and chronics that could and should have been prevented from becoming such by proper treatment at the right time. Young men starting in practice are often called in to treat acute cases of alcoholism and drug taking. The inference is that they are better trained than the family physician, and being strangers there is less danger of publicity in employing them than one who knows the family well. The young physician is without any practical knowledge, except what he may have learned in some hospitals, and this is often of the most vague and informal character. In desperation he gives opium or its alkaloids. The results, if good, are accidental. If the patient continues to employ the physician he becomes disgusted and soon turns the patient over to another whose ignorance may be more dense than that of the old family physician. Had the original medical attendant received some proper training in the college he would have been able to retain a patient that now goes wandering around from one quack to another until he dies. The family physician in the course of years has picked up some knowledge concerning such cases. Much of this may be influenced by his own personal habits, and when this fails to become practical he turns also to the quack. Thus an increasing army of patients are neglected and lost to the regular profession, patients who could have been treated successfully and cured to a large extent.

The intense conservatism of medical colleges and medical teachers has closed the door on many a field of practice that their students could and should have occupied. The post-graduate schools ought to recognize this field of psychoses and give practical instruction that could be put to service in every community in the country. Every active physician comes in contact with spirit and drug takers and the laymen of his community turn to him with increasing frequency for counsel and instruction as to what shall be done. He is unable to give it, and this brings wandering irregulars and enthusiastic reformers into the community who try to teach the great doctrines of preventive medicine concerning spirit and drug taking. The family physician is ignored. He of all persons who should be best able to advise and counsel and give lectures to his patrons is silent. The fault is in the medical colleges and should be remedied.

Alcohol and syphilis are recognized now as very widespread causes in a great variety of neuroses and psychoses as well as acute inflammations. Syphilis has attracted some attention and is the subject of lectures in colleges, but alcoholism is still regarded with indifference and is practically unknown. What the medical student of to-day needs is practical instruction as to how to meet and treat conditions that are common and how to advise and counsel on the great hygienic questions of the day. His whole future turns on his practical knowledge of the great questions of science that call for solution in every community. Spirit and drug-taking are two of these topics and should be taken up in every medical college in the country.

Walnut Lodge Hospital.

PREVENTION AND TREATMENT OF THE DEFORMITIES IN ANTERIOR POLIOMYELITIS.*

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Anterior poliomyelitis is rarely diagnosed in the acute febrile stage. One usually makes the diagnosis after the paralysis appears. Even though the diagnosis is made early, very little can be done at that time to prevent the later damage. Flexner has shown that hexamethylenamine is of greatest value before any of the symptoms appear; after the infection occurs, it has very little or no effect. It should be used, nevertheless, as it liberates formaldehyde, which may act as an antiseptic and bacteriocidal agent in the nasal cavity and cerebrospinal fluid.

In the acute stage or stage of onset, there are usually fever, headache, vomiting, intestinal dis-

*Read at the Bronx County Medical Society, May 19, 1915.

turbances and very often severe pain. According to Flexner, this pain is due to the involvement of the intervertebral ganglia. The treatment of this stage consists of rest, freedom from excitement and activity, and recumbency for a period of days or weeks. All cases should be kept quiet until the tenderness has disappeared.

In a few hours or a few days after the onset of the disease, paralysis appears. This paralysis is usually of the flaccid type, reflexes are lost ,and the reaction of degeneration soon appears. At the onset, the paralysis is usually much severer than the one that persists. One or more limbs may be affected. The lower extremities are far more often paralyzed than the upper (Whitman).

The affected parts are tender to the touch and motion. This tenderness may persist for several weeks, during which time it is best to leave the patient alone except for the prevention of the contractures.

Prevention of deformities: Deformities are not always caused by a permanent paralysis, but may be caused by the force of gravity, by the unopposed action of the active muscles and by functional use. In a large number of cases, one or more of the dorsi-flexors of the foot are weakened or paralyzed and the foot drops under the influence of gravity; if this attitude is permitted to persist, the muscles on the posterior aspect of the limb accommodate themselves to it and become shortened. Hence to prevent this deformity the foot should be kept at a right angle to the leg during this painful stage. A very good and simple method is to have the soles of the feet rest against a box covered with a blanket and placed against the foot of the bed. Other means which have proven of value are the application of a light Volkman's splint, or a posterior moulded plaster of Paris bandage. By these same means splints, braces, plaster of Paris bandages, the deformities at the knee (which is usually a flexion deformity), and at the hip (which is usually a flexion and abduction deformity of the thigh on the body, due to a contraction of the fascia lata) can be prevented. This treatment will allow the patients to recover a considerable degree of muscle power which would otherwise be lost entirely or regained much later by operative procedures. Massage, passive movements and electricity should not be used during this tender stage. Frequent change of position is desirable so as to prevent pressure sores. Keeping the patients out of doors is very beneficial.

Treatment of the deformities: After the tenderness is gone, active treatment should be begun—the sooner the better. The resistance of the patient should be built up with general tonics, fresh air, and good food. Massage, electricity, and muscle training should be given until the period of spontaneous repair has passed. This period is an indefinite one, and by most authorities is to last between one and two years.

The massage should be given daily for fifteen minute periods; it may be given either with an electrical vibrator or manually, preferably the latter. The mothers are taught how to massage the affected parts at home, so that no time is lost. The benefits derived from massage are: (1) The improvement of local and general circulation. (2) The prevention of muscular deterioation.

In regard to the electrical treatment, there are a great many authorities who claim that little benefit is derived from its use; many others, however, lay much stress on its use. In our clinic at the Lebanon Hospital, we have found it of some value; but certainly not the specific benefit claimed by some orthopedic surgeons. Static electricity is best, because it improves the life of the muscles and nerves, without overstimulation. Should overstimulation take place, much serious damage can be done. Hence it is best to give these treatments for short periods of time, about five to ten minute seances three times a week, alternating them with massage; the current used should be the weakest that will produce a contraction. Where static electricity cannot be had the galvanic current is next best. The faradic current is useless and can only do harm by overstimulating the muscles and nerves. Hydrotherapy is of some benefit, as it increases the circulation and stimulates the growth of the limb. The affected part should be immersed in water 95-100° F. every night for fifteen to twenty minute periods.

Muscle training is the most useful. It is based on the fact that all the motor centers in the cord have not been destroyed, unless the destruction in the cord has been a very extensive one. Hence new connections and new paths for sending a motor impulse from the brain to the muscle are produced. Passive movement is the first one done. It should be done slowly and to the fullest range of motion possible, pausing at each extreme and returning the part to the normal position when the motion is finished. The same movement is then performed against slight resistance offered by the patient, the resistance being gradually increased. The patient then performs the movement himself while the physician guides it along the proper plane. The guidance is gradually diminished and as the patient becomes more proficient the guidance is removed entirely; finally the movement is done against the resistance of the physician; the resistance may be varied according to the degree of paralysis present. In addition to this muscle training, a good means at our disposal is to get the patient on his feet as soon as possible after the painful stage and in that way have him use his muscles by his own efforts, to walk and balance. The sitting posture is most adaptable for training the muscles of the spine and trunk.

If there is fixed deformity, by which is meant if the functions of a joint are limited and there is restriction of its arc, this deformity must be overcome before any treatment can be satisfactory. The deformities usually met are footdrop or pes equinus, flexion deformity at the knee, flexion and abduction deformity at the hip. In the spine the most troublesome deformity is lateral curvature. At times if the paralysis of the posterior group of muscles is extreme, kyphosis may be induced. In the shoulder the deformities are usually slight, because the part is not subjected to the strain of weight bearing and because the force of gravity is opposed to muscular contraction. The best way to overcome these contractures or fixed deformities, is by gradual forcible stretching and the subsequent application of plaster of Paris bandages, splints or braces. One must always bear in mind the possibility of injuring nerves and blood vessels when stretching a limb. If the contracture deformity is too powerful to be controlled by these means, tendon lengthening by either the open or subcutaneous method, myotomy with the subsequent application of plaster of Paris bandages should be resorted to. These preliminary steps

should subsequently be followed by mechanical or operative measures. A few words about lateral curvature of the spine. This deformity should be looked for in every case and where present, especially low down in the spine, forcible correction, and retention by a Kleinberg brace, or an Abbot jacket, perferably the former, should be done. The brace or jacket must be applied early and worn persistingly because the cause of the deformity which is the unilateral paralysis is always present to aggravate the condition. If after about one or two years of conservative treatment cases do not respond satisfactorily they are then ready for radical operation.

Operations are undertaken (1) to correct the fixed deformity when present; (2) to improve the muscle function, and (3) to secure stability of useless joints.

1. The correction of fixed deformities has already been discussed.

2. The improvement of muscle function is usually accomplished by transplanting the tendon of a sound muscle for that of a paralyzed one. It is best to defer this operative procedure for a period of at least one or two years after the onset of the paralysis as within that time all spontaneous recovery of function should have taken place. Good function in the limb operated upon can be expected in about six months. One must always bear in mind that massage, muscle training, active and passive motion of the tendon, free from body weight, should invariably precede subjection of the joint to the heavier strain of the body weight.

3. To secure the stability of flail and other more or less useless joints: This is usually done when so many muscles are paralyzed that transplantation cannot be undertaken. Arthrodesis or the production of artificial ankylosis, is one of the methods used. It is of greatest service at the ankle joint where it may serve to fix the foot at a right angle to the leg. Arthrodesis should not be done in children under fourteen years of age, where the knee cannot bear the body weight, or on the knee in children on account of the interference with the epiphyseal growth. Astragalectomy, as advocated by Whitman, has been performed in paralytic calcaneous with excellent results. Osteotomy in some instances, especially in extreme deformities in the adult, has proven useful in overcoming resistant distortion. The silk ligament suspension operation as advocated by Bradford and Allison and reported upon favorably by Ryerson, is especially of value in foot drop.

Nerve grafting, as advocated by Spitzi and others with the aim of restoring muscular power in paralyzed muscles by uniting the inactive nerve with one which is still active, has been performed with encouraging results but the operation is still in the experimental stage.

In conclusion it may be said if a case of anterior poliomyelitis is seen early it is possible by mechanical means as splints, braces, manipulation, muscle training and massage to prevent the occurrence of contractures. In the later stages, we have at our disposal means such as manipulation, tendon transplantation, tendon fixation, arthrodesis, and various bone operations to entirely correct some and improve probably the majority of the deformities that are usually met with.

I wish to thank Dr. S. Kleinberg for his kind suggestions.

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ECZEMA AND THE BULKLEY RICE DIET.

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The etiology of eczema is very imperfectly understood by the average general practitioner; this is due to the teaching of the textbooks, which give any number of "predisposing and exciting causes," but no definite proofs. Six cardinal symptoms are popularly supposed to be *always* present, namely erythema, itching, moisture, crusts, fissures and infiltration.

For many years I have been a sufferer from a form of eczema, seldom recognized by the general practitioner and not always by the dermatologist. The first sign was itching and sweating between the toes, sometimes followed a day or two later by the appearance of a vesicle, which itched incessantly. Most vesicles, when opened, will discharge their contents for awhile and then dry up. Not so, however, in this variety. When opened, they oozed for some time, then closed up again as if they had never been touched. Next the vesicles formed between the fingers. These persisted for months, accompanied by intense itching. Opening up the vesicles in the hope of assisting them to dry up did not improve matters, for they discharged for a long time or formed new walls.

For nearly twenty years I have been afflicted with this annoying condition. Curiously enough, these vesicles appeared and usually persisted throughout the warm months of the year. On the other hand, during the winter months, the vesicles disappeared, and were replaced by fissures, usually on the tips of the fingers just below the nails, at other times on some other part of the hands. The first sign was a small painful point, like the mark left after using a hypodermic needle. The next day the skin had split open about ½ mm. wide, and three or four mm. long. The fissure did not itch, but was very painful.

In October, 1914, the vesicles spread to the palms and to the dorsum of the hands, with the formation of crusts, fissures, and a serous discharge. There was no rash on any other part of the body. It was now high time to see a dermatologist and I decided to consult Dr. L. Duncan Bulkley of New York.

On October 29, after taking a careful history, and examining me thoroughly, Dr. Bulkley put me on three meals a day, consisting of nothing but hot boiled rice, bread and butter, and water. My weight was then 185 pounds. I was advised to examine a specimen of my urine and found that it showed an excess of indican.

It is well to mention here that I was not only a great meat eater but also a heavy eater and that I did not get enough exercise in proportion to the intake of food.

When I reported myself at Dr. Bulkley's office a week later, November 5, the condition of the hands had improved, and the itching of the toes had entirely stopped. However, a maculo-papular rash had appeared on the legs, thighs, arms, and trunk, showing that the excess of protein had not yet been eliminated. My weight now was 179 pounds. I was placed on rice diet for another week.

At my third visit, November 12, after two weeks' treatment, the rash on the hands had greatly improved, but the erythema and papules on the limbs and trunk were at their worst and the itching was

well nigh intolerable. I was now allowed a purely vegetable diet but I was told to set apart one day in the week for a rice diet. On November 13, I dined with some friends, drank one cocktail and some light French wine and ate a rather thick piece of tender steak. The effect of this meal was very striking, for within two hours the itching became intense, the erythema looked angry, and the papules became more elevated. The rash reappeared in places where it had disappeared.

On November 17, at 5 A.M., I returned from an obstetrical case, and took a small bottle of beer and some crackers before going to bed again. Waking up about 9 A.M. I was thunderstruck at my condition, fissures had made their appearance on the fingers and on the palms, and crusts were scattered over the dorsum of both hands. The rash on my limbs and trunk broke out anew. This experience showed plainly the overstimulating effect of a small amount of alcohol. The former experience of November 13 I attributed entirely to the steak. The next day, November 18, the condition seemed a little worse. On November 19, I saw Dr. Bulkley. There was slight improvement as far as appearances went, but the itching was intolerable. I noticed, too, this day that I was intensely sensitive to the cold, and did not feel comfortable in the house until the temperature was raised to 84° F. I was ordered on a rice diet for five days. Weight 182 pounds. On November 20, the rash had improved greatly. The right hand was almost normal, except for healing fissures; the left hand had improved, too, but the areas occupied by the interossei muscles were still red but of a dull color. The rash on the limbs and trunk had diminished and the itching was much less. November 24: Right hand practically normal. November 25: Fissure appears on tip of middle finger of right hand. November 26: Took some turkey for dinner. November 27: Left hand practically normal. Rash on trunk and limbs persists but the itching is much less. November 29: Hands normal, rash on trunk and limbs improving, points of selection being confined to the skin over the extensor muscles of the forearms and arms and over the insertion of the deltoid. The rash entirely covered the leg and thigh but the last spot to disappear was on and below the posterior superior spines of the pelvis. On the trunk in front the rash never extended above the umbilicus, and behind it occupied the lumbar region and the shoulder. The rash fortunately never appeared on the neck and face. This day I dined at a club, ate everything in moderation, which had no effect on me the next day. Dec. 4: Rash almost gone on trunk and limbs. Took salmon for lunch and dinner. Dec. 5: Effect of salmon plainly seen today; erythema, papules, and itching reappear.

From this time on I took chances in the selection of my food, eating as much protein in the shape of fish, meat, and cheese as I dared without making conditions worse. Owing to this, the erythema and papules did not entirely disappear for a couple of months. I am sure now that had I confined myself to Dr. Bulkely's rice diet or purely vegetable food, my condition would have improved far more rapidly.

I wish to emphasize the following points:

1. That itching, sweating toes, with or without vesicles between them, signify eczema, from a diet too rich in protein or stimulants. Itching cannot be attributed to tight shoes, for I wear "Ground Gripper" shoes, which are very wide.

2. That itching vesicles on the interossei muscles or between the fingers, signify eczema.

3. That fissures on the fingers or other parts of the hand signify eczema.

4. That the itching vesicles usually appear during the warm months of the year, and the fissures during the cold months, and that the patient feels the cold intensely.

5. That a diet rich in protein or stimulants is the sole cause of this form of eczema.

6. That consequently the rice diet of Dr. Bulkley, followed by a purely vegetable diet, is the only rational treatment.

My gratitude and thanks are due to Dr. Bulkley for his patience, kindness, and interest in my case.

15 NORWOOD AVENUE.

A SIMPLE TREATMENT FOR IVY POISONING.

BY JOHN E. LANE, M.D.,

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ONE of the most frequent forms of dermatitis venenata, ivy poisoning, affords an excellent illustration of the statement that "the efficiency of the treatment of a disease is inversely proportional to the number of remedies recommended." Hyde remarked that "many topical remedies have been vaunted as specifics for this disorder, from the brine of a pork-barrel to a decoction of the leaves of the plant itself."

While it is probable that comparatively few physicians have tried the two "specifics" mentioned, there are few who have not tried with disappointment the "many topical remedies" which are not mentioned by name. As the list of remedies remaining in the text-books that refer to this disease is somewhat long, the physician is puzzled as to which to try first, and frequently tries one after the other till the trouble subsides.

For some time I have used in most cases one thing only, and the relief, both to physicians and patients, of using *one* simple and fairly efficient method, has been so noticeable in a large majority of the instances in which it has been recommended that I am led to call further attention to it, making no claims for its novelty, for its being a specific, or that it is the *best* method of treatment. Still it has some advantages. It is cheap, it is harmless in any location, it is clean (something that is not true of many of the mixtures commonly used), it is always easily accessible and easy of application, it is suitable for any stage and for any case extensive enough to require much treatment, and it gives as much relief and comfort to the patient, and hence is as little unsatisfactory, as anything I have tried. The comfort of the patient is the chief indication to be met as the disease is self-limited.

I have had no experience with trying to abort the disease and do not remember having seen any authentically aborted cases of it. I have had no experience with ointments in fully developed cases, except to remove them. They are not indicated as they are hard to remove without damage to the underlying skin and if they become adherent they favor the development of infections.

The treatment is this: The affected areas are loosely covered with two or three thicknesses of gauze or cheesecloth, which is kept continually moist with a solution of boric acid, the strength of which is unimportant. The gauze is frequently changed in any case, but the frequency depends

somewhat upon whether there is much oozing from the blebs. The larger blebs are opened but it is unnecessary to touch the smaller ones. If the gauze is used more than once it is rinsed and boiled before it is reapplied. As the largest number of these cases occur during the hot weather it usually adds to the comfort of the patient to keep a small piece of ice in the solution so that it may be applied cold. This is usually the whole treatment, but in cases where the itching is very intense some additional relief may be obtained by gentle sponging with a weak solution of alcohol when the gauze is changed. A simple ointment may be used for protection after healing has begun and the skin has become fairly smooth.

The advantage of this treatment in addition to those already mentioned is that no trauma is inflicted and that if powder settles on the skin from evaporation of the liquid it is easily dissolved at the next application by using a more dilute solution.

PROFESSIONAL BUILDING.

A NEW WAY OF STAINING CELLS IN THE CEREBROSPINAL FLUID.

BY B. LEMCHEN, M.D.

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WHILE the stain that I have been using for cerebrospinal fluid is not new, the method in which I am doing it is new. I simply take benzidine and make up a 2 per cent. solution in glacial acetic acid, which I call solution number one. The other solution is hydrogen peroxide. When I am ready to count the cells I take a small test-tube and put in solution number one and an equal amount of solution number two, mixing the two together. I take a pipette and draw up the stain to .5 and then draw the spinal fluid to the 11 mark. The two are mixed together and then put on the counting chamber. I use the Fuchs-Rosenthal, but any other chamber would do just as well. By this method the red blood cells are stained blue and the polymorphous cells are stained a light yellow, while the nucleus is visible by having blue granules in it. Parts of the periphery are stained blue. In the lymphocytes, the periphery is stained dark blue, looking like a dark blue ring. The middle of the cells is not stained, except in places there are blue granules. In the plasma cells, the periphery is stained dark blue, almost black, and the middle of the cell is all clear—does not take any stain at all.

Now, it is hardly necessary to refer to the value of counting cells in cerebrospinal fluid, because wherever the meninges are involved there is always an increase of cells. While some authorities claim that from one to five cells per c.mm. are found in the normal and that we find an increase in cells (lymphocytes) in tuberculous meningitis and that we also find an increase of cells (polymorphous leucocytes) in any other form of meningitis, all authorities agree that plasma cells are found only in syphilitic involvement of the meninges. Of course, men of much experience claim that they could recognize plasma cells even with the ordinary stains that have been in use; for instance, methyl-violet or the Wright stain, and acetic-acid; but a good many physicians will hardly be able to recognize them, and, in fact, with the old stains it is sometimes very hard to tell whether we have a red blood cell or a lymphocyte.

Therefore the value of a simple stain that will differentiate the cells in the spinal fluid is obvious, as blood is sometimes, or a good many times, mixed with the fluid in such a small amount that one could not tell it with the naked eye.

In addition to this I have found that with the use of this simple stain we can differentiate the cells even with a low power of the microscope. In large hospitals, where there are many cell counts to be done every day, I believe it will prove of some value to employ the stain in the way I am using it in our laboratory at the State Hospital in Dunning.

Medicolegal Notes.

Opinion Evidence as to Cause of Death.—In an action on an accident policy for the death of the plaintiff's husband, which had taken place when he was sawing upward through planking, in a cramped position, on a hot day, the appearance of the deceased was that of one who had died of a ruptured artery, according to expert medical testimony. It was held that judgment for the plaintiff could not be based on such testimony alone, which would require a further inference that the ruptured artery resulted from accident, based on the expert's inference that the death resulted from a ruptured artery, and the jury may not pile inference upon inference. The burden was on the plaintiff to show by competent evidence, to a resonable certainty, that the accident was at least an active agent in producing the death. —Wright vs. Order (Mo.), 174 S. W. 833.

Indorsement of License of Another State—Examination in English.—In mandamus to compel the New York Board of Regents to indorse a license granted the relator to practise in the State of Michigan, it appeared that the relator was an Italian and a graduate in medicine of the Royal University of Palermo, Italy. After coming to this country he became a resident of Buffalo, N. Y. Desiring to practise medicine in the State, he found that he would have to pass a regents' examination in English. He thereupon applied to the Michigan State Board of Registration for admission to the examinations conducted by that board, and having passed these examinations, was granted a medical license by that board. That examination was taken in Italian, English not being a requirement in Michigan. Within a few days after that he made application to the New York Regents for indorsement of his Michigan license. They notified him that his application had been returned to the Michigan board with the request that it withdraw its indorsement, on the ground that by going to Michigan for the examination the relator had avoided the specific requirement in New York State that in order to be admitted to its licensing examination he would have to pass the Regents' examination in second year English for foreigners. The Michigan board withdrew its indorsement. The relator maintained that he was entitled to the indorsement because the Michigan board was one "maintaining standards not lower than those" prescribed by the New York board. It was held that, while the discretion given the Regents in according or withholding the indorsement of a license cannot be arbitrarily exercised, it was not an improper exercise of such discretion to refuse to indorse the relator's license, though the Michigan board had been registered as maintaining a standard not lower than that required by the New York Public Health Law.

The only registration of the Michigan board was effected, if at all, by a reciprocity agreement between the authorized officials which authorized the Board of Regents to request a consideration of any certification by the Michigan board of a license granted by them if the Regents had any reasonable doubt of the qualifications of an applicant. If this agreement effected a registration of the Michigan board within the New York statute, the registration was subject to the provisions of the agreement, while, if the agreement was not a statutory registration, there was no registration authorizing an indorsement of the license; so that in neither case was the relator entitled to have his license indorsed.—People v. McKelway, 163 N. Y. App. Div. 286, 148 N. Y. Supp. 818.

MEDICAL RECORD.

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THE BROADENING SCOPE OF THE BINET-SIMON TESTS.

THE ability to apply some sort of rule or measure to problems which confront us is very gratifying to one aspect of human psychology. It does away with the feeling of insecurity. Hence the pedantic exactness of neurotics, according to Alfred Adler of Vienna, who says that they suffer from a chronic feeling of insecurity and seek a sense of security by endeavoring to gauge everything exactly, to drop hitherto unknown elements into definite mental compartments. The popularity of such tests as those of Binet-Simon is due largely to this manner of thinking. Intended by their originators only for juvenile use they have been applied by other investigators to aid in the solution of certain puzzling adult conditions. Thus the adult offender, who does not show any gross psychotic symptoms, is subjected to these tests and often found wanting.

W. C. Sullivan, writing in the *Lancet* of March 23, 1912, reported the use of these tests on a number of prisoners with interesting results. He especially recommended them for application to those adult delinquents who show a superficial liveliness and even wittiness which is apt to mislead untrained observers and cause them to overlook intellectual defects. Dr. Sullivan advises certain alterations in the tests to make them more suitable for adults.

Following in his footsteps M. Hamblin Smith (*Lancet*, July 17, 1915) has applied the tests to a number of prisoners. He divides his cases into "feeble-minded" and "not feeble-minded," but does not make his distinction quite clear, although he is careful to state that by "not feeble-minded" he does not necessarily mean mentally normal. Like most investigators who have used these tests on subjects other than those for which they were intended, Smith recommends various modifications of them. He thinks that they are useful only for males of 25 years and below and for females of 30 years and younger. Above these ages, he asserts, cooperation is difficult to obtain and the subject is more inaccessible. He says that the failure to reach any given standard of intelligence is not of itself sufficient reason for regarding the subject as feeble-minded.

Another field for the Binet-Simon tests is exploited by Louis Wender (*N. Y. Medical Journal*, March 6, 1915), who thinks they are valuable in the senile psychoses, especially where the hallucinatory and delusional fields are not prominent, but where the mental disorder consists rather of a simple deteriorating process. Wender examined thirty old men of this type. He found that the longer the disease had been in existence the more pronounced was the retrogression. After suggesting several revisions of the tests the writer gives two instances where they may be of value in seniles. He says that where it is difficult to make a diagnosis between arteriosclerotic dementia and senile dementia failure to pass these tests speaks for the latter condition. He also suggests that they be applied to old persons in a community who have deteriorated to the extent that they are not capable of handling their financial affairs and yet who do not show tendencies which would necessitate intramural care.

The problem of the amount of deterioration which exists in chronic alcoholics is often puzzling, and Dr. D. Percy Hickling (*Washington Medical Annals*, May, 1913) thinks that it may be solved by these tests. He says that often a slight degree of deterioration is present in the chronic alcoholic, so slight as to be imperceptible to his associates and yet real enough to impair his social efficiency. Failure to retain positions which he formerly held often drives him back to alcoholism as a refuge. This deterioration may be discovered by the Binet-Simon tests which Hickling recommends applying to all alcoholics who seem to be failing in efficiency. He states that these tests do not show accurately the degree of mental deterioration, but they do show that such exists.

Thus we have many suggestions for the use of the Binet-Simon tests in other ways than for children. Certainly they have the advantage of being simple to apply and of being readily usable by any physician even though he have no psychiatric training. It is only required that he follow closely the directions given by the originators. Judging by the views of those investigators who have worked with them in alien fields we shall have in time complete modifications of the Binet-Simon tests to fit such types as the heboidophrenic, the alcoholic subject, and the senile dement.

FUNCTIONAL DISEASES OF THE ARTERIES.

RELATIVELY scant attention has been paid to the diseases of the arterial system, particularly those of functional nature, when compared with the vast amount of study that has been devoted to the functional diseases of the heart. The former are really three times as common as the latter, as pointed out by Sir Lauder Brunton in the *Lancet*, July 24, 1915. The functions and the disturbances of the arteries may be studied independently of those of the rest of the cardiovascular system. One function of the arteries usually overlooked is their ability to pass blood on into the veins by means of peristalsis. From the days of Hippocrates and of Morgagni abnormal pulsation of the abdominal aorta has puzzled clinicians. Although the pathology of this condition is still veiled in obscurity, Brunton believes that Morgagni was right in ascribing it to nervous irritation. This is probably produced re-

flexly through the solar plexus by some irritation in the stomach or duodenum and occurs especially in cases in which there is a suspicion of ulcer. A pulsating aorta is to be differentiated from aneurysm by the fact that in the former the pulsation is only in one direction while in the latter the pulsation is in all directions.

Abnormally great pulsation is also observed in other arteries, as the innominate, subclavian, and carotid. A frequent throbbing of the large arteries is a common accompaniment of exophthalmic goiter. Brunton believes that the throbbing of the carotids in this disease is due not only to longitudinal elongation but also to lateral expansion and is a manifestation of hyperthyroidism. The throbbing of the carotid on one side in migraine shows that the condition depends partly at least upon the nervous system, although the possibility of a toxemic element cannot be excluded.

Functional disturbances of the arterial system due to dilatation, as seen in blushing and in the flushes of the menopause, are less common and of less importance than those due to arterial contraction. One of the most characteristic of these occurs in migraine which has been studied exhaustively in his own case by Brunton. He finds that the causation of migraine is twofold: (1) a toxemia from the liver or intestines, and (2) a local cause, such as eyestrain, dental caries, or nasal or aural irritation. Other conditions caused by arterial contraction occur in the acroasphyxia of various degrees of severity, its most pronounced type being Raynaud's disease. There is no longer any question, he thinks, that angina pectoris is primarily caused by vascular spasm. So also is the "angina abdominis" thus named by Baccelli but previously described by Brunton and about the same time by Huchard as "angina pectoris pseudogastrique." The point is emphasized that in many cases the symptoms of vascular spasm occur although the vessels affected are healthy. As the arteries become less elastic with age the tendency to constriction frequently becomes less marked. But the effects of atheroma may exaggerate the symptoms caused by actual spasm.

THE PROPHYLAXIS OF MUMPS.

Epidemic parotitis has always been regarded as rather of a negligible quantity among the infectious diseases because of its general harmlessness, and it is probably on account of this attitude that so little is known about its etiology and treatment. It is true that, in children at least, it is a comparatively trivial affection and very rarely accompanied by more than a transient discomfort, but in institutions it is apt to occur in epidemics which occasion a great deal of annoyance to the managers and an excessive amount of work to the meager nursing staff. We have no treatment worthy the name, and isolation as a prophylactic measure is made difficult by the long period of incubation.

As a rule one attack of mumps confers a complete and lasting immunity upon the individual, and it is therefore reasonable to suppose that such a person carries in his blood antibodies against the infectious agent. Working on this theory Hess (*Am. Jour. Dis. of Children*, 1915, x, 99) has recently been injecting the blood of immunes into children who had been exposed to the infection. His results are interesting for in no instance did parotitis develop in a child thus protected. From six to eight cubic centimeters were obtained from a vein of the donor with a syringe and immediately injected intramuscularly. The procedure was, of course, guarded by the Wassermann reaction and in no case was there any rise of temperature or local reaction. He found it possible to use as donors patients in whom the swelling had not subsided and the long period of incubation permitted inoculation some time after the exposure. Blood injected in this way should not cause trouble because of incompatibility and the whole process seems to be devoid of danger. It should prove of value, especially in orphan asylums and similar institutions, where a large number of susceptible persons are collected.

A DISSERTATION ON THE DIAPER.

That the dignity of medical science should condescend to a discussion of the correct application of the diaper would seem strange were it not for the usurpation of this function by knowing aunts and wiser nurses, who have really retarded the evolution of this important perquisite of the nursery. The time has apparently arrived for a radical dress reform in this most elementary of all garments. From time immemorial infants have protested loudly and eloquently against the clumsy method of ensheathing a goodly portion of their anatomy, but until now their cry, although heard only too well, has been woefully misunderstood.

Samuel A. Visanska (*Pediatrics*, July, 1915) believes that the ordinary infant's napkin produces across the lower abdomen a constriction, which is responsible for many intestinal and other disorders. As ordinarily adjusted one end of the napkin is pulled sharply from the left to the right side with the result that pressure is brought directly over the sigmoid. This is regarded as one of the main causes of intestinal stasis in infants, being comparable in this respect to the obsolescent abdominal binder. Another effect of the infant's napkin as usually applied is to produce undue pressure upon the soft and plastic pelvic bones. The antero-posterior diameter of the pelvis is slightly lengthened and the transverse diameter is narrowed. The pelvis is further deformed by the greater pressure being produced on its left side. These effects are much more pronounced if rachitis is present. In the infant the fundus of the uterus is on a line with the anterior superior spinous processes and the bladder when full rises a little higher, both of these organs being actually in the abdominal cavity. Over these is brought to bear for a period of eighteen months or more the bulky mass made up of the ends of the napkin pinned together, the pressure of which mass is increased when the infant sits up. Visanska believes that this factor is responsible for a large share of the uterine and other pelvic displacements so common in women. He cites the Indian custom of wrapping about the papoose a soft unpinned

cloth and attributes the proverbial health and easy childbearing of Indian women partly to the looseness of their entire garb from infancy to old age.

The so-called new method of designing and applying the infant's napkin may have suggested itself already to many a resourceful matron. Indeed, it was from one of them that Visanska first got the idea. The plan consists in adapting to the needs of the infant the principle of the ordinary T-bandage. Instead of the napkin being folded in the form of a triangle, it is cut in the form of a T-square a little longer than wide. The napkin is secured by means of two safety pins, one on each hip of the child. This arrangement is said to afford the necessary protection without subjecting the infant to any discomfort or producing any undue compression.

THE ACTION AND USE OF EMETINE IN ENDAMEBIASIS

In view of the increasing rôle played by emetine in modern therapeutics, considerable interest is attached to the study of the mode and sphere of action of ipecac and emetine in the treatment of endamebiasis. Such study is contributed by Randolph Lyons to the *American Journal of the Medical Sciences*, July, 1915. He finds that when these drugs are administered either by mouth or hypodermically they exert their action only after they have been absorbed into the blood stream, and affect the endamebas only within reach of the circulation, namely, in the tissues. The important fact is brought out that endamebas free in the lumen of the intestine are not affected by either the oral or subcutaneous use of the above drugs. Experimental evidence is cited to show that the amebicidal principles of ipecac when taken by mouth are not eliminated in the feces.

Emetine administered hypodermically fails to destroy the vegetative *Endameba coli*, a parasite simply harbored in the intestinal canal. This fact is supposed to argue against the elimination of the drug from the circulation by way of the large intestine. Relapses are attributed to the survival of some of the endamebas, probably through encystment, some of the cysts remaining embedded in the tissues of the gut, and awaiting favorable conditions to become vegetative. In the carrier state the endamebas are simply harbored in the lumen of the gut, and cause no symptoms. In some unknown manner the intestinal mucosa is protected against the penetration of the organism.

In view of the above facts regarding the action of emetine, it is quite obvious that this drug is best administered subcutaneously. Lyons states that small repeated injections are to be preferred, as they are more readily absorbed, and the effect is maintained. In severe cases emetine should be used intravenously. The oral administration of this drug is not advised because of the intestinal irritation that results. Likewise, emetine is not suited for colonic irrigations. Ipecac is preferable for the gastroenteric route.

As regards the dosage of emetine, it is pointed out that in an ordinary case of amebic dysentery an average of one grain daily or less is sufficient. The treatment lasts one or two weeks. If the treatment is too prolonged or the doses of emetine are too large a diarrhea may arise, and may be persistent. Other ill effects may result from such excessive dosage. For the prevention of relapses an intermittent form of treatment should be instituted in every case, even though cysts are not found.

THE PERENNIAL SUBJECT, WAR TETANUS.

The relationship between the coexistence of the main factors of infection in tetanus and actual infection has never been satisfactorily worked out. No doubt infection very often refuses to develop in cases in which every contributory factor is present; just as it does occur not infrequently when apparently none of the critical factors is present, not even a tangible wound. At a meeting last January of the Hamburg Medical Society (*Deutche medizinische Wochenschrift, May 6*), Rumpel stated that he had made bacteriological and inoculation tests of twenty cases of suspicious wounds, but not a single inoculated animal developed tetanus; nevertheless, of the twenty patients, one developed the disease. Fraenkel believes that the tetanus bacillus cannot be demonstrated in wound secretions in ordinary stained smears. To wait for cultures is tedious, but a new method which Rumpel is developing will, he hopes, greatly shorten the period.

It is not impossible that tetanus will eventually be broken up into several distinct types. One of these may be an endogenous type in which nonvirulent tetanus bacilli circulate in the blood and become activated by certain traumatisms which may be very slight. Another type, mentioned in connection chiefly with trismus nascentium, has been termed the neurogenic, because evidences of infection are completely wanting.

The entrance of Italy into the European war will undoubtedly afford us a line on the value of Baccelli's treatment in lowering the mortality of lockjaw. If, as is claimed, tetanus runs a milder course in Italy than in Austria and Germany, this need not apply necessarily to war tetanus, in which so many aggravating causal factors may obtain. The Baccelli method thus far has not received a systematic try-out in the war, having been tested only by certain individuals.

The Function of the Pineal Body.

Until very recently the pineal body has been considered as a more or less interesting vestigial remnant of a third eye and devoid of any importance whatever. The latest interest of the medical profession, however, the study of the internal secretions or of the endocrine glands, or, as one active cultivator of this field would have it, hemadenology, has become so popular and has rewarded investigators with so many new and marvelous facts that the attempt has been made to include the pineal among those glands. Positive evidence has been lacking. A few cases showed precocious sexual development and, at autopsy, tumor of the pineal, but these findings were not regular, for only a small percentage of the cases of tumor of the pineal showed similar clinical pictures. The inaccessibil-

ity of the pineal body has up to this time offered complete obstruction to the experimental study of its physiology. Dandy, however, has devised an operation (*Jour. Exper. Med.*, 1915, xxii, 237) in which he approaches it through the corpus callosum. This procedure is accompanied by very small mortality, so that he was able to study the effects of the removal of the body in puppies. He removed the pineal body from a number of puppies and followed the animals for varying periods of time, the longest being fifteen months. In all of his animals he was able to find no evidence of sexual precocity or indolence, no emaciation or adiposity, no somatic or mental precocity or retardation. His conclusion is that "the pineal is apparently not essential to life and seems to have no influence upon the animal's well being." He used a sufficient number of animals and an adequate number of controls so that there appears to be no reason why his results should not be accepted. It is a relief to find that there is one structure which is not possessed of a mysterious power for good and evil in the economy, and we can therefore dismiss it definitely from consideration as an endoerine organ.

Vaccine and Tetanus.

One of the stock arguments of the antivaccinationists is that cowpox vaccine may become contaminated with the germs of infectious disease and so transmit the latter to the innocent victim of the assault by the vaccinator. It cannot be denied that tetanus has sometimes attacked recently vaccinated persons, and so there is some plausibility in the contention of the anti's that the tetanus spores were implanted with the vaccine virus. The repeated charges that such has been the case have led Dr. John R. Anderson, director of the hygienic laboratory, U. S. Public Health Service, to undertake a careful investigation of all cases of tetanus following vaccination reported in the past ten years and he has endeavored to collect accurate data concerning such accidents. The results of this investigation and of a series of animal experiments seem to warrant certain conclusions, of which the following is a summary (Public Health Reports, July 16): (1) It is difficult, if not impossible, to produce tetanus in susceptible animals by vaccination with virus containing large numbers of tetanus organisms which have been purposely placed therein. (2) In view of the failure to demonstrate tetanus organisms in the large amount of vaccine virus specifically examined for this purpose, it seems exceedingly improbable that vaccine virus as sold in the United States contains tetanus organisms. (3) From 1904 to 1913, inclusive, over 31,000,000 doses of vaccine virus were used in the United States. Yet information was obtained of only forty-one authenticated cases of tetanus occurring subsequent to the operation. From this it is concluded that had the virus used during that time in the United States been at fault many more cases of tetanus should have followed vaccination. (4) In view of the large number of vaccinations, about 585,000, done in the United States Army and Navy, and the absence from them of a single case of tetanus following the operation, the cases of tetanus following vaccination in the country at large were evidently not due to infection contained in the virus. (5) The average period from vaccination to onset of symptoms of tetanus in 83 cases was 20.7 days, while the average mortality of 93 cases was 75.2 per cent., this being slightly higher than the mortality of cases of tetanus due to other causes with an incubation period of ten days or less. The conclusions based upon these studies were that in case of tetanus occurring 15 or 20 days subsequent to vaccination the infection is not received through the vaccine virus, but in all probability is received from outside sources about the tenth day or later after vaccination. The infection with tetanus is a contamination of the vaccination wound, such as may occur in the case of any other surgical or accidental wound not properly cared for.

A New Disease?

It would be difficult to make the well-informed clinician believe that he could encounter a number of cases of disease presenting the same syndrome which he would be unable to identify and which, moreover, could not be classified even when the best professional advice was secured. And yet this is happening now among the soldiers in northern France, according to the *British Medical Journal* for July 17. For the past three months there have been observed numerous cases of a disorder somewhat like subacute nephritis in its manifestations. Dropsy is sometimes present and the urine contains albumin and casts. It does not appear to be infectious or contagious and the medical authorities have been unable as yet to determine what are the predisposing causes. Naturally there has been a great deal of theorizing. One explanation was that it was an Oriental disease, something on the order of beriberi, but this theory was discounted by the fact that it was not prevalent among the Indian troops. Moreover, as has been proven by Heiser and others in the Philippines, beriberi is dietetic in origin and the soldiers suffering from this strange malady have been shown to have had the same fare as the others. A suggestion which obtained some favor for a time was that these were cases of unrecognized scarlatina, but this has since been disproved. Some observers hold that it is an autointoxication due to the intestinal stasis which necessarily develops when men are subjected to prolonged periods of duty in the trenches and elsewhere. Some authorities saw features in it analogous to forms of metallic poisoning, and with this idea in view have made searching analyses of the food, water, and the patients' urine. Whatever may be the cause of this new disease, it does not seem to be very serious except in its temporarily incapacitating effects, and it is probable that a further period of observation will clear up its etiology.

Experimental Infections and the Respiration.

Very little work has been done upon the subject of the effect of the entrance of bacteria or of bacterial toxins into the body upon the respiratory rate and rhythm. Such an investigation has been conducted by Carmelo Cafiero and Giovanni Lorenti (*Pathologica*, July 1, 1915), who studied the effect of both anaerobic and aerobic bacteria and their toxins upon the respiratory center. They found that immediately after the injection of living anaerobic or aerobic bacteria there is an increase in the frequency of breathing. If. however, these germs are first killed the respiratory rate is unchanged or diminished. The respiratory effect is first shown at the end of half an hour following the injection. In other experiments in which living or dead aerobic

germs were injected it was observed that several hours preceding the death of the animal there occurred a further increase in the frequency of respiration followed by a progressive diminution in the latter. At the same time there occurred an increasing amplitude in the respiratory wave. The greatest diminution in the rate of breathing was observed to occur three or four hours after the injection. In some experiments the increased depth of respiration was noted one to one-half hours following the injection. The general conclusions drawn from these researches are that living germs, whether aerobic or anaerobic, cause at first an excitation of the respiratory center; that such property is not possessed by the same microorganisms if killed; that both living and dead aerobic microorganisms cause an excitation of the respiratory center several hours before death, which excitation soon disappears and is followed by a progressive inhibition of this center; and that none of these effects occur if the bacterial toxins are injected.

News of the Week.

Death Rate of the Canal Zone.—Dr. Wm. F. Mason, chief health officer, in his report for June states that the total number of deaths of employees of the Canal Zone during that month was 15; of these, 11 died from disease, or 3.61 per thousand, as compared with 2.43 for the preceding month, and 3.28 for the corresponding month of last year.

New York City Death Rate.—During the week ending August 28 the deaths in New York City numbered 1,351, giving a rate of 12.23 as compared with 12.86 during the preceding week and 12.01 during the corresponding week of 1914. The death rate for the first thirty-five weeks of 1915 was 13.64 as compared with 14.10 for the corresponding period of 1914.

Chicago Death Rate.—During the week ending August 28 there were 565 deaths in Chicago, giving a rate of 12.0 per thousand as compared with 12.2 for the preceding week and 12.2 for the corresponding week of 1914.

Typhoid Fever has been prevailing to an unusual extent in and around New York City. In Westchester County 18 cases were reported during the week ending August 28, in White Plains and the neighboring towns. In this city the disease has been noticeably prevalent in Richmond and Brooklyn boroughs. Of 21 deaths from typhoid fever reported during the week ending August 28, 12 occurred in Brooklyn, and 41 new cases were reported there as against 29 in the remaining four boroughs. Some cases have also occurred on the German liners which have been tied up since the beginning of the war in Hoboken.

Cholera.—The epidemic of this disease which has been prevailing in certain parts of Austria seems to be under control of the sanitary authorities, as during the week ending August 28 the number of new cases reported was only 929. Cases of cholera have been reported in Potsdam, Liegnitz, and Frankfort on the Oder, and the Berlin police have ordered people to boil all drinking water, especially when taken from the rivers. Bathing in the rivers is forbidden. Switzerland has instituted a strict quarantine against the disease along its German and Austrian frontiers and is fumigating the baggage of all incoming passengers. A number of sailors on the interned German steamships at Hoboken have suffered from diarrhea and for a time it was suspected that some of the German refugees from China who had been cared for on those ships might have carried with them the cholera bacillus, but a bacteriological examination showed that the cases were of simple diarrhea and not of cholera.

Hay Fever Convention.—The forty-second annual White Mountain convention of hay fever victims was held last week at Bethlehem, N. H.

Opposed to Twilight Sleep.—It is reported that an association to oppose the twilight sleep movement will soon be started by Mrs. Olson of Flatbush, who proposes to interest wealthy women in the anti-twilight sleep campaign and raise money to circulate literature in behalf of the cause. The immediate incentive to the formation of the new association is said to have been the death of a woman in a Brooklyn hospital where she had gone to have a child after the Freiburg method.

Red Cross Surgeons for Germany.—An association has been formed by German residents of New York to send surgeons and medical supplies to the German and Austrian armies. The first unit, under the leadership of Dr. Hermann Fischer of the German Hospital, sailed on Thursday of this week. The supplies will be sent on another vessel under the care of the American Red Cross. Other units will follow as the money is raised for their outfitting.

Health Board Licenses for Cooks and Waiters.—The Health Department of this city has issued an order that all cooks, waiters, and dishwashers in the hotels and restaurants of this city must submit to an annual medical examination. Those who are found to be free from tuberculosis and other infectious diseases and not to be typhoid carriers will receive a license to continue their occupation, the others must seek other work not connected with the preparation of food. There are 4,500 hotels and restaurants in the city giving employment to about 90,000 persons in the kitchens and dining rooms. Among the first 2,000 examined the health officials found two typhoid carriers and over twenty affected with syphilis, tuberculosis, or other infectious diseases.

The Health of Garment Workers.—Officers of the U. S. Public Health Service have been making, as the beginning of a series of investigations of industrial sanitation in this county, an inquiry into the condition of the garment workers in New York City. In all 3,000 workers were examined, 2,400 males and 1,000 females. The investigation of these 3,000 disclosed 13.457 defects or diseases of all kinds, of which 9,451 appeared among the male and 3,916 among the female workers. Only about 2 per cent. of those examined were free from some physical defect or disease. The most common disease was tuberculosis. Of the workers 69 per cent. had defective vision, 26.2 per cent. had chronic nose or throat affections; that 26 per cent. defective teeth, 26 per cent. flat feet, 15.3 per cent. hypertrophied tonsils, and 10 per cent. defective hearing.

Uniform Blind Alphabet.—The work of preparing a new uniform raised letter system for the use of the blind has been begun by a commission recently appointed at a joint session of the American Association of Workers for the Blind and the American Association of Instructors of the Blind. After the commission has come to a definite conclusion a conference will be held with the British uniform type committee when final action will be taken.

Sterilization of Defectives.—A report recently published by the American Eugenic Society recom-

mends the sterilization of an increasing number of defectives each year until the number reaches about half a million, when it is computed that the propagation of the mentally unfit in this country will be practically at an end.

The New York College of Dentistry is about to erect a seven-story building on Forty-second street, east of Second avenue.

Association of Military Surgeons of the United States.—The twenty-fourth annual session of this association will be held in Washington on September 13 to 15, under the presidency of Col. J. R. Kean, M. C. U. S. A. The secretary is Brig.-Gen. Samuel C. Stanton, M. C. Ill. Nat. Guard, Chicago.

Pellagra Congress.—The third triennial convention of the Association for the Study of Pellagra will be held in Columbia, S. C., on October 20 and 21. The secretary of the association and chairman of the committee of arrangements is Dr. J. W. Babcock of Columbia.

The First Wisconsin District Medical Association, meeting at Juneau the second week in August, elected the following officers: *President*, H. B. Sears, Beaver Dam; *Vice-President*, D. Engsberg, Lake Mills; *Secretary-Treasurer*, S. B. Ackley, Oconomowoc. The next annual meeting will be held at Jefferson.

Dr. F. F. Simpson of Pittsburgh has retired from practice temporarily on account of ill health. A hyperglycemia from which he has been suffering for some years is now so far relieved that it is hoped he can take up his professional responsibilities again after a period of complete rest.

Dr. Maude Glasgow of this city has removed to The Vondel, 171 East Eighty-third street.

Dr. C. D. Christie has been appointed director of the Clinical Research Laboratory at the Lakeside Hospital, Cleveland.

Dr. William Evans Brunner has been elected professor of ophthalmology in the medical faculty of the Western Reserve University.

Dr. M. L. Holm, formerly State bacteriologist at Lansing, Mich., has been appointed chief of the Houghton laboratory of the Michigan State Board of Health.

The Alabama State Board of Health.—A favorable report has been made to the Alabama Legislature on a bill which provides for the election of the State Board of Health by all delegates to the Alabama Medical Association, and the appointment of the State health officer by this board.

Marriage and Eugenics.—The *Boston Medical and Surgical Journal* states that, owing to the notable decline in marriages in Wisconsin, since the enforcement of the so-called eugenics law, the law has been amended to make its requirements less rigid, and permitting physicians greater liberty in granting certificates.

Obituary Notes.—Dr. Nelson W. Wilson of Buffalo, N. Y., a graduate of the University of Buffalo, Medical Department, in 1898, attending surgeon in genito-urinary diseases at the Buffalo General Hospital, and a member of the American Medical Association, the New York State and Erie County Medical Societies, the American Urological Association, and the Association of Military Surgeons of the United States, died suddenly while attending a theater in New York, on August 30, aged 50 years.

Dr. Eric M. Lundholm of St. Paul, Minn., a graduate of the University of Stockholm, Sweden, in 1890, chief surgeon of the Bethesda Hospital, St. Paul, and a member of the American Medical Association, the Minnesota State Medical Association, and the Ramsey County Medical Society, died at St. Mary's Hospital, Rochester, Minn., from pneumonia following an operation for stomach trouble, on August 3, aged 57 years.

Dr. Samuel Walter Bragg of Lincoln, Me., a graduate of the University of Vermont, College of Medicine, Burlington, in 1879, died at his home suddenly, from apoplexy, on August 7, aged 55 years.

Dr. Martin Bernard Roddy of Lynn, Mass., a graduate of the Baltimore Medical College, Baltimore, Md., in 1909, and a member of the American Medical Association and the Massachusetts and Essex South District Medical Societies, died suddenly at the Lynn Hospital, following an operation for appendicitis, on August 12, aged 29 years.

Dr. William F. Muhlenberg of Reading, Pa., a graduate of the University of Pennsylvania, Department of Medicine, Philadelphia, in 1872, and a member of the American Medical Association, the Medical Society of the State of Pennsylvania, and the Berks County Medical Society, died at his home on August 25, aged 62 years.

Dr. Nathaniel Wallis of Fitchburg, Mass., a graduate of the University of Vermont College of Medicine, Burlington, in 1894, died at the Burbank Hospital, Fitchburg, on August 18, after a long illness, aged 59 years.

Dr. George E. McNeil of Sedalia, Mo., a graduate of the Beaumont Hospital Medical College, St. Louis, in 1890, house surgeon at the Missouri, Kansas, and Texas Railroad Hospital, Sedalia, for twenty-five years, and a member of the American Medical Association, the Missouri State Medical Association, and the Pettis County Medical Society, died at his home on August 15, aged 53 years.

Dr. Alexander Montgomery of St. Louis, Mo., a graduate of the Washington University, Medical Department, St. Louis, in 1856, a surgeon in the United States Army during the Civil War and in charge of the Government Hospital at St. Louis, and for eighteen years on the staff of the St. Louis Department of Health, died at his home on August 12, after a long illness, aged 81 years.

Dr. Henry C. Stearns of Haverhill, N. H., a graduate of the Dartmouth Medical College, Hanover, in 1896, and a member of the American Medical Association and the New Hampshire State and Grafton County Medical Societies, was instantly killed on August 23, when the automobile which he was driving was struck by a railroad train at Woodsville, N. H. His thirteen-year-old son, who was with him, was seriously injured. Dr. Stearns was 49 years of age.

Dr. Isaïe Cormier of Montreal, Can., a graduate of Laval University, Medical Department, Quebec, in 1882, died suddenly, from acute indigestion, at his home on August 17.

Dr. Samuel Wood Dana of New York, a graduate of the College of Physicians and Surgeons, New York, in 1858, a member of the New York Academy of Medicine, and for many years on the staff of the New York Dispensary, died at his home on September 1, aged 87 years.

Dr. Charles Franklin Mohr of Providence, R. I., was assassinated on August 31 while in an automobile near that city. He was graduated from the College of Physicians and Surgeons, Baltimore, in 1891.

Dr. Green Vardiman Black, dean of the North-

western University Dental School, died August 31, on his farm near Virginia, Ill., at the age of 79 years.

Dr. A. WARD FOLLETT of Somerville, Mass., died on August 15 after a long illness. He was born in Royalton, Vt., January 27, 1858, and was graduated from the Dartmouth Medical School in 1881. He was for five years assistant superintendent of the Brother Hospital, Providence, R. I., then practised for two years in Cambridge, Mass., and removed to Somerville in 1888.

Dr. NATHANIEL W. LYNDE, who died in this city on September 3, was born in West Brookfield, Mass., in 1859, was graduated from Yale in 1882, and received his degree from the College of Physicians and Surgeons in 1885.

Dr. JOHN MILTON EDWARDS of Portland, Ore., died on August 26 at the age of 41 years. He was born in Mankato, Minn., and was graduated from the College of Physicians and Surgeons, Chicago, in 1899.

Dr. BENJAMIN H. CHEDISH of Omaha, Neb., died on August 18 in Kenosha, Wis. He was a graduate of the College of Physicians and Surgeons, Minneapolis, in 1903.

Dr. JAMES CHARLES FAHEY of Northampton, Mass., died August 24 at the age of 48 years. He was a graduate of the medical department of the University of Vermont in 1891 and had practised since then in Northampton, where he was for several years city physician.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

HEALTH OF ARMY RECRUITS—CAUSES OF REJECTION—OBSTETRIC SECTION OF R. S. M.—POSITION OF FETUS IN UTERO—OBITUARY.

LONDON, August 20, 1915.

EVERYTHING connected with the war is occupying the attention of all parties. Recruiting is among the chief subjects of discussion just now, and its medical aspects are various. An interesting one is the relation to it of the sanitary and medical condition of schools. Drs. Finch and Hutt, who have both had experience in this department, have studied the problem, and in an interesting article point out some of the bearings of school medical work on the physique of the recruit. From the annual report of the health of the army they have compiled and contributed to the *Lancet* a table showing the rejections at inspection or within three months of enlistment. The figures give cause for reflection, as they show the total rejections amount to 22 per cent., and this they say does not necessarily imply that men offering themselves for enlistment are of inferior physique to the average population, for they have found when examining men of the territorial force as to their fitness for foreign service they had to reject nearly 20 per cent. This need not so much surprise us when we recall that other statistics would lead us to expect some such figure; *e.g.* those contained in the annual reports of medical officers of schools.

Of the causes of rejection a large group includes conditions associated with inferior physique, such as under-measurement (of chest), under-weight, and under-height, impaired constitution and debility, malformation of chest or spine, flat-foot. It is suggested that thorough medical supervision of school children would reduce these conditions, but obviously their effects only must be intended since defective formation is the affair of nature. Still, adequate feeding and physical training may accomplish something in a number of these defectives—add open air exercise and gymnastics, perseveringly carried out, and look for increase of chest measurement and other marks of improvement.

Another large group of defects is due to surgical diseases of the young affecting the teeth, the vision, the hearing, the joints. Hernia, too, is a very important matter, calling for early surgical treatment. Dental clinics have now been established in connection with many large schools, and will undoubtedly prevent much suffering at a later age. Defective sight naturally arrests the attention of teachers or, perhaps earlier, of parents, and should be referred to the medical attendant. Deafness is often present a long time before advice is sought, and then discharges from the ear will perhaps be found which are evidently of long standing. Medical inspection before school age would give better results, both curative and preventive. Open-air schools would have a beneficial influence, not only in this but in many ailments of the young, particularly catarrhal conditions of the naso-pharynx and enlarged tonsils and adenoids, which too often lead to middle-ear disease.

The Obstetrical Section of the Royal Society of Medicine has begun its session with the address of the president, Dr. W. S. A. Griffith, who took for his subject the causes which "determine the lie of the fetus in utero." This problem seems to have had a fascination for many observers from early times, and in the present day there are not wanting those who find it very attractive, among whom Dr. Griffith is an honored worker. In this address he gave an account of the systematic experimental investigation he has carried on so far, which he hopes will remove much speculation and many sources of error. He intends to continue his investigations and report results to the society. From early times statements were made which could only be guesses, as facts were wanting on which to base a conclusion. One of these guesses prevailed for ages, and even survives among the populace of various localities—that which asserts that the head lies upward until the seventh month, when a somersault is taken and the position of head downward remains to the end of the pregnancy. This notion might well have arisen in the movement of the fetus impressing the mother. William Hunter, correcting the error, wrote that neither reason nor instinct teaches the fetus "at a particular time any trick of a tumbler or rope-dancer." Thomas Raynalde, in his "Byrthe of Mankynde" (1545), described the position as head to the right angle of the matrice and legs across, adding "albeit there be that do describe the lyeing of the childe after another sort, but to be short they are lyars." In 1743 Onymos suggested the real position, and propounded the gravity theory as an explanation. This has continued to be widely accepted, although many authors have rejected it. Matthews Duncan supported it, Simpson opposed it. Dr. Griffith expressed his pleasure when studying the matter at finding many of Duncan's statements were correct. The position at the end of pregnancy is not disputed, but in the later middle months there was so much uncertainty that Dr. Griffith made use of every opportunity to determine the point, and was led to agree with Scanzoni, Veit, Dubois and others that

in the middle months the proportion of head-lowest in the living fetus increases from 50 per cent. before the sixth month steadily onward, while its mobility decreases as its size approximates to that of the womb, when such a great change as a revolution of the child could not well occur without some extraneous agent as exemplified in external version. We are fully justified, the lecturer declared, in concluding that if a fetus in the last three months lies head downward in the lower pole of the uterus and in the pelvic brim, it is very unlikely to alter under ordinary normal conditions. No other part is so adapted to the normal pelvis as the head.

The death is announced of Mr. Charles Holmes, F.R.C.S., at the great age of 99. At the age of 21 he qualified at the two royal colleges. He practiced for many years in Oxon and Bucks, and about 1875 retired to Emsworth. He was one of the first to receive the honorary fellowship of the Royal College of Surgeons.

Sir Peter Eads, M.D., consulting physician to the Norfolk and Norwich Hospital, has died in his 91st year. He took his medical degree in London in 1850, was knighted in 1885, was sheriff of Norwich in 1880-81, and had been mayor three times. He retired from practice in 1903, after a long career as eminent in the medical as in the political and social positions of Norfolk.

Brigade-Surgeon Lieut.-Col. H. Black Purves, late I. M. S., has died suddenly at Malvern. He joined the Bengal Army in 1865 and served at various stations, retiring in 1895.

Lieut.-Col. John Lees Hall, R.A.M.C., has died suddenly at the age of 60. He joined the army medical service in 1880 and became lieutenant-colonel in 1907. He was in the South African war as P. M. O. of a general hospital, and received the Queen's medal with three clasps. He retired in 1907, but for the last year has been employed temporarily with the R.A.M.C.

Progress of Medical Science.

Boston Medical and Surgical Journal.

August 26, 1915.

1. Acute Tuberculous Inflammation of the Ileocolic Glands Simulating Appendicitis. H. Gage.
2. The Use of Digitalis in the Various Forms of Cardiac Arrhythmia. H. A. Christian.
3. The Relationship of the Abnormal Heart Beat in Prognosis. P. D. White.
4. The Treatment of Heart Disease. F. C. Shattuck.

1. Tuberculous Ileocolic Glands Simulating Appendicitis.—H. Gage points out that the predominant feature in the cases which he has observed as well as in most of the cases elsewhere reported, has been an attack of pain and tenderness localized in the right iliac region, of recent origin, accompanied by a slight rise of temperature and without demonstrable tumor; in only one of his cases was a small tumor believed to be present. Nausea was present in almost all, but vomiting occurred only in four.

2. Digitalis in Cardiac Arrhythmia.—H. A. Christian notes that digitalis slows the pulse rate and increases the work of the heart. It decreases the pulse deficit, *i.e.* the difference between apex beat and radial pulse. In cases of auricular fibrillation digitalis impedes conduction in the bundle of His; the ventricle consequently beats more slowly, there is more time for the ventricle to fill, and there is more time for the muscle to recover from fatigue. In some cases with auricular fibrillation in which edema is marked a much better diuresis is obtained by combining with the digitalis a diuretic drug, such as theocin. In another form of arrhythmia, namely, auricular flutter, digitalis usually produces a very striking effect. In pulsus alternans frequently digitalis produces good results. In true pulsus alternans the pulse is regular in rate, but every other beat is weaker than its predecessor. In such a case the pulse rate may be definitely slowed by digitalis. In the rapid, regular, decompensated heart digitalis, when it acts, appears to have a threefold effect. It slows the rate by increasing vagus inhibition and by increasing conduction time between auricle and ventricle, and it strengthens heart action by some direct action on the myocardium and coronary circulation. This type of case often seems definitely resistant to digitalis, and the patient may take large amounts before any effect can be detected. It is always well to remember in such cases to watch the patient carefully, for sometimes the digitalis action, which has been long delayed, develops with great rapidity into marked activity so that the patient, who shortly before has shown no digitalis effect, quickly develops toxic symptoms. In paroxysmal tachycardia there is very little evidence that digitalis produces any good effect.

3. The Abnormal Heart Beat and Prognosis.—P. D. White has observed that of all the disturbances of the rhythm of the heart beat, auricular fibrillation (absolute irregularity) and auricular flutter have the gravest prognosis, for not only are these conditions indices of myocardial damage but they themselves increase the difficulty of the circulation by their rapid driving of the heart. Sometimes, however, many years may elapse before the death of these patients. Of eighty-six cases of auricular fibrillation seen at the Massachusetts General Hospital 16 per cent. are known to have died within ten months of discovery. Premature beats and paroxysmal tachycardia are compatible with a long and active life, but their frequent association with cardiac damage should lead one to be a little cautious in prognosis. Permanent damage to the atrioventricular bundle of His or its branches is evidence of widespread damage to the myocardium. Hence the prognosis of a patient showing such a condition should be guarded. Defective contraction of the heart as shown by familiar symptoms and signs has a prognosis dependent on the number and degree of these symptoms and signs, plus a consideration of similar trouble in the past and of the way in which the heart responds to rest and digitalis. Of all the individual signs of abnormal contracting power of the heart pulsus alternans is one of the most important and consistent. Of eighty-three cases of alternation of the pulse seen at the Massachusetts General Hospital 31.3 per cent. are known to have died within ten months of discovery.

New York Medical Journal.

August 28, 1915.

1. The Bone Graft Wedge. F. H. Albee.
2. Pituitary Tumor with Improvement After Puncture of the Corpus Callosum. W. M. Leszynsky.
3. Greek Physicians at the Persian Court. W. B. Konkle.
4. The Initial Strain in Weak Foot. P. W. Roberts.
5. Uterine Fibroids. G. E. Shoemaker.
6. Gonorrhea in the Male. H. Schoenrich.
7. Fractures. J. F. X. Jones.
8. Midwives and Physicians Factors in Puerperal Fever. N. Kavinoky.
9. Vaccine Therapy in Dermatology. A. Stickler.
10. Acetonuria and Carbohydrate Starvation. S. H. Blodgett.
11. Laryngeal Tuberculosis. A. S. Kaufman.
12. John Bunyan, Hypochondriac. H. D. King.

1. The Bone Graft Wedge.—F. H. Albee states that in many cases of hip dislocation the acetabulum is found to be too shallow and with a superior rim insufficient to retain the femoral head. To obviate this defect Hoffa in 1800 did his first successful operation, which consisted chiefly in deepening the acetabulum by scooping out the contained fat, articular cartilage, and bone to furnish an adequate concavity to receive and hold the head of the femur. By this method he was enabled to produce a

stable joint, but in many instances with little or no motion associated with pain, and in many others producing a stiff hip with a varying amount of shortening of the leg, depending upon the amount of excavation made in the superior portion of the acetabulum to receive the head of the femur. In cases in which motion seemed free shortly after the operation a later examination showed it to be slight, and at a still later period a proliferative arthritis which completely locked the joint frequently occurred. The author's method which has been performed successfully in a number of instances is said to obviate the above-mentioned disadvantages and produces a stable joint, with full and free motion and without pain or shortening. The most important feature is that it preserves the entire acetabulum and joint cartilage, thus guarding against any later joint change. It may be described as a bone wedge graft remodeling operation for paralytic and congenital dislocation of the hip. The important points of advantage which it is said to possess over the Hoffa open operation are: (1) it is an operation of less magnitude, producing less shock and mutilation of the anatomical joint structures; (2) there is a preservation of the synovial membrane and hyaline cartilage of the joint as well as of the ligamentum teres. The operation is performed without the disarticulation or extensive trauma of the head of the femur, a most important factor in avoiding shock and subsequent traumatic degenerative change in the joint. There is no shortening of the limb by the operation, as no portion of the existing articular structures is removed or scooped out as in the Hoffa operation. There is a restoration of joint stability and a reinforcing of the joint structures, and an actual addition to the joint anatomy by the insertion of these bone grafts to be described. The author's method minimizes any possibility of limited motion of the remodeled joint, or subsequent production of osteoarthritis to limit motion or produce painful motion.

2. **Pituitary Tumor.**—By W. M. Leszynsky. (See MEDICAL RECORD, July 24, 1915, page 172.)

10. **Acetonuria and Carbohydrate Starvation.**—S. H. Blodgett concludes that acetone in the urine may be caused experimentally by carbohydrate starvation, but not clinically, except to a very slight extent. Acetone alone or in conjunction with dietetic acid may, and in this unnamed condition frequently does, appear in the urine, often in enormous amounts, when there has been no carbohydrate starvation. Therefore the theory that a carbohydrate diet should be pushed in this condition appears to the author to be unfounded.

11. **Laryngeal Tuberculosis.**—A. S. Kaufman treats this condition as follows: In the early or catarrhal stage the patient is taught to spray the larynx with a mild alkaline solution in connection with the local application of mild astringents, followed by an oil spray. In regard to applications they should be made with the aid of a laryngeal mirror to guide the proper performance of this operation. Nodules and ulcerations call for surgical interference. The use of the punch in the former and the curette in the latter permits the medicaments which may be applied later to gain better results. Lactic acid, 25 to 50 per cent., and formaldehyde solution, 2 to 10 per cent., are efficient remedies when applied directly to the affected area, and not to the surrounding tissues. A drug recently used in this condition, and which has given very gratifying results, is scarlet red. Application of a 10 per cent. solution in oil causes a marked lessening of pain, and the ulcerations show a tendency to heal. Furthermore, it is nonirritating, and may be applied to the larynx without causing the patient discomfort by the use of the laryngeal mirror. For dysphagia, local anesthetics are indicated. The author has found that a 20-per-cent. mixture of orthoform and boric acid insufflated into the larynx gives relief for some time after its use.

Journal of the American Medical Association.

August 28, 1915.

1. Orthopedic Surgery and the Crippled. N. Allison.
2. Malignant Disease of the Large Intestine. A Plea for Early Diagnosis and Early Radical Operation. H. B. Delatour.
3. A Two-Stage Combined Abdominosacral Operation for Carcinoma of the Rectum. D. F. Jones.
4. An Uncommon Case of Multiple Benign Sarcoid of the Skin. J. Zeisler.
5. Chronic Intestinal Stasis with Infection from a Surgical Point of View. W. B. Russ.
6. Ileocolostomy and Colectomy for Arthritis Deformans. R. Smith.
7. Lupus Erythematosus of the Mucous Membranes. G. D. Culver.
8. Plasma and Blood Volume in Pregnancy. J. R. Miller, N. M. Keith, and L. G. Rowntree.
9. Tuberculin Tests in Children of Colorado. G. H. Cattermole.
10. Pneumonia in Infants. A Clinical Study of Hospital Cases. H. D. Chapin.
11. The Etiology and Treatment of Ozena. A Preliminary Report. H. Horn.
12. A New Method for the Prophylactic Application of Tetanus Antitoxin. H. E. Robertson.
13. Report of a Case of Cesarean Section After Death of the Mother. A. E. Mack.

2. Malignant Disease of the Large Intestine.—By H. Beeckman Delatour. (See MEDICAL RECORD, July 3, 1915, page 40.)

3. A Two-Stage Operation for Carcinoma of the Rectum.—By D. F. Jones. (See MEDICAL RECORD, July 3, 1915, page 40.)

4. Multiple Benign Sarcoid of Skin.—J. Zeisler reviews the history of the conception of benign sarcoid and shows how the studies of it have rather complicated and multiplied the types. Darier in 1910 differentiated four types of sarcoid; (1) Boeck's type: the tuberus, papular and diffuse infiltrating form; (2) the Darier-Roussy type: subcutaneous sarcoid of the trunk, symmetrical and resembling tuberculosis; (3) "Sarcoides noueuses et nodulaires," resembling erythema induratum; (4) the Spiegler-Fendt type: round cell, nontuberculous tumors. Since 1910 there have been reported probably less than thirty cases. That many of the cases bear a greater or less degree of relationship to tuberculosis must be admitted, but Zeisler doubts whether one should unite the two. A somewhat different attitude may be justified regarding its relationship to syphilis as brought out by recent observations. The author mentions the remarkable capacity of syphilis for imitating other conditions, but it must be admitted that the positive Wassermann and even response to salvarsan do not necessarily establish a syphilitic origin for any lesion of the skin. Latent syphilis may coexist and have other diseases superimposed on it, and salvarsan itself often cures other cutaneous disorders than syphilis. It is therefore not improbable that some cases reported as sarcoid do not really belong to that type.

5. Chronic Intestinal Stasis.—By W. B. Russ. (See MEDICAL RECORD, July 3, 1915, page 39.)

6. Ileocolostomy and Colectomy for Arthritis Deformans.—By R. Smith. (See MEDICAL RECORD, June 26, 1915, page 1093.)

7. Lupus Erythematosus of the Mucous Membranes.—G. D. Culver states that the cutaneous lesions of lupus erythematosus are so deforming that they may monopolize the attention of the physician to the exclusion of those of the mucosa. He reports eleven cases showing the disorder in nineteen locations on the mucous membrane: inside of cheeks, five; gums, three; roof of mouth, one; lips, four; nose, two; and edges of eyelids, four. Nine of these eleven patients were females. Thomas Smith has also noticed this tendency for the disease to occur in women more than in men. One of the characteristics of lupus erythematosus of mucosa is its persistency. The lesions, when not acutely inflamed, are usually erosions covered with sodden epithelium and bordered by an irregular, noncharacteristic edge, which is but slightly raised. The patch may have a yellow coating or be leucoplasic, and, when the latter, is less char-

acteristic than that of lichen planus or syphilis, or from irritants. It is definitely patchy without papules, and though of long standing is less thickened than leucoplasic areas of syphilis or irritants. The mucous patches of syphilis have a dirtier appearance on the edges. The condition stubbornly resists treatment and often shows acute exacerbations definitely associated with disturbances of the general health, especially of the digestive tract. The gums are only exceptionally in good condition, and the history of easily bleeding gums is common. One of the most interesting conclusions reached by carefully observing all the phases of the lesions is that they are the result of a general disorder, and internal treatment and proper regimen are as necessary as local treatment.

8. **Plasma and Blood Volume in Pregnancy.**—J. R. Miller, N. M. Keith, and L. G. Rowntree state that from the beginning to the middle of the nineteenth century it was believed that the total volume of circulating blood increased during pregnancy, hence the theory of the plethora of pregnancy and the treatment of untoward symptoms by bleeding and cupping. Later it was shown that in the last months of pregnancy the red cells and albuminous contents of the blood decreased, while the white cells and water content increased, hence the theory of chlorosis of pregnancy was developed and increased diet replaced bleeding in the treatment. The authors review the literature of the subject and give the results of their own research, describing the technique and methods used. The determinations of plasma and blood volumes were made before or after labor, or both, in a series of thirteen women, and while the authors do not attempt to announce any far-reaching conclusions they point out the points of special interest and hold that their studies indicate that an absolute and a relative increase in the volumes of both plasma and blood exist late in pregnancy with a slow return to normal during the puerperium.

9. **Tuberculin Tests in Children of Colorado.**—By G. H. Cattermole. (See MEDICAL RECORD, July 3, 1915, page 36.)

10. **Pneumonia in Infants.**—By H. D. Chapin. (See MEDICAL RECORD, June 26, 1915, page 1092.)

11. **Etiology and Treatment of Ozena.**—H. Horn concludes from his investigations as follows: The *Coccobacillus fœtidus ozænæ* Perez, as isolated by Hofer, has answered all the bacteriological requirements necessary to establish its identity as the etiological factor in ozena. The isolation of this organism is attended with considerable difficulty. The production of agglutinating serum in rabbits is an exceedingly difficult task. The preparation of autogenous vaccines in every case is very difficult, if not impossible. At present mixed vaccines made from various strains of the Perez bacillus is the most practical method of treatment which is now available. It may be necessary to precede or combine with the treatment the vaccines made from the organisms which are usually present in combination with the Perez bacillus. It may be two or more types of ozena bacteriologically different but clinically identical.

12. **Prophylactic Application of Tetanus Antitoxin.**—H. E. Robertson describes the technique of his method as follows: Liquid antitoxin was poured on pads of sterile absorbent cotton in such amounts as to render the cotton uniformly moist but not wet enough to drip. These pads were then dried for twenty-four hours in a moderate heat (from 40 to 45° C.). A previously sterilized evaporating dish or earthenware mortar covered with a double layer of filter paper was found satisfactory for this purpose. Drying in vacuum did not appear to give any advantage. The dried antitoxin cotton became a stiffened mass resembling dried paper pulp. This was weighed and then divided into pieces which by weight would represent definite quantities of antitoxin; for example, if the entire mass contained twenty units of dried antitoxin, one twentieth by weight would represent about one unit. In wounds of mice, rats, or guinea-pigs, protection was given against the later injection of many times the minimum fatal dose of tetanus toxin or against the simultaneous inoculation of a garden earth which had been proved by numerous tests to produce tetanus in 100 per cent. of cases for unprotected mice, rats, or guinea-pigs. If the dry antitoxin pad was bound on a wound in which no fresh blood or serum was present, the absorption of antitoxin was greatly reduced and the protection therefore incomplete. If immediately previous to the application of the pad it was moistened in sterile saline, distilled water, sterile bouillon, or any clean fluid, absorption was rapid and protection entirely adequate. Pieces of this dried antitoxin cotton were used which were over six weeks old and were found to be perfectly efficient in the usual dosage. Amounts representing the dried product of from one to two and a half units (German standard) were employed, and rats weighing up to 200 grams were given full protection.

British Medical Journal.

August 21, 1915.

1. The Influence of Intravenous Injections of Neosalvarsan on the Arterial Blood Pressure. H. D. Rolleston.
2. Notes on the Typhus Epidemic in Serbia, 1915. T. G. Maitland.
3. Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis. A Clinical Study of Eighteen Cases. C. H. Vrooman.
4. Our Present Position with Regard to the Prescription of Proprietary Foods in Infant Feeding. H. C. Cameron.
5. Calculi of the Prostate. R. L. Spittel.
6. The Causes and Treatment of Severe Pruritus Ani. P. Lockhart-Mummery.

1. **Neosalvarsan and the Blood Pressure.**—H. D. Rolleston finds that the average of both the systolic and diastolic blood pressures on the days after an intravenous injection is generally lower than before injection, the fall in the systolic being slightly more marked than in the diastolic pressure. This fall, however, is very probably not a direct result of the action of neosalvarsan, and, in part at least, may be due to rest in bed. The blood pressure seven hours after the intravenous injection of neosalvarsan is usually lower than it was before. The fall in the diastolic pressure is slightly less than that of the systolic pressure. The fall cannot be explained as due to fever. As compared with the blood pressure taken seven hours after the intravenous injection of neosalvarsan, the average of the blood pressure estimations on subsequent days is usually lower. This is more marked in the diastolic than in the systolic blood pressure. During the actual intravenous injection of neosalvarsan both the systolic and diastolic pressures are nearly always higher than on other occasions. This appears to be due to excitement. During the operation the pressures may vary considerably, the systolic blood pressure being more affected than the diastolic. The blood pressure before the first injection of neosalvarsan is nearly always higher than the blood pressure before the second injection of neosalvarsan, but here again mental excitement may be responsible. Finally, the general effect of intravenous injections of neosalvarsan is rather to lower, certainly not to increase, the arterial blood pressure.

3. **Artificial Pneumothorax in Treatment of Pulmonary Tuberculosis.**—C. H. Vrooman states that in order to obtain good results in this treatment it should be used in cases of recent origin. The moderately advanced case of recent onset, with the disease confined almost altogether to one side, is the type of case in which one should produce a pneumothorax at once.

Many of these progress rapidly, and at the end of six months must be classified as far advanced, so that by the use of artificial pneumothorax one has a most valuable adjunct to the usual methods of treatment. Incipient cases, with severe hemoptysis, should also be treated by pneumothorax at once. In so many of these there is such a rapid extension of the disease after hemoptysis that it is better to give the patients the benefit of this treatment. The author would not go so far as some and advocate that all incipient unilateral cases be treated, as the results with ordinary sanatorium treatment are good. His great complaint is, like that of all men in sanatorium work, that so few of these cases are sent for treatment. On the other hand, his experience does not encourage him to hope for much benefit from pneumothorax in the far advanced, long-standing cases. The far-advanced case which has recently become so should be distinguished from that in which the disease has been of some years' standing. A case of recent onset, which from physical signs one must classify as far advanced, but which from general condition is still moderately advanced, is eminently suited for pneumothorax, provided, of course, the disease is mostly unilateral. Artificial pneumothorax is, then, a valuable addition to the methods of treating tuberculosis, but unfortunately its application is restricted to not more than 5 per cent. of cases which have come under the author's observation.

5. **Calculi of the Prostate.**—R. L. Spittel reports two cases of calculi of the prostate, from one of which twelve faceted calculi were removed, and from the other forty-six seedling calculi. Prostatic calculi usually occur in middle life and old age. In the three cases that have so far come under the author's notice, the largest stones occurred in youths of 19 and 20, and small seed calculi in a man of 35. As to the origin of prostatic calculi it is known that, though lodged in the region of the prostate, they may have three modes of origin and formation: (1) They may be formed in the substance of the prostate gland itself. They have then as their basis the corpora amylacea with varying amounts of calcium phosphate and carbonate deposited round them, giving rise to stones varying in size from grains of sand to large calculi. (2) They may be formed in pouches, congenital or acquired, that communicate with the prostatic urethra, catching up deposits from the urine, and eventually forming stones that are more or less the moulds of the pockets that lodge them. (3) They may have their origin in the kidney or bladder, and become lodged in the prostatic urethra secondarily, where successive phosphatic deposits cause an increase in their size and mould them to the shape of the passage or diverticulum that gives them lodgment.

Berliner klinische Wochenschrift.

July 19, 1915.

Action on Asthma of Hypophysis Extract. — Riese gives credit to Weiss for introducing the use of this substance in the treatment of asthma (in 1912). The surprising character of the results obtained causes us to seek the rationale. The Weiss remedy has a private or semiprivate formula and is marketed as a proprietary. The author felt certain that its favorable action was due to hypophysis extract. The relief afforded was almost instantaneous. There were certain nervous collateral effects, most pronounced at the first injection, which spoke plainly for the presence of adrenalin—nervous excitation, tremor, and pallor. The author wrote Weiss to ask if adrenalin could be left out of the remedy, and the reply was that the entire formula was the result of long experience and could not be changed. The author then made a test of pure hypophysis extract in asthma, using it according to a system, and not only did he cure a case of chronic asthma in an elderly woman, but at the same time weaned her from the use of morphine to which she had become addicted. He used Weiss's remedy and hypophysis extract in the same subjects and could see no difference in their power over asthma, while the latter was free from unpleasant collateral activity. Weiss's remedy apparently contains two different hypophysis extracts plus adrenalin. But how can hypophysis extract relieve asthma if the latter is due to contraction of smooth muscle fibers? In theory it should produce spasm and not paresis. The spasmodic theory of asthma, however, is far from being demonstrable. The total volume of the lung tissue is increased in asthma, whereas according to the theory in question it should be diminished. The increased volume should be due to sudden paresis of the bronchial musculature. The sudden relief afforded by hypophysis extract would then be intelligible. According to our past notions the drug could act only through the sympathetic, and we know that adrenalin acts specifically on the latter and can be used to differentiate between sympathetic and autonomous fibers, the latter being derived from the cerebrospinal nerves. Adrenalin does indeed exert some power over asthma and the very rapid action of Weiss's formula is probably due to the adrenalin component. Hypophysical extract also acts in this manner. But Langley and some others have never accepted the teaching that the bronchioles are under control of the sympathetic. According to this school they are under the control of autonomous fibers derived from the vagus. The author, however, inclines to the sympathetic theory, and believes that asthma results from loss of tone in the smooth muscle of the bronchioles. We know that hypophysis extract cannot act on normal smooth muscle, but only when the latter has lost its tone; while adrenalin is a true sympatheticotropic substance. The two can therefore act as synergists in asthma. The action of atropin and the nitrites in relieving asthma is quite different, but has the same result; for these substances paralyze the antagonists of the sympathetic. Hence these remedies can also be used as synergists to the preceding and the asthmatic does indeed need all the synergists he can command. The favorable action of potassium iodide cannot be made to fit into the author's theory nor is it antagonistic. In all probability the injections of hypophysis extract in asthma in some way make good the disturbance of hormone balance which originally made possible the disease. The sympathetic fibers responsible for asthma may pass through the vagus. Persistent, systematic injections of hypophysic extract are able to cure asthma if they can restore to the musculature its lost tonicity.

Münchener medizinische Wochenschrift.

July 20, 1915.

Cryptogenic Fever.—Knoblauch and Quincke describe a peculiar epidemic or rather endemic of febrile affections in a large city hospital. Patients feel ill suddenly with fever of a pronounced remittent type. Every one of the eleven patients complained of right-sided pain over the lower ribs—a stitch, at times with tenderness on pressure. This showed a marked tendency to be reflected to the shoulder and scapula, of both the right and left sides. There were no finds on physical exploration and the entire picture was negative save for the pain and tenderness and elevated temperature along with such symptoms as accompanying fever in general, as depression and perspiration. There was some tendency to relapse. The condition passed off in a few days, save when relapses occurred, which seemed to

be the case especially in those patients who got up most promptly. The temperatures were of the degree called moderate (up to 104° F.). In regard to the nature of the cases pleurisy could straightway be excluded. Food poisoning was out of the question. The pains, radiated to the shoulder, suggested some affection of the liver, diaphragm, spinal roots, etc., but no evidence of such was forthcoming. Exposure was out of the question, as the cases occurred early in September. An insect bite visitation seemed a good tentative hypothesis and the author does not pursue his speculations further, save by systematic exclusion of fever due to catarrh or rheumatism. At the same time, from all that we know of the vagaries of "influenza," he cannot quite exclude such a diagnosis, even if that term is often a vague blanket expression for ocular endocarditis, sepsis, and many other febrile states.

The Ninhydrin Reaction in the Lumbar Punctates of Tuberculous Meningitis.—Nobel, an assistant to Professor von Pirquet, discusses the results of testing lumbar punctates with the ninhydrin method much used by Abderhalden in his serodiagnosis of pregnancy. The word "ninhydrin" is a contraction of a long-named chemical substance which is a delicate color reagent for the cleavage products of protein digestion. When ninhydrin is boiled with amino-acids a blue color is produced. The appearance of this reaction in lumbar punctates is of considerable value for the positive recognition of tuberculous meningitis. Its value appears in differential diagnosis. The test is very sensitive and the color reaction not marked. The content in the punctate of albumin has no significance. From ½ to 1 c.c. of punctate is boiled half a minute with 0.1 c.c. of a 1 per cent. solution of ninhydrin. Even if all albumin is removed from the punctate the presence of the amino-acids serves to give the reaction. The rationale of the test is bound up in the presence of proteolytic and peptolytic enzymes in the fluid obtained by lumbar puncture in cases of tuberculous meningitis. Then again, Nobel states, this presence of proteolytic and peptolytic ferments is associated with the greatly increased amount of albumin in the cerebrospinal fluid in this disease.

The Plague of Flies at the Front.—Kathariner in a letter to the Military Medical Supplement is not ashamed to go to the French for a practical solution of this problem. In a recent abstract in the MEDICAL RECORD the statement is in evidence that disinfectants are impracticable on such a large scale as would be demanded in fighting flies. But Roux of the Pasteur Institute (Paris) has devised a solution made up of 10 liters of water, 500 c.c. of heavy tarry oils and 2.5 kilos of iron sulphate, which, when poured over dung heaps destroys all odors and kills maggots. Better still, however, is 5 per cent. cresol, for its presence prevents the flies from blowing and also destroys all larval life when present. Plain 10 per cent. solutions of copperas or iron sulphate should be applied at once in stables to fresh dung and in the latrines of the trenches a little pure kresyl answers well. In trench life we have to fight certain known species of carrion and corpse flies (*calliphora, lucilia, sarcophaga*, etc.). From the trenches these insects reach the provisions and cuisine, for they are far better travelers than the house flies. Fresh meat may be sprinkled with tarry oils and left exposed with impunity, although cresol and formol have no deterrent effects on the flies. Iron sulphate is the best disinfectant to throw upon cadavers which cannot at once be buried. Either in powder or 10 to 20 per cent. solution it fairly tans a corpse and prevents decomposition. According to Roux, as quoted by Kathariner, cresol, tarry oils, and iron sulphate will between them do all the required work.

Deutsche medizinische Wochenschrift.

July 22, 1915.

The New Roentgen Tubes of Lilienfeld, Coolidge, and Zehnder.—Levy-Dorn first refers to the chief defect of the old tubes, to wit: the residuum of air in the nearly exhausted tubes which serves to transmit the current cannot be kept constant. Lilienfeld and Coolidge both aimed to produce an absolute vacuum in the tubes and replace the air particles with electrons given off by cathodes of incandescent metals or metallic oxides. Constancy can then be secured by regulating the especial incandescent circuit with a rheostat. Lilienfeld employed an aluminum cathode with concave mirror and an anticathode as in the usual tube, and an accessory cathode and special anode. The accessory cathode is rendered incandescent. Three circuits are required to operate the tube. First comes the heating circuit which heats the accessory cathode to incandescence. Next comes an ignition circuit by which the incandescent cathode is connected with its anode and has a low tension. Third is the ordinary high-tension current. The Coolidge tube has no ignition circuit, the regular and incandescent cathodes are fused together, and there is no secondary anode. Recently Koch has modified the Lilienfeld tube by leaving out the ignition apparatus and obtaining the same effect from a ramification of the regular inductor current. The result approximates more closely the structure of the Coolidge apparatus. Zehnder makes a complete departure in aiming to produce effects similar to those of the other apparatus. His tube is of brass with a glass or aluminum window. The anticathode is of copper coated with platinum, and the cathode is protected from the tube by a high-tension insulator. There is clearly no effort to produce a high-degree vacuum, and the inventor has not as yet applied for a patent. It may be possible to nullify the disadvantageous action of the gas particles in another way—by metallic occlusion.

Attempted Suicide with Tuberculin.—Janssen was summoned in the autumn of 1913 to see a patient who had been treated by him for several years with tuberculine for ordinary pulmonary tuberculosis. He found the patient very ill with high fever, tachycardia, and tachypnea. The original focus of disease showed no corresponding lighting up. The severe toxemia pointed to the existence of a suppurative focus. The treatment consisted of antipyretic measures and cardiac stimulants. In about three weeks' time the patient became normal with never the least sign of a toxigenic focus. Nothing could be learned from the woman patient by direct questioning. At last, however, she confessed that in a moment of despondency it had occurred to her that the tuberculin she was taking might be made to kill her. She got possession of a syringe and some tuberculin intended for external use and injected 2 c.c. at once. Although, as above stated, she was made very ill the focus in the being underwent notable improvement. Had she not received treatment, however, she would undoubtedly have perished from toxic cardiac failure. The old axiom that tuberculin used as a remedy should never produce a general reaction seems to be only partly true, for a highly poisonous dose brought prompt therapeutic benefit in this case.

The Pathology of Stuttering.—E. Fröschel distinguishes between tonic and clonic stuttering. The former is illustrated when the patient pronounces "p" as "pppp," "do" as "dodododo," "after" as "aaaafter," etc. Tonic stuttering cannot be easily described; in this the patient dwells for a long time upon the opening consonant of a word. The author attributes stuttering to an inhibition of the speech function. In some instances it may be regarded as an anxiety neurosis affecting speech.—*Arch. f. experim. und klin. Phonetik.*

Insurance Medicine.

Relative Death-Rates of Self-Declared Abstainers and Moderate Drinkers.—The *American Underwriter*, June, 1915, is devoted to a consideration of the relative death rates of abstainers and moderate drinkers from the actuaries' viewpoint. In an introduction to the discussion Edward Bunnell Phelps points out that facts and figures have not as yet clearly established these relative death rates, but that when that point has been reached the world will at least have the real measure of the physiological effect of the moderate use of alcohol on the ordinary man. As the mathematician and rate maker of the life insurance business, the final authority on death rates and premium rates, the actuary must be conceded precedence of all other judges in passing on the probable effects of alcohol on the lives of those life insurance policyholders who have acknowledged that they more or less frequently make use of it as a beverage.

Mr. R. M. Moore, actuary of the United Kingdom and General Provident Institution of London, read a paper at the Institute of Actuaries of London on November 30, 1903, in which he reviewed in great detail the tabulated mortality experience of that institution with the policyholders in the class of total abstainers to which it was restricted since its establishment in 1840 to 1849 and with that class and the class of non-abstainers in that year for the first time admitted to membership, from that time down to 1901.

These figures showed that the ratio of actual to expected mortality in the case of the male members of the Temperance Section for the period of comparison had been about 26 per cent. lower than that in the case of the male members in the general section. Mr. Moore's tabulations were accepted as convincing proof of the alleged wide measure of difference between the mortality rates of drinkers and non-drinkers in general. All the members, however, of the institution demurred from some of the implied conclusions of Mr. Moore's paper and many leading British actuaries promptly sounded warning against their too hasty acceptance.

At a meeting of the Insurance and Actuarial Society of Glasgow, on Febraury 1, 1909, Dr. E. Duncan discussed Mr. Moore's paper, and while conceding that there cannot be any doubt of the superiority of the male abstainer over the non-abstainer, the physiological limit of toleration of alcohol varies for different classes of people. For the robust adult of middle age at an outdoor occupation the daily amount of alcohol which can be consumed without any apparently deleterious effects averages 1½ ounces. For the average man of adult age at an indoor sedentary occupation 1 ounce of alcohol is the physiological limit. Duncan was not much impressed with the argument that alcohol was a virulent poison. Like many other wholesome substances it is undoubtedly poisonous in excessive quantity. In small doses, such as indicated above, it is not a poison to the ordinary man.

Mr. Emory McClintock, actuary of the Mutual Life Insurance Company of New York, in 1895 read a paper before the Actuarial Society of America. He concluded from a study of the statistics of the Mutual that the investigation did not show that those who drank only occasionally and not to intoxication, or those who drank habitually but lightly were, in any way, injured. It did not show that all of those who drank heavily must therefore die prematurely. It did show, however, that there was enough injury done to a sufficient number of individuals to make the death rate distinctly higher on the average. Again, it was admitted that death losses in excess among drinkers were not necessarily always due to drink. The coincidence between excessive drinking and lowered vitality might be partly due to bad risks taking to drink, as well as to good risks becoming bad because of drink. On the whole, however, the teetotal habit, not before but after middle age, must be counted as a favorable indication in judging of proposals for insurance from persons not known to be careful and moderate in the use of beverages.

Mr. John B. Langer, then actuary of the Prudential Insurance Company of America at the next meeting of the American Actuarial Society in October, 1895, discussed McClintock's paper and brought forward figures which seemed to show that there were lower death rates for rheumatism and Bright's disease with beer drinkers than with whiskey drinkers.

Recapitulating the evidence cited in the discussion which followed the reading of Moore's paper, Mr. A. Levine recalled the fact that the abstainers and non-abstainers departments of the New Zealand showed substantially similar mortality experiences with those related in Moore's paper. Mr. T. P. Whittaker said that many of the company's abstaining members were life-long abstainers, and sons of abstainers, and suggested that these facts largely accounted for the better experience of its temperance section, and supported the contention that abstinence did lead to longer life.

The president of the Institute, Mr. Hughes, sounded a warning note as to the uses which he clearly foresaw the figures in Mr. Moore's paper would be put, saying that enthusiastic temperance advocates would say that the favorable comparison between the two sections was due to abstinence from alcohol. The paper did not prove that.

According to the tabular showings of the Medico Actuarial Mortality Investigation of forty-three American and Canadian life companies in the years 1885-1909, the policyholders who, according to their own statements, had a daily drinking average of two or more ounces of alcohol had a mortality of 186 per cent. of the expected, as compared with a mortality of only 115 per cent. in the case of the men whose daily average was not supposed to exceed two glasses of beer or one glass of whiskey.

These figures for the 42,000 cases in all forty-three companies are at decided variance with those of the Northwestern Mutual Life's experience with all of its 166,694 policies written between 1886 and 1895 inclusive, brought down to 1900, the entire difference between the death rates of abstainers and all non-abstainers being but 11.15 per cent. and the death rate of drinkers of whiskey and other spirits being but 23 per cent. higher than that of presumably light drinkers.

Reviewing all the evidence the author of the paper in the *American Underwriter* thinks that the inevitable conclusion to which the abstract of actuarial experience and opinion leads is that the probable difference between the death rates of abstaining and non-abstaining life insurance policyholders is still utterly problematical, but that the tabulated experience of the North Western Mutual Life comes much closer to an approximation of the actual difference than have any other figures previously published.

Book Reviews.

NATURE AND NURTURE IN MENTAL DEVELOPMENT. By F. W. MOTT, M.D., F.R.S., F.R.C.P., Pathologist to the London County Asylums, Consulting Physician to Charing Cross Hospital and the Queen Alexandra Military Hospital, Formerly Fullerian Professor of Physiology, Royal Institution. With Diagrams. Price $1.50 net. New York: Paul B. Hoeber, 1915.

THIS little book relates especially to the respective parts played by environment and heredity in mental hygiene. The author states that he recognizes that he is dealing with a vast subject, embracing physiology, pathology, psychology, biology, medical science, hygiene, pedagogy and sociology. His chief endeavor, he says, has been to show that there is a correlation of mind and matter. He discusses in 151 pages the progress of sanitary science; mental hygiene from a physiological standpoint; the causes of mental deficiency; inborn potentiality of the mind and the social heritage; the raw material of character in relation to heredity; genius in relation to heredity; inheritance of pathological and individual characters, neuropathic and temperamental inheritance; sex in relation to character, crime, and insanity; racial inheritance and crime; the influence of nutrition and the influence of education, stimulus, sleep, pain, and pleasure, in mental development; the health of the mother and father; infant feeding; control of the emotions and inculcation of good habits, and sex and education. There is an appendix on the medical inspection of school children by one engaged in the work in Chester, England. There are 17 illustrations. The book is an amplification by the author of three former lectures. Among the more recent subjects of interest, the hormone theory is lightly touched upon, and some attention is paid to neuropathic inheritance in relation to crime and insanity. Some pedigree charts are introduced as examples of neuropathic inheritance. The various subjects are treated in a more or less sketchy way, but in an interesting style, understandable by the general reader.

THE ALLIGATOR AND ITS ALLIES. By ALBERT M. RIES, Ph.D., Professor of Zoology in West Virginia University; author of "An Introduction to Vertebrate Embryology." Small Octavo, pages XI-358, with 62 figures, and 28 plates. Muslin $2.50. G. P. Putnam's Sons, New York and London, 1915.

PROFESSOR Ries' treatise on the Alligator seems to be a most excellent monograph. The first chapter, "The Biology of the Crocodilia," is practically an introduction to the subject, and is interesting reading for any intelligent person. The following chapters are more technical, and deal with the skeleton, the muscles, the nervous system, the digestive system, the urogenital system, the respiratory system, and the vascular system. The treatment is concise and lucid.

Chapter X, "The Development of the Alligator," is based upon a paper of that title, published for the author by the Smithsonian Institution, and is much more complete than the other chapters. A severe critic might complain that this chapter overbalances the rest of the book. The whole book, however, is so readable and so beautifully illustrated, that one is not inclined to be captious.

PAINLESS CHILDBIRTH. A General Survey of All Painless Methods with Special Stress on Twilight Sleep and Its Extension to America. By MARGUERITE TRACY and MARY BOYD. With nineteen illustrations from photographs. Price, $1.50. New York: Frederick A. Stokes Company, 1915.

THIS book has been written for the lay reader, and like the numerous magazine articles upon the same subject, and indeed like many of the so-called popularized accounts of other medical topics, it seeks to disseminate doctrines that have not yet received the seal of general medical approval. There can be no question that the authors have written an interesting and eloquent account of the history and technique of the Freiburg method. But the scientific value of their book is not enhanced by the introduction of data that have no connection with obstetrical analgesia, data such as the hearty dinner received by the patient on the same day on which her baby has been born, "a dinner which may well happen to include two or three meats and vegetables; pork, perhaps, sausages, cabbages, cauliflower, brussels sprouts, desert." The unthinking non-medical reader may possibly gain an impression from the numerous photographs in this book that healthy and handsome children are the natural product of twilight sleep. The enthusiasm of the authors leads them to minimize one of the dangers of scopolamine-morphine analgesia, a danger now well recognized and admitted even by some of the former ardent advocates of the Freiburg method, namely, the danger of axphyxia in the child. Apparently too much stress is placed upon the influence of fear and pain in the parturient patient. One of the authors actually "personally lived through a sister's confinement!" Apart from its few shortcomings, which may be attributed to the authors' zeal, this book contains a full account of the history of analgesia in obstetrics, beginning with Simpson's introduction of chloroform in alleviating the pains of childbirth. The evolution of the Freiburg method and the respective contributions to it of Krönig and Gauss are described in detail. The experiences of those in America who have written upon this subject are quoted in full. The most valuable parts of this book to the medical reader are the appendices comprising translations of the original articles by the authors of the Freiburg method, as follows: "Painless Delivery in Dämmerschlat," by Krönig in the *Deutsche medizinische Wochenschrift*, 1908; "Births in Artificial Dämmerschlat," by Gauss in the *Archiv. für Gynäkologie*, 1906, and "Further Experiments in Dämmerschlat," by Gauss, in the Karlsruhe Address before the Conference of German Naturalists and Doctors. A useful bibliography on various pbases of analgesia in obstetrics is given at the end.

JOHN SHAW BILLINGS. A Memoir. By FIELDING H. GARRISON, M.D. Illustrated. Price $2.50. New York and London: G. P. Putnam's Sons, The Knickerbocker Press, 1915.

MOST medical men are, or should be, sufficiently informed as to the late Dr. Billings's scope of activities and the monuments to his fame—chiefly the Army Medical Museum, Index Catalogue of the Surgeon General's Library and Index Medicines, and also the part he played in the creation of the Johns Hopkins Hospital and New York Public Library, to say nothing of less known achievements. If this mere enumeration is not sufficient, Dr. Billings has been the subject of very many appreciations and eulogies, and biographical sketches of him have appeared for many years past, or as soon as the extent of his labors was understood. Dr. Garrison has given us a full biography, in which his subject is viewed from a number of angles. It comprises about 400 pages, and is above all criticism. Judged by the ordinary man, even by the ordinary distinguished man, Billings was a paradox as an American; since, with transcendent abilities, he preferred to serve his country in a comparatively humble capacity, during the best years of his life. His biographer ascribes this choice to simple loyalty to the government, and doubtless in Europe his indefatigable capacity for work, his executive ability, and power of organization would have led to governmental honors which have no counterpart with us. In his own country his abilities could have counted in various ways. He could have been one of our great surgeons, and considering the number of American physicians who have left medicine for high executive positions, and who have become capitalists and Congressmen, he should have found opportunities by scores to win fortune and power.

That he remained a shining example of one who in a relatively humble sphere performed titanic works does not at first sight harmonize with the descriptive appelatives "Viking," "Norman," and other terms which suggest sovereignty. We can only conclude that Billings looked much further into the future than most men, and, perhaps alone, saw and improved opportunities to erect certain foundations, which are well nigh imperishable, which can never be superseded, and which far outweigh anything he might have accomplished under more autocratic circumstances.

Not half enough has been said of the example set by Billings to workers in subordinate capacities who complain that they have no future, save in slow or fixed promotion. The services are of the type of institutions in the country in which exceptional ability cannot be recognized in a fitting manner. Billings was merely given the opportunity of doing what no one else would have welcomed or could have done; but throughout he remained a plain captain and major in the Army to the time of his retirement. Even thereafter he continued to work for a modest remuneration. He was in a way a survivor of that "antique world" when "duty sweat for service, not for meed."

Society Reports.

AMERICAN SURGICAL ASSOCIATION.

Annual Meeting Held at Rochester, Minn., June 9, 10, and 11, 1915.

(*Concluded from page 422.*)

Cavernous Angioma of the Spleen.—Dr. CHARLES N. DOWD of New York said that angiomas of the spleen were very uncommon; some of them had ruptured and had been reported as blood cysts, others had undergone such changes as to be classified under sarcoma. A tabulation of 13 cases of cavernous angiomas was given. In six of these cases other organs besides the spleen were involved in the growth, especially the liver. The author reported one case in a woman of 37, who for six months had noticed a splenic tumor which had extended into the epigastrium across the median line. Splenectomy was done. At the operation angiomatous spots were noticed in the liver. The patient recovered from the splenectomy but thirteen days later suffered from liver hemorrhage similar to that which had occurred in the spleen. The liver enlarged greatly and the patient died six weeks later.

Abscess of the Spleen.—Dr. ARTHUR W. ELTING of Albany, N. Y., said that abscess of the spleen had been known to follow a great variety of acute infectious diseases, as well as some of a more chronic nature, especially those associated with a splenic tumor. In many cases the original portal of entry for the infecting microorganisms had not been demonstrable. Many cases of left-sided subphrenic abscess had undoubtedly been abscesses of the spleen. Abscess of the spleen always resulted from contiguous or metastatic infection, the latter being by far the more frequent. The bacteriology of the process had been very varied. Almost every variety of pyogenic organism had been cultivated from splenic abscess, while in some instances the pus has been sterile. Most abscesses of the spleen were embolic or thrombotic in origin, and developed in infected infarcts. Typhoid fever was the most common single cause of abscess of the spleen, with malaria next as an etiological factor. The prognosis was better in post-typhoid spleen abscess than in any other variety. In many cases of abscess of the spleen, there was a sequestration of spleen tissue, the sequestra varying in size from minute bits to the entire spleen. The symptoms of abscess of the spleen were suggestive rather than distinctive. Enlargement of the spleen, pain in the splenic area, and inflammatory involvement of the diaphragm or pleura at the base of the left lung, were the most important symptoms. Chills, fever, nausea, vomiting, and diarrhea often occurred and a marked leucocytosis was a frequent accompaniment. Radiography was of importance in making a diagnosis, but the most essential diagnostic measure was exploratory aspiration of the affected area. The treatment was always surgical and should be splenotomy or splenectomy, usually the former. The operative procedure would be through one of three routes: (1) the transpleural, (2) the abdominal, and (3) the retroperitoneal. The prognosis of abscess of the spleen, recognized reasonably early and adequately treated surgically, was relatively good. In the case reported by the writer, the onset was sudden, with pain in the upper left abdominal quadrant, fever, and prostration, with some enlargement of the spleen and a pronounced leucocytosis; no definite portal of entry for the infection was found. This condition continued for 20 days, when the temperature became normal and remained so for 6 days, with marked improvement in every way. The temperature again became elevated and the signs all pointed to the splenic area. Numerous Widal reactions and blood cultures were negative, but a high leucocytosis persisted. Repeated exploratory aspirations, as well as radiographs, produced negative results in the early stages. Finally the radiograph and the aspirating needle located pus in the region of the spleen, and transpleural drainage was done and a sequestrating abscess of the spleen disclosed. Cultures from the pus showed pneumococci. The patient improved for a time, but finally died, with all the evidences of a suppurating portal phlebitis.

Banti's Symptom Complex.—Dr. JOHN BAPST BLAKE of Boston, Mass., read this paper in which he said that splenectomy in splenic anemia, or Banti's symptom complex should be recommended under the following conditions: (1) In adults, when the diagnosis was agreed upon by a good physician and a competent surgeon. (2) When the condition of the patient was sufficiently good to withstand what might be a very serious operation; or when a poor condition could be sufficiently improved by one or more previous transfusions. (3) In children, only after a very thorough trial of all possible medical methods of treatment including fresh air, sunshine, careful nursing, liberal and appropriate diet, as well as the judicious exhibition of drugs. In a large majority of cases, a high white count or a considerable recurring or continuous fever were contraindications. In children also the agreement of physician and surgeon was an essential preoperative requirement. Splenic anemia was distinctly a borderline condition. In adults, most physicians of wide experience agreed that it was cured only by operation, and that it was by this means permanently cured. In adults, therefore, it was not necessary to wait (except for transfusion) once the diagnosis was established. Banti's symptom complex was in most cases a slowly progressing condition, often with periods of considerable temporary improvement; in a minority of instances the disease progressed rapidly; in practically all cases it terminated fatally. Unfortunately, neither the public, nor indeed the profession taken as a whole, was convinced of the importance of the early operative attack.

Splenectomy for Hemolytic Icterus.—Drs. CHARLES A. ELLIOTT and ALLEN B. KANAVEL of Chicago presented this communication. They first reported a case of splenectomy in a patient suffering from hemolytic jaundice of the familial type. The patient upon whom the splenectomy was done was a man of 54 years who had suffered all his life from the acholuric crises of malaise, headache, tenderness over the spleen, and slight fever, and on examination presented a large spleen, a marked anemia, and a fragility of red blood-cells at 0.54 per cent. Following the operation the patient had an uneventful recovery and reported himself two months later as having absolutely no icteric tinge, the urine was clear of urobilin, the red blood-cell count was normal, and in every way he could be said to be cured. The authors drew attention to the fragility test of Chauffard and Widal and discussed the method of arriving at their results. The fragility test in the various hemolytic cases examined varied from 0.46 to 0.54 per cent. at the beginning of the breaking down of the blood. The results of investigation as to the fragility in the splenic artery and splenic vein of dogs showed that the artery in the majority of cases presented a higher fragility of its cells. In discussing the pathogenesis, the authors leant to the assumption of Eppinger, who explained the destruction under the title of "hypersplenism." The results of the study of cases of splenectomy for this condition showed that practically all of the cases made complete recoveries after operation. There were two primary deaths. The average weight of the spleens removed was 1,000 grams. Liver crises due to the passage of an excess of thickened bile or of gallstones were present in six cases operated upon, and in four of these gallstones were found. The pathology showed an absence of connective-tissue proliferation with a constant infiltration of the pulp of the spleen with the blood-cells. There was no connective tissue proliferation and no increase in the size of the liver. The authors recommended splenectomy in these cases and believed that the operation should be performed early, particularly in the younger individuals where it would not seem advisable to wait for marked disability and the development of a large splenic tumor. On the other hand they drew attention to the fact that where there was an absence of disability it was inadvisable to operate in these patients as they might grow to old age without any serious complications.

Dr. HOWARD LILIENTHAL of New York referred briefly to seven cases of splenectomy, two for Banti's disease, one for Banti's disease with traumatic rupture, one unrecognized pseudoleukemic spleen, one case of pernicious anemia, one case of traumatic rupture of the spleen and one case of passive congestion of the spleen. Of these five patients recovered.

Dr. CHARLES L. GIBSON of New York mentioned five cases of traumatic rupture of the spleen, two cases of splenectomy for acholuric (hematogenous) jaundice, two cases of splenectomy for Banti's disease, one case of splenectomy for von Jaksch's anemia, one case of splenectomy for ecchinococcus cyst of the spleen, and one case of attempted splenectomy in splenomyelogenous leukemia. Three of the traumatic cases, both cases of acholuric jaundice, one case of Banti's disease, and the case of von Jaksch's anemia ended in recovery,

as did also the case of ecchinococcus cyst. In the case of splenomyelogenous leukemia splenectomy was impossible, due to the enormous size of the spleen, and the patient died on the tenth day following operation. In this case the operative interference was done at the earnest request of the patient.

Dr. W. A. Downes of New York reported eleven cases of splenectomy performed during the past three years with five deaths. In this series was included one case of spontaneous rupture of the spleen in typhoid fever and this was supposed to be the only one on record which had terminated favorably.

Dr. K. A. J. Mackenzie of Portland, Oregon, cited a case of splenomegaly associated with polycythemia and suggested that such a condition might well deserve more serious attention from the surgeon.

Dr. E. H. Pool of New York referred to two cases of von Jaksch's anemia occurring in his practice during the past year. He advocated in this condition that if persistent and careful medical treatment did not produce satisfactory results, removal of the spleen should be considered; if the anemia is marked, he stated that a preliminary transfusion should always be done.

Dr. Charles H. Peck of New York reported a case somewhat similar to that mentioned by Dr. Mackenzie, a polycythemia associated with splenomegaly; this condition was accidentally discovered in a patent admitted for coccygodynia. There was a hemoglobin of 140 per cent. and an erythrocytosis of 8,000,000, with a much enlarged spleen. He found in the literature that such a case was considered unsuitable for splenectomy and was to be classed as lenkemias. He also referred to a case of hemorrhagic acholuric jaundice, on which he did a splenectomy three years ago with a good recovery.

Dr. Fred T. Murphy of St. Louis mentioned a typical case of the Gaucher type in a child of six, in which he had recently operated.

Dr. Arpad G. Gerster of New York discussed the technique of splenectomy. He also reported a hitherto unpublished case of abscess of the spleen. This patient was admitted as an emergency case to the hospital, with high fever and symptoms of perforation; previous history unknown. Physical examination disclosed an effusion in the left pleural cavity, and a tumor occupying the left subphrenic space. A diagnosis of an acute suppurative process was made (the spleen as such could not be made out) and a puncture was made from behind. This proved a very satisfactory procedure, yielding seropus, and he then entered by the posterior route which gave an exceedingly easy access to the spleen. A large abscess was evacuated in which there were stomach contents as well as pus; there was a perforation of the stomach into the abscess; whether this perforation had led to the development of the abscess, or whether the latter had pointed into the stomach, could not be determined. A jejunostomy was immediately made, but the high fever continued and the patient died. Dr. Gerster recommended a posterior incision under suitable circumstances.

Dr. Willy Meyer of New York reported three cases of splenectomy; the first, done about twenty years ago, was a case of leukemia, which was before the time that this condition was recognized as a contraindication to splenectomy; the patient ded from secondary oozing. The second case was one of sarcoma of the spleen, evidently a primary tumor, as the liver was not involved; the patient died six months later from metastasis. The last case was one of splenomegaly in a man over forty years of age with recovery. Dr. Meyer stated that all of these operations had been done with the T-incision, first in the median line, then with another incision at right angles, meeting the costal margin outside. He emphasized the necessity of impressing upon the medical man the fact that splenomegaly is a surgical disease and that these cases are curable by operation.

Dr. Francis T. Stewart of Philadelphia called attention to a case resembling that detailed by Dr. Gerster, in which he was so certain of the diagnosis of abscess of the spleen that he made no preliminary puncture, but performed a splenectomy only to find the condition to be one of leukemia; the patient died.

Dr. William J. Mayo of Rochester, Minn., alluded to the apparent size of the spleen, and stated that few surgeons recognized enlargement of the spleen unless able actually to feel it beyond the costal margin. Jaundice, which formerly was thought always to mean something in connection with the biliary tract, gall-bladder, or pancreas, was now known to be due also to a diseased spleen and its effect on the red blood cells. He mentioned three cases of so-called leukemia, showing, however, no increase of white cells, in which splenectomy was followed by recovery. He insisted that true leukemia was a non-surgical condition, but believed that every chronically enlarged spleen should have a reason for non-operative interference.

Partial Occlusion in the Treatment of Aneurysm.—Mr. Edward Martin of Philadelphia reported three cases of arteriovenous aneurysm involving the internal carotid and the cavernous sinus; one operated upon by Dr. Deaver, the common carotid of one side being ligated, and two operated on by Dr. Martin under local anesthesia; in each case a unilateral carotid ligation had been made supplemented by ligation of a group of orbital veins for the purpose of promoting local thrombosis. All three patients were promptly and permanently cured. Dr. Martin urged the combined carotid and orbital ligation supplemented by serum injections, starvation diet, limitation of liquids, daily and non-straining movements of the bowels, and absolute rest in bed for two or three weeks, making this endurable to the patient by the judicious use of anodynes. Although the complete ligation of the carotids alone gave about 60 per cent. of cures, he pointed out that even in pulsating ophthalmos the immediate and remote mortality and subsequent crippling from brain lesions were sufficiently frequent (20 per cent.) to act as deterrent factors against this procedure. The partial and temporary carotid occlusions he obtained by chromic catgut in one instance, by tendon in the other, and he advocated the use of a fascial strip taken from the patient. He noted that all non-absorbable occluding media exhibited a tendency to discharge into the lumina of vessels about which they were placed.

Dr. Arthur Dean Bevan of Chicago in connection with ligation of the carotids for arteriovenous aneurysm following skull fracture, suggested first the ligation of the common carotid; if this proved inefficient, then the ligation of the external carotid, just above the superior thyroid, which would carry with it a certain amount of circulation that would tide over the brain on that side. If this also failed the final step should be the ligation of the internal carotid.

Dr. Howard Lilienthal of New York reported an unusual case of mastoiditis which after operation developed a left pulsating exophthalmos with divergent squint, with enlarged vessels in the orbit above the lid, and with tinnitus. He ligated both common carotids within ten days of each other. After a short period the tinnitus recurred. The skull was then opened by the Hartley-Krause osteoplastic method as he believed there was an arteriovenous aneurysm of the cavernous sinus; no area of pulsation could be found. The patient recovered from the operation but was not well, desired further treatment, and a ligation of an enlarged artery in the neck was performed. Death occurred a few hours later from recurring hemorrhage, due to the slipping of the ligature. An interesting point in this case was the ligation of the common carotids within ten days of each other without serious cerebral symptoms.

Dr. Ellsworth Eliot, Jr., of New York recommended partial occlusion of arteries as a valuable method of treatment in aneurysms which were inaccessible and considered it preferable to arterial ligation when such a measure threatened the viability of vital centers. In aneurysms of the extremities however, he preferred excision of the aneurysmal sac if such could be easily reached, when the anastomotic circulation was sufficiently abundant to preclude the danger of gangrene.

Dr. C. A. Hamann of Cleveland reported a case of traumatic arteriovenous aneurysm involving the internal carotid and lateral sinus, successfully treated by ligation of the common carotid.

Dr. A. W. Elting of Albany, N. Y., referred to two cases of pulsating exophthalmos, in one of which there was a definite history of trauma but in the other no such history. The first case was cured by ligation of the common carotid; in the second case ligation of the internal carotid was followed for a day or two by improvement, with however, a few days later, recurrence of all the original symptoms; after a few weeks there was entire disappearance of all symptoms with permanent cure.

End Results of a Series of 300 Operative Cases of Disease of the Biliary Tract.—Dr. John J. Buchanan of Pittsburgh, Pa., read this paper. He was able to trace all but 18 of his cases—giving 94 per cent. of known results. The primary mortality was 4.66 per cent.; 32 per cent. of the cases were acute; 95 per cent. were

drained and only 5 per cent. excised; prompt and permanent recovery ensued in 81.7 per cent. of the drained cases and an additional 5 per cent. were later cured by nature or by surgical means. The writer concluded that, while cholecystotomy was not a perfectly satisfactory operation, it was perhaps more satisfactory than cholecystectomy for surgeons of ordinary skill. As a surgeon's experience and skill increased he was more disposed to practise excision. There was a field for both operations, and that surgeon would have most success who not only considered the condition of the patient, but estimated justly his own capabilities.

Papillomas of the Gall-Bladder.—Dr. CHARLES H. MAYO of Rochester, Minn., said that few operations on the gall-bladder were of recent development. The not infrequent discovery of an apparently healthy gall-bladder in operations for gallstones caused general exploration to become a routine procedure. Thick walled gall-bladders without stones were next drained or removed. Later came the appreciation that a diseased mucosa could exist in a gall-bladder of healthy external appearance. If inflammation was from bacterial infection the lymphatics draining the diseased area was enlarged and soft in acute processes and harder in chronic processes. If there were no gallstones and little change in the appearance of the gall-bladder the lymphatic glands on the cystic duct and along the hepatic and common ducts should be palpated. If they were found to be swollen without other adequate cause the gall-bladder should be removed. If the glands were not swollen and no stones were found, then search must be made for other source of symptoms. Rosenow's theory of the cause of this inflammation seemed plausible. Bacterial invasion of the wall of the gall-bladder might cause changes in its circulation with edema, infiltration, exudation, swelling of the lymphatic glands, and local necrosis of the mucous membrane. Papillomas of the gall-bladder occurred in the same manner but instead of a primary destructive effect there occurred locally an overgrowth which might later become necrotic. Papillomas were found in 107 of the 2,538 cases of cholecystectomy in the Mayo Clinic from Jan. 1, 1907, to June 1, 1915. From a surgical standpoint, it was important to note that the papillomas of the gall-bladder were not cured by temporary drainage but that cholecystectomy should be performed.

Dr. S. J. MIXTER of Boston, Mass., strongly advocated the performance of cholecystectomy in preference to cholecystostomy. He was among the first to advocate the more radical measure, which he had practised for many years, and he was convinced that the advantages of this method were not to be questioned.

Dr. GEORGE W. CRILE of Cleveland said that his end-results in cholecystectomy had not been uniformly favorable and cited two instances, one in his own practice and one in the practice of a colleague, where very small stones later formed in a tiny bit of mucous membrane left at the bottom of the gall-bladder, producing a diminutive cholecystitis with blocking of the cystic duct. Both cases were finally operated upon a second time by the speaker with much difficulty.

Dr. JOSEPH C. BLOODGOOD of Baltimore stated that in the last two years at the Johns Hopkins Hospital he had studied a group of a thousand cases of operation upon the gall-bladder. Cholecystostomy was the usual procedure; in these cases there were 60 cases of cancer, in only two of which was the disease removable. He suggested that the future treatment of gall-bladder conditions be instituted early in the disease, with the hope that interference would take place before the development of cancer. Cholecystectomy was a protection against the development of cancer. He stated that in the series mentioned there had developed no cases of cancer of the gall-bladder where drainage was instituted in which at the time of operation careful examination showed no evidence of malignant disease.

Dr. W. D. HAGGARD of Nashville reported a case of cholecystostomy in which the patient developed carcinoma within a year.

Dr. WILLY MEYER of New York reported another case in which cholecystostomy was followed by the development of cancer at the site of the drainage tube eight months later. A second operation was refused and the patient died.

Dr. ARCHIBALD MACLAREN of St. Paul reported a case of cholecystectomy followed in eight months by cancer of the stump of the gall-bladder.

Dr. J. J. BUCHANAN of Pittsburgh stated that he had been able to follow ninety-four per cent. of his cases, and in none of these had carcinoma developed.

Resection of the Cardia for Carcinoma.—Dr. WILLY MEYER of New York read this paper. He stated that he offered his report with some hesitation, inasmuch as the two patients upon whose operations it was based did not pull through. However, he was so fully convinced not only of the feasibility of the work, but of the possibility of a more frequent recovery from operation than had hitherto been observed, that he felt impelled to write the paper. He first referred to five resections of the cardia followed by an operative recovery. They were the cases of Voelcker, Kümmel, Sauerbruch, Zaaijer, and Ach, each done by a different method, which he illustrated by lantern slides. He then proceeded to tell of his own experience with two operations done in the course of the winter, one at the Post-Graduate, the other at the German Hospital. He emphasized the necessity of doing the operation in stages, the first to represent gastrostomy with careful palpation of the pathologic conditions at and around the cardia; the second to consist in attacking the tumor from the abdominal cavity, if the healthy portion of the esophagus above the tumor could be reached from below. He strongly advised following the method of Ach, according to which the proximal stump was extracted from the posterior mediastinum through an esophagotomy wound at the neck and transposed downward under the skin of the chest. Dr. Meyer carried out the extraction method in both instances, but was forced each time by adverse conditions found to add a thoracotomy at the same sitting. However, abdominal section plus thoracotomy plus esophagotomy evidently was too much for these reduced patients to stand at one time. In his second case the intratracheal insufflation did not work satisfactorily and was seemingly the principal cause of the fatal issue. In both his cases the work had to be done in the presence of and with preservation of a previously established gastric fistula, a point which did not have to be considered by the operators whose cases were reported. Dr. Meyer stated that Ach carried out the extraction method by means of a wire loop, introduced to the stump of the esophagus, which loop was then pierced with needle and thread. The latter was knotted and served to withdraw the esophagus from the posterior mediastinum. However, this kind of procedure added an element of sepsis and Dr. Meyer therefore had constructed a new esophageal extractor which obviated this drawback. He tested it in the dog with entire satisfaction and stated that he saw no reason why it should not work equally well in the human subject. All the steps of the resection of the cardia as witnessed in his two cases, also of the new instrument and of Ach's extraction method were illustrated by lantern slides.

Dr. ARTHUR DEAN BEVAN of Chicago said that thoracic surgery, being accompanied by enormous risks and requiring expert and experienced workers with perfect technique, should be turned over to specialists in this field, in order that the pioneer work might be carried on only by skillful men interested in the perfection of this field of surgery.

Dr. LEONARD F. FREEMAN of Denver recorded an operation performed seven years ago for carcinoma of the lower end of the esophagus. He gave a detailed description of the method of procedure. The patient rallied well from the operative shock, but unfortunately died some four days later of pneumonia. There was apparently no leakage from the site of the gastro-esophageal anastomosis.

Non-Calculous Obstruction of the Upper Ureter.—Dr. CHARLES H. PECK of New York presented a report of fourteen cases of upper ureteral obstruction to illustrate the principle of "splinting the ureter" as a part of the operative procedure, for the purpose of preventing recurrence of obstructions from fresh kinks, adhesions, or angulations, while the kidney and ureter were becoming fixed in their new position. A ureteral catheter or probe was passed through a stab wound in the kidney cortex to the bladder and secured to the skin by adhesive straps. It was removed after three or four days. The fourteen cases included examples of valvular obstruction at the pelvic ureteral junction with hydronephrosis and other types of non-calculous obstruction. None of the cases had had recurrence of symptoms or had required secondary operation. Plastic resection of the kidney pelvis, nephropexy, etc., were done according to indications in each case before the ureteral catheter was placed.

Fistulous Communication between Stomach and Colon Following Gastroenterostomy.—Dr. C. A. HAMANN of Cleveland presented this communication. A gastro-

jejunal ulcer, following gastroenterostomy, might result, he said, in a fistulous communication between the stomach and transverse colon. There was some thirteen such cases upon record. The leading symptoms of such a condition was fecal odor of the gastric eructations and perhaps fecal vomiting, diarrhea (sometimes lienteric in character), and loss of weight. As there was usually also an opening into the jejunum, the term "gastro-jejuno-colic fistula" was an appropriate one. The author reported a case in which this condition ensued after gastroenterostomy and partial gastrectomy. The patient recovered, after separation of the stomach, jejunum, and colon from one another, closure of the openings in the stomach and jejunum, resection of four inches of the colon and the making of a new gastroenterostomy.

AMERICAN PEDIATRIC SOCIETY.

Twenty-seventh Annual Meeting, Held at Lakewood, N. J., May 24, 25 and 26, 1915.

THE PRESIDENT, DR. GEORGE N. ACKER OF WASHINGTON, D. C., IN THE CHAIR.

Monday, May 24—First Day.

President's Address.—Dr. GEORGE N. ACKER delivered this address in which he spoke of the importance of Child Welfare work. He said that this subject had found national expression in the establishment of the Children's Bureau of the Department of Labor. This Bureau, under the guidance of its director, had done creditable work at Johnstown, Pa., the results of which had been embodied in the first report of the Children's Bureau in its study of infant mortality in the United States. According to this report the death rate among children was in direct proportion to the earning capacity of their fathers. The infant death rate was five times as high in a poor unsanitary section of the city as in a better residential district. In families where the earning capacity of the father was $10 per week, the infant mortality was 256 per 1,000 births; in those in which it was in excess of $25 the mortality was 84 per 1,000 births. This report seemed to show the importance of breast feeding for at least three months. A high infant mortality was found to be coincident with neglected streets, unsanitary housing, taking boarders in the home or working outside the home on the part of the mother. This Bureau was trying to find the conditions of life which were most favorable to the American baby in every respect. Since the problem was an economical one it became the duty of the State to provide the necessities for healthful living if the parents were unable to do so. Dr. Acker spoke of the advantages that accrued from playgrounds, school lunches and the classes for teaching girl pupils the care of infants. He expressed the opinion that the effects of the European war would be shown in a physically and mentally weakened offspring attended by a correspondingly high infant mortality and that this country would not escape this result altogether. That much could be done to lessen this evil was shown by Professor A. Pinard who stated that the infant mortality in Paris was 21 per cent. less during the first six months of the war than during the same period of the preceding year, and that the maternal mortality had decreaed proportionately during this time. These results were attributed to the measures taken by the maternal and infant aid societies organized at the beginning of the war. The danger of contact infection with tuberculosis had been too much neglected and the mistake had been made of laying too much emphasis on the destruction of infectious material at the expense of building up individual resistance by good food and proper hygiene. The infant constantly exposed to tuberculosis infection was as much entitled to protection as authority would give it were the disease smallpox or diphtheria. Dr. Acker suggested that a reform should be brought about in the chaotic condition of the principles of infant feeding, and also that it might be wise to enlarge the membership of the Society. This latter might be done by providing an associate membership from which men could be advanced to full membership on a basis of merit.

Cubic-Air Space for Institutional Bottle-Fed Infants.—Dr. THOMAS S. SOUTHWORTH of New York read this paper. He pointed out the shortcomings of the New York State law with reference to stating that while ventilation was a nominal requirement, such ventilation was neither defined nor enforced. There was no apparent evidence that the laws and rules were based on competent pediatric authority. The writer had sent out a questionaire to each member of this society with the hope of securing some definite data of value and authority on this subject, the inquiry being restricted as far as possible to bottle-fed infants under one year of age unaccompanied by their mothers. Dr. Southworth reviewed the questions which had been asked and analyzed the answers from which he concluded as follows: (1) The majority of hospitals and institutional wards for infants from which reports were received, provided 1,000 cubic feet air space and upward for each inmate, and only five reported 600 cubic feet or less (the legal requirement). (2) Even with 1,000 cubic feet of air space free ventilation was considered highly important, and as the space decreased such free ventilation became more and more imperative. No allowance of cubic air space was at present made for the attendants in the wards. (3) Reduced cubic air space meant less square feet of floor space and less separation between cribs, with proportionately increased opportunity for the spread of cross infections. Adequate separation of the beds was only attainable with large cubic air space. (4) On account of their handicaps, bottle-fed babies were likely to require more space than nursing infants. (5) Bottle-fed infants required as much air space as sick or "medical" or "surgical" cases among infants. (6) The majority of pediatrists believed that infants should have as much cubic air space as adults, if not more and this was especially true of bottle-fed infants, because they were more susceptible to infection, suffered in their confinement and did badly in all save the best equipped institutions. (7) Limited cubic air space involving limited floor space, was an important contributory factor in the high mortality of artificially fed infants, and such crowding in limited space was very commonly the concomitant, if not itself the cause of faulty hygiene, insufficient care and inadequate nursing. (8) Even with a liberal allowance of cubic air space free and abundant ventilation was of equal importance; in addition, provision for roof gardens, porches, and sunparlors was advisable, if not imperative. (9) The mere presence of windows did not of itself constitute ventilation, but their proper use must be provided for. (10) A low minimum of cubic air space established by law, without definition of what constituted efficient ventilation and without enforcement, might be more harmful than beneficial, and might constitute a virtual license to overcrowd in ill-ventilated wards. (11) The example of the more progressive hospitals and institutions which provided the large amounts of air space per infant, together with free ventilation, was to a considerable extent nullified by state and local regulations, licensing for the less progressive, the employment of a minimum air space for a class of infants among whom there was admittedly an unduly high death rate.

Dr. L. EMMETT HOLT of New York pointed out that the problem was a difficult one for pediatrists since so much depended on the co-operation of hospital authorities. He also brought up the question to whether children having hospital care did better in separate institutions or in a special department of a general hospital. In some ways children were better off in a special institution since they required a special kind of care and in children's institutions a special construction was desirable, while in a large general hospital there were certain advantages, training schools for nurses, opportunities for consultation with physicians in other special departments and opportunities for the training of internes that would give them experience in dealing with children's diseases. A given number of children needed from two to three times as many nurses as would be required for the same number of adults.

Dr. ROWLAND G. FREEMAN of New York said that in the matter of cubic air space what the child needed was free moving air. Out-doors was better than in. Dr. Freeman also spoke of the relative advantages of the general hospital and the special hospital for children and stated that the general hospital offered the pediatrician the advantage of contact with men in other departments and he could thus get acquainted with methods that were being employed with adults and that might be applied to children as well.

Dr. L. E. LA FETRA of New York said that there were many other factors besides the cubic air space that had to do with the welfare of infants in institutions. The fewer babies there are to a given amount of cubic air space the better they did. Breast-fed infants did better than those artificially fed with the

same air space. The amount of indivdual care the babies received was an important factor. When more babies were admitted to a ward more nurses were too often not added. Frequently there was inadequate nursing at night. Beds should be far enough apart to avoid the danger of cross infection.

Dr. S. McC. Hamill of Philadelphia discussed the advantages of general and special hospitals for children and said the question really resolved itself into one of hospital administration.

Dr. Henry L. Coit of Newark brought out the point that atrophic babies radiated heat rapidly and with this type of infants one had to be more careful as to the ingress and egress of air; for these infants the air should be warmer than for normal infants. For such infants a proper balance in the atmospheric conditions could not be obtained by window ventilation. In determining air space some allowance had to be made for the physical condition of the child and its capacity for maintaining heat.

Dr. Fritz B. Talbot of Boston took exception to Dr. C. Coit's statement that atrophic infants radiated heat more rapidly than normal ones; they had found that in atrophic infants the subnormal temperature was not due to radiation from the skin but to the fact that the engine did not make enough heat to keep up the temperature; and heat had to be supplied from the outside.

Dr. Samuel S. Adams of Washington, D. C., said that proper ventilation depended on many different factors; a competent architect was one of these. If one could not get proper hospital construction from the board of managers of the hospital, an appeal to the ladies' board was sometimes successful. They had adopted the plan of having the mothers come and take their babies out for exercise in the afternoons, and had also employed nurses for this purpose. The babies that were taken out undoubtedly did better than those that remained in-doors.

Dr. Southworth, in closing the discussion, said there was a growing belief that babies should not be kept in foundling hospitals, but were better off boarded out. The two states that were making the greatest effort to board out their babies were those in which the laws required the least cubic air space in institutions for infants, namely, New York and California.

Parapharyngeal Abscess as Distinguished from Retropharyngeal and Peritonsillar Abscess. — Dr. Henry Heiman of New York read this paper in which he described the distinctive features of each of these conditions and concluded as follows: There occurred, especially in children, a form of abscess which was occasionally mistaken for retropharyngeal abscess, but which had a separate and distinct entity. It might be called parapharyngeal abscess as its site was in the lateral columns, that was, by the side of the pharynx. The origin of this abscess was from the superior chain of deep cervical glands which were situated along the course of the carotid artery, as distinguished from the retropharyngeal glands, situated in the circumscribed retropharyngeal space, just lateral to the midline and in front of the prevertebral muscles. The parapharyngeal abscess always displaced the tonsil toward the median line and was rarely accompanied by any marked local change in the appearance of the pharynx, or by any symptoms of pressure on the larynx. These abscesses were, as a rule, cured only by external operation.

Dr. Wilder Tileston of New Haven, Conn., said he had just seen a case of parapharyngeal abscess, in which the abscess perforated internally, contrary to the rule Dr. Heiman laid down.

Dr. Thomas S. Southworth of New York said that peritonsillar and parapharyngeal abscesses were likely to be confused. In the peritonsillar abscess there was more swelling of peculiar vague character before we could feel the gland, but not an external fluctuating mass. The abscesses grouped under these two heads sometimes pointed inside and sometimes out. Dr. Southworth asked Dr. Heiman whether in his experience these parapharyngeal abscesses pointed externally, or whether one had to go down after them as after those secondary to scarlet fever.

Dr. L. E. La Fetra of New York said that he wished to add his testimony to what had been said, that parapharyngeal abscess could certainly be opened from within if the cases were such as he understood were included in the parapharyngeal group. One of the points was that in these cases in which there was a large amount of swelling and the tonsil was pushed inward toward the midline, one need not be in too great a hurry to operate; with expectant treatment, hot irrigations, etc., the abscess might open of itself.

Dr. Walter Lester Carr of New York, expressed the opinion that it would sometimes be found difficult to make distinctions according to this classification. He said he had heard this subject discussed and the surgeons were all in favor of an external operation while the medical men thought these abscesses could be reached internally, or could be brought to a point by irrigations. The paper had not told them definitely when a case was suitable for the surgeon and when it was proper to use a small incision, an operation such as could be done by any of them. The operation which gave the best drainage, whatever the form of infection, was the preferable one.

Dr. J. P. Crozer Griffith of Philadelphia stated that from his experience in consultations with general practitioners he had been led to believe that the diagnosis of retropharyngeal abscess was not as easy as Dr. Heiman had said.

Dr. Heiman, in closing the discussion, showed that most of the points brought up had been covered by his paper. Parapharyngeal abscess was much slower in developing, while the peritonsillar abscess developed within from twenty-four to forty-eight hours, and involved Rosenmuller's fossa.

A Contribution to Ductless Gland Therapy. — Dr. Royal Storrs Haynes of New York presented this paper in which he related the history of an abnormal child which demonstrated the particular activities of the pars intermedia of the pituitary gland. This patient was first seen in 1905 when three years and eight months of age, and a diagnosis of cretinism was made. Under thyroid therapy she improved until at the end of two years she was bright, intelligent, with a closed fontanelle and not greatly protuberant abdomen. Shortly after this it was noted that she was not so bright. Under increased doses of thyroid she again deteriorated. In 1913 she came under the direct care of the writer, at which time she was a large child, though below the average. She was excessively nervous, had an excessive appetite and was troubled with enuresis. It was apparent that she was getting too much thyroid. After doing without thyroid for some months she became remarkably normal. During the past six months it seemed that another agency was at work or released by the withdrawal of the thyroid. The patient's weight increased rapidly. Her face was heavy, her fingers blunt and she looked old and sullen. The possibility of pituitary involvement suggested itself and a radiograph seemed to show that the sella turcica was enlarged. Acting on the suggestion that an enlarged turcica meant an enlarged pituitary, while the increased tolerance for glucose meant a deficient pars intermedia, he concluded that a hyperplasia of the pars anterior caused the enlargement of the face, hands, and feet, and that this by pressure on the pars intermedia or its blood supply caused it to become deficient. Acting on this supposition a preparation of pars intermedia was obtained in capsule form, each capsule being equivalent to 150 pounds of live bullock. After taking these capsules for two weeks the patient began to show an improvement and made steady progress until at the end of some months a distinct change had taken place in her facial expression and her skin. Her fingers became tapering, her hips slender and shapely and her lower extremities straighter. An attempt was made at one time to resume the thyroid treatment but this had to be abandoned. The patient did not now appear to be an abnormal child, only a rather heavy stocky one, good natured and insensitive to pain. It seemed evident in this case that, assuming deficiency of thyroid, there was also an affection of the pituitary, which partook of the nature of deficiency of the pars intermedia.

Dr. Charles Herrmann of New York said that this case bore out his contention that frequently more than one ductless gland was affected. There seemed to be a correlation between the so-called ductless glands. Assuming this to be the case an extract composed of thyroid, suprarenal, and pituitary was better than thyroid alone. In the treatment of cretinism itself, they had formerly used only thyroid extract, but they were now using thyroid protein and the results were as good if not better than with the thyroid extract.

Dr. J. P. Crozer Griffith of Philadelphia said he had under his care a boy who had gigantism and both a hypo- and a hyper-activity of some ductless gland. He did not see how this could be unless there was something besides the pituitary diseased.

Dr. HAYNES replied that there might be an association of thyroid and pituitary disease. There was a scientific basis for this statement, since the removal of the thyroid had been shown to result in hyperplasia of the pituitary.

The Energy Metabolism of an Infant with Congenital Absence of the Cerebral Hemispheres.—Dr. FRITZ B. TALBOT of Boston made this report. He said that this baby was admitted to the Massachusetts General Hospital when eight months of age, at which time he was unable to sit or hold his head up. His muscles were relatively undeveloped, anterior fontanelle depressed, posterior fontanelle closed. The child was blind, apparently deaf, and had an idiotic expression. There was no paralysis other than the muscles of the neck. His reaction to touch seemed more highly developed than in the normal infant. An operation for the relief of the blindness showed that the hemispheres of the brain were entirely absent and were replaced by cerebrospinal fluid. At the base of the skull there were a series of knobs, none larger than a small walnut, the posterior of which probably represented the cerebellum. The pulse rate when the child was at rest was 69 to 70 per minute; during muscular exercise it was 140 per minute. The child weighed 330 grams more than the average baby of the same age. The metabolism of the child was determined in the apparatus described by Benedict and Talbot, in "Gaseous Metabolism of Infants" (Carnegie Institute, Washington, Pub. 210). A comparison of the metabolism of this child with that of two normal infants of about the same age, weight, and length showed that the metabolism of this child was extremely low. His minimum metabolism was relatively lower than that of a new born babe and of several fat babies none of which produced less than 42 calories per kilo body weight. Since this child was deprived of the volitional areas of the brain, his life was similar to that of a frog in which the cerebral hemispheres had been removed. He therefore did not develop musculature as would a normal infant. His temperature remained constant during the time of observation. The vital functions of this infant were carried on at a very low plane because his existence was purely reflex. Unless some external stimulus caused him to move there was little or no muscular activity and as a result only a small amount of fuel was necessary to keep the furnace going.

Dr. JOHN HOWLAND of Baltimore stated that in his metabolism studies he had reported a similar case in a child eight years of age when first seen and weighing only 13 pounds. His metabolism was very low and he had almost no muscles. The results of the metabolism observations made on this child were nearly comparable to those presented by Dr. Talbot.

Dr. TILESTON of New Haven, Conn. asked whether the child had had any epileptiform seizures, chronic spasticity, tachycardia, or increased respiration.

Dr. TALBOT of Boston replied that there were no changes in the respiration and no nervous symptoms except that when the child cried he made a sound suggestive of laryngismus stridulus.

(*To be continued.*)

STATE BOARD EXAMINATION QUESTIONS.

WASHINGTON STATE BOARD OF MEDICAL EXAMINERS.
July, 1914.

[Answer ten (10) questions only in each paper.]

(*Continued from page* 382.)

GENERAL DIAGNOSIS.

1. How would you diagnose an acute attack of appendictis? Differentiate between an acute attack and an un-ruptured ectopic gestation.
2. Describe the cardinal symptoms of exophthalmic goitre. When should you operate and what are the dangers in operating?
3. Describe burns of the first, second and third degree. What complications are likely to arise in the latter class?
4. Describe the symptoms of intestinal obstruction and differentiate from stone in the ureter?
5. Give differential diagnosis between concussion and compression of brain.
6. What sequel frequently follows depressed fracture of skull? How would you locate such by symptoms in the superior parietal region?
7. Differentiate between tabes dorsalis and multiple sclerosis.
8. Differentiate between pleuritic effusion and gangrene of lungs.
9. Differentiate between acute albuminuria and interstitial nephritis.
10. Describe acute otitis media, and what complications are likely to arise?
11. Give diagnosis between Landry's paralysis and rabies?
12. Describe symptoms and name causes of sacro-iliac disease. Differentiate from sciatica.

BACTERIOLOGY.

1. Give four methods by which microorganisms gain entrance to the body and name two diseases of each class.
2. Name the pathogenic agents in the following diseases: diphtheria, uncinariasis, syphilis, erysipelas, malaria (estivoautumnal), abscess, acute osteomyelitis, purulent salpingitis.
3. What is meant by infection? Give the usual symptoms.
4. Define following terms: chemotaxis, strict parasite, saphrophyte, opsonins, agglutinin, antiseptic, disinfectant.
5. Describe and give the characteristics of pneumococcus.
6. In a case of suspected diphtheria how would you arrive at a positive diagnosis? Describe process.
7. Differentiate between: vaccines and antitoxins; sapremia and septicemia; septicemia and pyemia.
8. What bacteria most frequently cause puerperal fever?
9. Give short description of Gram's method of staining and state which of following bacteria are "Gram positive": tubercle bacillus, typhoid bacillus, gonococcus, diphtheria bacillus, anthrax bacillus.
10. Describe the bacillus of typhoid fever and give characteristics.
11. What is a pure culture? Name five culture media in common use.
12. Give characteristics of the tubercle bacillus.

CHEMISTRY.

1. Define chemistry, atom; molecule; density.
2. Define carbon. Illustrate, (*a*) Free; (*b*) In combination.
3. What are hydrocarbons? Illustrate.
4. What gaseous matters are found in the body during health?
5. What is sodium chloride and daily amount eliminated?
6. What are curative sera and how prepared?
7. Give pigments of bile, blood, urine.
8. What is the caloric value of food? How serviceable in the dietaries of (*a*) Infancy; (*b*) adult; (*c*) old age.
9. Give quantitative estimation of total acidity of gastric contents.
10. Give four abnormal constituents of urine and method of determining same.
11. Give ferments of pancreatic fluid and their function.
12. Essential differences between human and cow's milk.

ANSWERS.

GENERAL DIAGNOSIS.

1. *Acute appendicitis* is characterized by sudden onset of pain, at first general over the abdomen, but later localized in the right iliac fossa; tenderness, most marked at McBurney's point; rigidity of the right rectus abdominis muscle; fever; vomiting and constipation; the patient generally lies on his back with the right thigh drawn up.

In *unruptured ectopic gestation*, there is a history of irregular menstruation, morning nausea, and breast signs; the pain is of a colicky character and may cause faintness; vaginal examination shows a movable mass on one side of the uterus.

2. The *cardinal symptoms of exophthalmic goiter* are: Exophthalmus, enlargement of the thyroid gland, tachycardia and tremor. Operation should be undertaken when the disease continues to progress in spite of proper medical treatment. The dangers in operating are: Hemorrhage, sudden death from dyspnea, injury to the recurrent laryngeal or pneumogastric nerve, and tetany.

3. *Burns of the first degree* are characterized by erythema, and local congestion of the skin; *burns of the second degree*, by vesication; and *burns of the third degree* by destruction of the skin. The possible complication of this last class are: Shock, sepsis, and ulceration of the duodenum (which may cause death from hemorrhage or perforation).

4. *Symptoms of intestinal obstruction:* Abdominal pain of an acute and severe type, constipation, vomiting which may become fecal, prostration, pallor, thirst.

In *renal colic*, the pain is agonizing, and is located in the kidney and radiates down the ureter, and may be felt in the testicle, glans penis, or inner side of the thigh; a chill is usually present; and the urine is bloody.

5. *Differential diagnosis of concussion and compression of the brain:*

	CONCUSSION.	COMPRESSION.
Onset	Sudden.	Gradual.
General condition	Can be roused.	Cannot be roused.
Pupils	Equal, react.	Dilated, immobile, perhaps unequal.
Pulse	Slow and weak.	Slow, full, heaving.
Respirations	Slow, shallow, irregular.	Slow, deep, stertorous.
Muscular system.	Relaxed (functional paralysis).	Organic paralysis.
Reflexes	Present.	Absent.
Rectum	Incontinence of feces.	Incontinence of feces.
Bladder	Incontinence of urine.	False incontinence.
Temperature	Subnormal, equal on the two sides.	Subnormal, rising in late stages; may be unequal on the two sides.

—(*Aids to Surgical Diagnosis.*)

6. Depressed fracture of the skull is frequently followed by compression of the brain.

The symptom locating it in the superior parietal region is paralysis of the muscles of the lower extremity on the opposite side of the body.

7. In *tabes dorsalis* the cardinal symptoms are: Loss of knee-jerks, lightning pains, Romberg symptom and ataxic gait, Argyll-Robertson pupil, numbness of the feet, a history of syphilis, and the slow onset of the disease.

In *multiple sclerosis*, the cardinal symptoms are: Intention tremor, nystagmus, scanning speech, exaggerated knee-jerks, ankle clonus, ataxia, rigidity in the legs, attacks of vertigo and apoplectiform and epileptiform seizures.—From Butler's *Diagnostics.*)

8. In *gangrene of the lung*, the offensive odor of the breath and the presence of lung tissue in the sputum are quite sufficient to differentiate this condition from pleuritic effusion (or anything else).

9. In *acute albuminuria* there is albumin in the urine, but none of the other symptoms of interstitial nephritis.

In *interstitial nephritis* the symptoms may be latent, but as a rule the general health is disturbed; headache, defective vision, lassitude, insomnia, dyspnea on exertion may be present. The urine may contain a little albumin or none at all, blood pressure is increased, the pulse is hard and incomprehensible, and the second aortic sound is accentuated.

10. In *acute otitis media* there is tinnitus, impaired hearing, pain (which may become intense), and fever. *Possible complications* are: Inflammation of the mastoid cells, caries and necrosis, phlebitis, meningitis, and cerebral abscess.

11. In *rabies* "the wound by which the poison was introduced, as a rule, rapidly heals, and for a time nothing happens to attract the patient's attention to the scar. In about six to eight weeks or so the scar may become painful and nervous disturbances manifest themselves. The patient becomes sleepless, peevish, irritable, and experiences a choking sensation about the throat. When the disease is fully developed there are intense muscular spasms, the respiratory muscles and those of deglutition being specially involved; but a more or less tetanoid condition may be observed in nearly all the muscles. There may be opisthotonos. The features may be horribly contorted or wear an aspect of extreme terror; the saliva is not swallowed, and as it collects in the mouth along with thick mucus from the congested fauces it causes noisy attempts at ejection, attended with great difficulty. The face is usually flushed or livid during the attacks and there may be raving delirium, delusions, and hallucinations. It should be noted that, though the patient is very thirsty, he is afraid to drink, as any attempt at swallowing brings on the spasms at once; even the sound of running water will excite the attacks. There is generally fever, the temperature ranging from 100° to 103° F. After from two to three days the patient may pass into the "paralytic stage," which, however, is more common in animals. He generally dies of exhaustion in from two to ten days after the development of the characteristic symptoms."

Landry's paralysis "is an acute ascending paralysis beginning in the legs, rapidly involving the trunk, diaphragm, and arms, ending fatally, and probably due to a toxic affection of the lower motor neurone."—(Wheeler and Jack's *Handbook of Medicine.*)

12. *Sacro-iliac disease* is of tuberculous origin. The *symptoms* consist of pain over the joint, increased by movement or standing. From pressure on the lumbosacral cord, pain may be referred to the leg. The leg can be moved without pain or limitation if gentleness is exercised; but pain is produced by compressing or forcibly separating the crests of the iliac bones. There may be apparent lengthening on the diseased side from pushing downward of the iliac bone on that side. Tenderness and swelling, or even an abscess, may be felt over the joint posteriorly, or the abscess may burrow and point in the lumbar region, groin, or ischiorectal fossa.

The diagnosis from sciatica is made by the absence of pain on compressing the pelvis in sciatica.—(*Aids to Surgery.*)

BACTERIOLOGY.

1. *Microorganisms may enter the body:* (1) By the *respiratory tract*, as in pulmonary tuberculosis and whooping cough; (2) by the *digestive tract*, as in typhoid fever and cholera; (3) by the *mucous membrane* of the *genital tract*, as in gonorrhea and syphilis, and (4) by the bite of an insect (transferred to the blood) as in malaria and yellow fever.

2. *Diphtheria* is caused by the Klebs-Loeffler bacillus; *uncinariasis*, by the *Ankylostomum duodenale* and the *Necator americanus; syphilis*, by the *Treponema pallidum; erysipelas*, by the *Streptococcus erysipelatis; malaria* (*estivo-autumnal*), by *Plasmodium præcox; abscess*, by *Staphylococcus pyogenes aureus, Staphylococcus pyogenes citreus, Staphylococcus pyogenes albus, Streptococcus pyogenes, Bacillus tuberculosis*, and others; *acute osteomyelitis*, same as *abscess; purulent salpingitis*, same as abscess, with *Micrococcus gonorrhea*, and *Bacillus coli communis.*

3. *Infection* is the morbid process caused by the successful invasion of the organism by pathogenic *microorganisms.* The *usual symptoms* are: Malaise, chill, fever, prostration, headache, rapid pulse; other symptoms vary according to the infection.

4. *Chemotaxis* is the property by virtue of which certain living cells approach or move away from certain other living cells or substances.

Strict parasite is a parasite which cannot lead an existence independent of its host.

Saprophyte is a microorganism which grows on dead matter.

Opsonin is that quality of a serum which makes a microorganism more susceptible to phagocytosis.

Agglutinin is something in the blood serum of an animal affected with a bacterial disease which causes the clumping of the pathogenic bacteria.

Antiseptics are agents which prevent or restrain putrefaction.

Disinfectants are agents which restrain infectious diseases by destroying or removing their specific poisons.

5. *Pneumococcus* is a spherical or oval coccus, encapsulated, non-mobile, non-flagellated, non-sporogenous, non-liquefying, often occurring in pairs, non-chromogenic, aerobic and optionally anaerobic, staining readily with aniline dyes and by Gram's method; its cultural characteristics are variable, some strains growing readily on ordinary media, some with difficulty, and some not at all.

6. A sterile swab is rubbed over any visible membrane on the tonsils or throat and is then immediately passed over the surface of the serum in a culture tube. The tube of culture, thus inoculated, is placed in an incubator at 37° C. for about twelve hours, when it is

ready for examination. A sterile platinum wire is inserted into the culture tube, and a number of colonies of a whitish color are removed by it and placed on a clean cover slip and smeared over its surface. The smear is allowed to dry, is passed two or three times through a flame to fix the bacteria, and is then covered for about five or six minutes with a Loeffler's methylene-blue solution. The cover slip is then rinsed in clean water, dried, and mounted. The bacilli of diphtheria appears as short thick rods with rounded ends; irregular forms are characteristic of this bacillus, and the staining will appear pronounced in some parts of the bacilli and deficient in other parts. *Methods of culture:* The bacillus of diphtheria grows upon all the ordinary culture media, and can be readily obtained in pure culture. Loeffler's blood serum, particularly with the addition of a little glucose, is an admirable medium for the rapid growth of this bacillus. The medium should be alkaline and not less than 20° C.

The *characteristics of the bacillus of diphtheria:* The bacilli are from 2 to 6 mikrons in length and from 0.2 to 1.0 mikron in breadth; are slightly curved, and often have clubbed and rounded ends; occur either singly or in pairs, or in irregular groups, but do not form chains; they have no flagella, are nonmotile, and aërobic; they are noted for their pleomorphism; they do not stain uniformly, but stain well by Gram's method and very beautifully with Loeffler's alkaline-methylene blue.

7. *Difference between an antitoxin and a bacterial vaccine:* "The antitoxic sera act directly upon the poison secreted by the living bacterial cell and neutralize its toxic property, while the bacteriolytic sera affect the bacteria themselves and destroy them or paralyze their action. Since the antibacterial sera are without effect upon the formed toxin, they are mainly useful in practice as a means of protecting against the bacterial invasion, while the antitoxic sera (*e.g.* diphtheria) may be employed to combat an infection already in progress. Broadly speaking, the latter are curative, the former protective."—(Jordan's *Bacteriology.*)

Sapremia is due to absorption of toxins only, and is characterized by a persistent high temperature, relieved at once by removing the source of the poison.

Septicemia is due to organisms multiplying in the blood, and characterized by a maintained high temperature, but not relieved by getting rid of the original source.

Pyemia is due to particles of blood-clot carrying organisms to parts distant from the original source, and there setting up abscesses. It is characterized by rigors, very high temperature, sweatings, and big remissions of temperature.

8. Bacteria which most frequently cause puerperal fever, are: *Streptococcus pyogenes, Staphylococcus pyogenes aureus, gonococcus, Bacillus coli communis, Bacillus aerogenes capsulatus.*

9. *Gram's method of staining:* Stain a cover glass preparation for two or three minutes in anilin gentian-violet. Wash in water. Treat with Gram's solution (iodine, 1 gram; potassium iodide, 2 grams; water, 300 c.c.) for a minute and a half, when the preparation becomes nearly black. Decolorize with strong or absolute alcohol for at least five minutes, wash, dry, and mount. Sometimes a contrast stain of Bismarck brown or eosin is used.

Tubercle bacillus, diphtheria bacillus, and anthrax bacillus are Gram positive; typhoid bacillus, and gonococcus are Gram negative.

10. The *bacillus of typhoid fever* is a short bacillus, with rounded ends, about 1 to 3 microns long by 0.5 to 0.8 micron wide, motile, flagellated, non-sporogenous, aerobic and optionally anaerobic, stains by carbol-fuchsin but not by Gram's method. The Widal reaction is obtained with the typhoid bacillus, a culture of which shows the phenomenon of agglutination or clumping upon the addition of dilute serum from a patient with typhoid fever.

11. A *pure culture* is one that contains only one kind of microorganism.

Five culture media: Gelatin, bouillon, blood serum, agar, and potato.

12. The *tubercle bacillus* is a small slender rod, about 3 or 4 microns long by 0.2 to 0.5 micron wide; it is nonmotile, has no flagella, no spores, is aerobic, and resists acids; stains well by Ehrlich's method or by carbol-fuchsin method. The bacilli grow well on blood serum and in glycerin bouillon.

CHEMISTRY.

1. *Chemistry* is that branch of science which treats of the composition of substances, their changes in composition, and the laws governing these changes.

An *atom* is the smallest particle of an element that can enter into chemical action.

A *molecule* is the smallest quantity of any substance that can exist in a free state.

Density of a substance is the weight of a given volume of that substance as compared with the weight of an equal volume of some other substance accepted as a standard of comparison, under like conditions of temperature and pressure.

2. *Carbon* is a chemical element, with atomic weight 12, valence 4, and symbol C. It exists *free* in three allotropic forms, diamond, graphite, and coal; in *Combination* it is found in every organic compound, such as ether, chloroform, chloral, phenol, carbohydrates.

3. *Hydrocarbons* are substances which contain carbon and hydrogen only, as methane CH_4; ethane C_2H_6.

4. *Gaseous matters found in the body during health:* Hydrogen, oxygen, nitrogen, carbon, dioxide, methane.

5. Sodium chloride is a compound whose molecule contains one atom of sodium and one atom of chlorine, NaCl. Abut fifteen grams are eliminated daily.

6. "Serum-therapy proper is the prophylactic and curative treatment of certain infectious diseases by the subcutaneous or intravenous administration of a blood-serum containing an antibody (antitoxic, bactericidal, etc.) which is specific to the particular disease. As generally used, however, the term includes also the treatment of some of these affections by vaccines and by the toxic products (toxins) of attenuated cultures of their respective microbes; but these toxins, though sometimes grown on blood-serum, may be produced on other media, and are never administered in a blood-serum, as the antibodies invariably are.

"An *Antitoxic Serum is prepared* as follows: A highly virulent culture of the specific microorganism of the particular disease, or still better, a strong toxin of tested strength prepared therefrom, is injected into the cellular tissue of a suitable animal, generally a horse, at first in very small quantity. The effect is soon shown by the onset of fever and other symptoms of acute disease, which are known as the 'reaction.' After an interval of time sufficient for recovery from these symptoms, the injection is repeated with a stronger toxin or with a culture of greater virulence, or with a larger quantity of the original toxin. This process is continued for several months, or until the animal no longer 'reacts' to the poison, and then sufficient antitoxin is presumed to exist in its blood to render it immune to the toxin and to the disease. After each inoculation the animal's blood serum is tested as to its value by experiment on guinea-pigs of definite weights. When the desired degree of immunity is reached the animal is bled from the jugular vein under strict aseptic precautions, from 6 to 12 pints being taken from a horse, according to his size and general condition. The blood is received in sterilized flasks, which are carefully stoppered and stored on ice until the clot has separated from the serum. The latter is tested to determine its value in antitoxin, has phenol added to it in the proportion of 0.5 per cent, and is bottled in vials which contain in each the dose for one patient. The vials are labeled with a statement of the number of normal antitoxin units per c.c. of the contents, expressed in multiples of a standard normal serum."—(Potter's *Materia Medica.*)

7. PIGMENTS. Of *bile:* Bilirubin, biliverdin, bilifuscin, biliprasin, bilihumin. Of *blood:* Hemoglobin, oxyhemoglobin, hematin. Of *urine:* Urochrome, urobilin, uroerythrin, uroxanthin.

8. "In order to supply the requirements of the organism a certain amount of potential energy is needed to over-balance the amount dissipated in waste and in the production of body-heat. More potential energy is consumed during work than when the individual is at rest. The following table, computed by Rubner, shows the daily heat consumption, in units of heat (calories), in an adult, weighing 65 kilograms:

During rest in bed	1800 calories	or 28 calories per kilo.
In repose	2100 calories	or 32 calories per kilo.
In light work	2300 calories	or 33 calories per kilo.
In moderate work	2600 calories	or 40 calories per kilo
In hard work	3100 calories	or 48 calories per kilo.

From Rubner's investigations we learn that:

1 gm. of protein	= 4.1 calories
1 gm. of fat	= 9.3 calories
1 gm. of carbohydrates	= 4.1 calories

It has also been determined that 1 gram of alcohol equals 7 calories. In other words, the number of grams of proteins, fats, and carbohydrates required daily can be converted into their calorimetric equivalents, and inasmuch as the alimentary principles can in a degree be substituted for one another (law of isodynamics), the daily food requirements can be easily estimated in calories of heat. Thus, in order to calculate the caloric value of any food in preparing a dietary, the number of grams of proteins contained are multiplied by 4.1; the number of grams of fat by 9.3; and the number of grams of carbohydrates by 4.1; the total is then ascertained by adding. Bearing the weight of the individual in mind, a dietary can easily be constructed according to the following method:

The quantity of protein consumed daily is	100 gm. × 4.1 =	410
The quantity of carbohydrates consumed daily is	500 gm. × 4.1 =	2050
The quantity of fats consumed daily is	50 gm. × 9.3 =	465
		2925

The average number of calories required daily in an individual, according to this calculation, is therefore 3000."—(Friedenwald and Ruhräh's *Dietetics for Nurses.*)

9. *Estimation of total acidity of gastric contents:* "To 10c.c. of the filtered fluid, accurately measured into a beaker, three drops of a 1 per cent solution of phenolphthalein is added, and enough $\frac{N}{10}$ NaOH solution, accurately measured from a burette, to produce a permanent pink color. After the addition of a few cubic centimeters of the decinormal soda solution, a light rose color appears, which should not be mistaken for the end reaction. The final change of color is produced by a single drop of the alkali, and hence the addition should be made drop by drop near the end. Near the completion of the test, each drop will produce a pink-red cloud as it falls into the liquid, which will disappear on gently mixing the contents of the beaker. This is best done by giving the beaker a rotary motion."—(Bartley's *Chemistry.*)

10. First of all, test for the *albumin*, as follows: The urine must be perfectly clear. If not so, it is to be filtered, and, if this does not render it transparent, it is to be treated with a few drops of magnesia mixture, and again filtered. The reaction is then observed. If it be acid the urine is simply heated to near the boiling point. If the urine be neutral or alkaline it is rendered *faintly* acid by the addition of dilute acetic acid, and heated. If albumin be present a coagulum is formed, varying in quantity from a faint cloudiness to entire solidification, according to the quantity of albumin present. The coagulum is not redissolved upon the addition of HNO_3.

If albumin is present it should be removed. The urine is then tested for *sugar* as follows: Render the urine strongly alkaline by addition of Na_2CO_3. Divide about 6 c.c. of the alkaline liquid in two test tubes. To one test tube add a very minute quantity of powdered subnitrate of bismuth, to the other as much powdered litharge. Boil the contents of both tubes. The presence of glucose is indicated by a dark or black color of the bismuth powder, the litharge retaining its natural color.

Test for *bile:* Put 3 c.c. HNO_3 in a test tube, add a piece of wood, and heat until the acid is yellow; cool. When cold, float some of the urine to be tested upon the surface of the acid. A green band is formed at the junction of the liquids, which gradually rises, and is succeeded from below by blue, reddish-violet, and yellow.

Test for *Blood:* To the urine add a solution of potassium hydroxide to distinct alkaline reaction; heat nearly to boiling (do not boil). A red precipitate is produced.

11. *Ferments of the pancreatic fluid. Trypsin*, which splits up proteins into proteoses, peptones, and amino-acids: *Steapsin*, which emulsifies and saponifies fats: and *Amylopsin*, which converts starches into erythrodextrin, achroodextrin and maltose.

12. Normal human milk consists of about 88 per cent of water and about 12 per cent of solids. These latter are approximately: proteins, 2 per cent; fats, 3 to 4 per cent; sugar, 6 per cent; and inorganic salts, about 0.3 per cent.

Cow's milk has approximately: proteins, 4 per cent; fats, 4 per cent; sugar, 4 per cent; and inorganic salts, about 0.7 per cent.

(*To be concluded.*)

Therapeutic Hints.

The Medicinal Treatment of Gastric Ulcer.—P. Cohnheim notes that there are two drugs of especial value in this condition, namely, nitrate of silver and subnitrate of bismuth. As a general rule the former should be given in the acute chlorotic ulcer, and bismuth in the other forms of ulcer, in the following prescriptions:

℞ Silver nitrate, gr. vij ss.
Distilled water ʒ vj ss.
M. et Sig.: One tablespoonful (porcelain) in a wineglassful of water ¼ to ½ hour before meals.

℞ Bismuth subnitrate, ʒ iij ss.
Sig.: One teaspoonful in a glass of warm water, stirred well, before breakfast. Lie on right side one-half hour after taking.

If the pain is not relieved by the above treatment it is best to prescribe belladonna combined with bismuth or an alkali one or two hours after eating, as follows:

℞ Extract of belladonna leaves, gr. iii—v.
Magnesium oxide,
Sodium bicarbonate, āā ʒ vj.
M. et Sig.: A teaspoonful one or two hours after meals, two or three times daily.

℞ Extract of belladonna leaves, gr. iij.
Bismuth subnitrate, ʒ iv.
M. et Sig.: A knifepoint after meals.

If there are spasms of the pylorus from one-half to one wineglassful of olive oil should be given in the morning before breakfast and from one to two teaspoonfuls before the midday and evening meals; or the following may be given:

℞ Tincture of belladonna leaves, ʒ j—j ss.
Sweet almond oil, ʒ j—j ss.
Yolk of one or two eggs.
Distilled water, q. s., ad ℥ vij ss.
M. ft. emulsio. S.: A tablespoonful before eating, t.i.d.—*Diseases of the Digestive Canal.*

A New Treatment for Chorea.—Sáinz de los Terreros bases this treatment upon the method of intravenous injections of bichloride of mercury as recommended by Huertas of Madrid in the treatment of rheumatic arthritis. In a choreic patient eight years of age the course of treatment would be as follows: Two intravenous injections of one milligram, two of two milligrams, and ten of three milligrams of bichloride of mercury, three injections being given every week. The results are said to be excellent.—*La Pediatría Española.*

Digitalis in Large Doses in the Treatment of Pneumonia.—Manfredi notes that this method of treatment has been employed by Maragliano since 1891 in his clinic at Genoa. Rasori and Tommasi were the first to attribute antiphlogistic properties to digitalis, and Traube perceived in the vasoconstrictor property of this drug a means of reducing the intensity of inflammation. In 1888 Petrescu of Bucharest reported the good results he had obtained in the treatment of pneumonia by means of large doses of digitalis. During 1913 and 1914 Manfredi treated a large number of cases of pneumonia according to the method of Maragliano, as follows: On the first day there is given four grams of digitalis in the form of an infusion, and in very severe cases this amount is repeated on the following day. With the diminution in the frequency of the pulse the quantity of digitalis is gradually decreased, and the administration of this drug is suspended when the pulse falls to normal or below it. —*Annali dell' Istituto Maragliano.*

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SOME EVERY DAY INJURIES TO THE EYE, AND WHAT TO DO FOR THEM.*

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THE enactment of a Workingmen's Compensation Law accentuates the necessity for an accurate knowledge of first aid to the injured, and in no department of the healing art is this of greater economic value than in injuries to the eye. The treatment first adopted largely determines the outcome, for no matter how trivial may be the injury, there is always the risk of ultimate disaster.

It is axiomatic that one who has lost the sight of one eye is from the very nature of his condition much more likely to suffer an injury to the other, and it is important to note that the loss of sight in one eye interferes with the wage-earning capacity, while that loss in both eyes may make of the sufferer a public charge. It thus follows that the immediate and proper treatment of an injured eye concerns the entire community, for an injury trifling in its nature may by neglect or unskilful treatment terminate in total loss of sight with destruction of the organ itself, while on the other hand the recuperative power of the eye is so great that by employing as much as is possible strict antisepsis, in addition to the recognized methods of treatment, many a damaged eye that in the past would have required removal can now be saved and sight retained.

Injuries occurring in the ocular district arrange themselves automatically in two groups, the one as regards location, the other as to gravity, and these may be defined as, first, those affecting the external structures or adnexa, and, second, those damaging the eyeball itself. This subject may be treated either topographically or from frequency of occurrence; a consideration from the anatomic or topographic standpoint, it seems to me, will be the lucid and practical one to follow.

Abrasions and contusions of the integument covering the lids resemble in appearance those occurring in other parts of the body, but they call for a different mode of treatment. The skin covering the eyelids is very thin, eroding easily, and antiseptics in germicidal strength will often cause its destruction, therefore carbolic acid solutions should never be stronger than one-half of one per cent., while those of bichloride of mercury should not exceed 1 to 5000, and tincture of iodine should not be applied at all. The classic "lead and opium" wash should not be used in treating contusions of the eyelids for it makes the skin stiff and hard, causing it to crack, and, whenever there is corneal abrasion, lead is deposited on this raw surface leaving a permanent white, dense, disfiguring scar which, if in the line of vision, interferes with sight. The proper remedies to use are weak lotions, many of them alkaline, such as, a 1 per cent. solution of biborate of sodium, a saturated solution of boric acid, a dilution of tincture of arnica, one drachm to an ounce of water, equal parts of colorless extract of witch hazel and water, and other solutions of similar nature. These may be applied either hot or cold, just as the patient prefers, and during their employment the skin should be anointed with cold cream or simple cerate several times daily.

The skin of the eyelids is so loosely applied that it moves freely in every direction and this laxity accounts for the rapid swelling that follows a direct blow which almost immediately produces great ecchymosis of these parts. This discoloration lasts about two weeks, is so unsightly, and is so often the cause of disagreeable remarks that its removal is urgently solicited. Once established, the ecchymosis cannot be dissipated and painting the surface is the only means of meeting this exigency. The many miscalled specifics such as arnica, calendula, witch hazel, raw beefsteak, cold oyster, scraped raw potato or turnip, and the medley of disgusting domestic remedies so popularly recommended, one and all, are without the slightest benefit.

If seen at once the best treatment is the application of a pad made of six or eight thicknesses of gauze saturated with a solution of boric acid and bandaged tightly over the eye. A folded handkerchief may be substituted for the bandage.

This laxity of the skin is employed advantageously in the performance of extensive plastic work to repair loss of integument, but these operations should be done under general anesthesia for so freely movable is the skin that immediately following subcutaneous injection of cocaine, a very marked edema arises by reason of which all the usual landmarks are at once obliterated.

Burns of the integument are best treated, not by the pasty and disagreeable Carron oil, but by the application of a 2 per cent. ointment of picric acid, which speedily relieves the pain, promotes healing, and leaves less scarring than Carron oil or any of the other remedies usually employed. Picric acid may also be used in watery solution 1 to 5 per cent., but as this stains bright yellow everything with which it comes in contact, the ointment is employed with more satisfaction.

Extensive laceration of the skin may cause great swelling or edema of the lids, sufficient sometimes, to produce so much pressure upon the globe as to threaten its destruction. When this occurs a canthotomy should be performed—the blunt-pointed blade of a pair of straight scissors is pushed under the outer commissure and all the tissues, including the skin, lying between the canthus and the margin of the orbit are divided with one or two cuts.

*Read before the Society of Alumni of Bellevue Hospital, June 2, 1915.

If the margin of the lid be torn or ruptured a suture should be so placed as to bring the separated edges into absolute apposition, otherwise one or more eyelashes may grow inverted, and with every act of winking scratch the cornea, provoking its irritation and an inflammation which may go on to loss of sight.

Wounds in the region of the punctum lacrimale should be carefully scrutinized as they often cause permanent damage to the lacrimal canal and sometimes its occlusion with the consequent overflow of tears which is so very uncomfortable and annoying. The punctum by manipulation, suture, or plastic replacement should be returned to its normal position in the lacrimal lake.

Injuries to the conjunctiva and to the structures of the eyeball are, as a rule, very painful, causing a blepharospasm so pronounced that an examination of the damaged tissues is well-nigh impossible and local anesthesia is imperative.

The writer emphatically dissents from the generally accepted dictum that in all ocular injuries requiring local anesthesia cocaine should be employed, and further, in his practice it is never used stronger than a 2 per cent. solution. Entirely too many eyes have been damaged or sacrificed by the perfunctory, profuse, and indiscriminate use of this remedy, therefore due caution must be exercised in its employment. Cocaine dries the cornea, loosens and promotes necrosis of its epithelium, thus favoring the occurrence of ulceration which so frequently results in partial or complete loss of sight. The conjunctival sac never is, nor can it be made sterile, and it affords a lurking place for numerous varieties of microorganisms, many of which are pyogenic, and to oppose which the intact cornea is the impenetrable barrier; but let there be any breach in the integrity of its epithelium and these microorganisms immediately invade the corneal tissue proper and start up an ulceration which eventuates in an opacity that may materially impair the sight, or even bring about its abolition. Holocain in 1 per cent solution is, in the writer's experience, the safest local anesthetic to use, having the advantage over cocaine that it does not dilate the pupil. The fact that it is considered more poisonous than cocaine may be discounted by carefully instilling it at the outer canthus, the head being inclined to that same side the surplus will then run over the cheek and not reach the nostril through the lacrimal canal and the nasal duct. Its solutions are not as permanent as those of cocaine and, like other substitutes therefor, cause some pain, but this burning and irritation soon pass away. Instead of holocain, alypin or novocain in 3 per cent., or beta eucain in 1 per cent. solution may be substituted; but whichever one is used the routine of its employment and the quantity to be used are the same: Two drops of the selected solution are instilled into the conjunctival sac and the lids closed—when possible the liquid should be allowed to flow over the cornea—two similar instillations are to be made at three-minute intervals, and in from three to five minutes subsequent to the third instillation full anesthetic effect is obtained. Even with the conjunctiva and cornea completely anesthetized it may not be possible to separate the lids, especially in children, in which event lid elevators should be used. With the thumb and forefinger grasp firmly the eyelashes and when possible the lower edge of the upper lid and lift it away from the eyeball. Into this interpalpebral slit pass the arm of the elevator and draw the lid upward, the arm of another elevator may then be slipped over the upper edge of the lower lid, and a separation of the retractors will bring into view a large part of the globe; by sliding the elevators from side to side the conjunctiva may be freely examined. Pressure of these elevators accomplishes another purpose, namely, an inhibitory influence on the orbicularis which assists in keeping the eye open. In order to explore the conjunctiva of the upper lid and its retrotarsal fold thoroughly the upper lid should be everted. The patient looking downward, the operator grasps firmly the lower edge of the upper lid between the tips of the thumb and index finger of the right hand, the point of the index finger of the left hand, a pencil, or a probe is then pressed over the upper edge of the tarsal cartilage and the lid is thus turned over, exposing its under surface. Eversion of the upper lid by one hand may be performed by substituting the tip of the second finger of the right hand as the fulcrum, instead of the index finger of the left hand or a pencil or probe.

Injuries to the conjunctiva, short of destruction of its tissue, heal quickly, requiring only cleanliness and the instillation of a weak antiseptic lotion.

The conjunctival sac is often the recipient of foreign bodies, such as bits of steel, ashes, lime, sand, husks of grain, and other intruders. Their usual site is under the upper lid, which after being anesthetized should be everted and the interloper wiped away with a wad made by wrapping a bit of absorbent cotton around any convenient cotton carrier. If this fails to dislodge the foreign body it can be lifted from its resting place by a blunt spud.

The most destructive of all injuries to the conjunctiva, the cornea almost without exception being likewise implicated, are burns, especially those from chemical irritants, such as carbolic, sulphuric, and other mineral acids, unslaked lime and cement. Molten metal and caustic alkalies, too, claim their large percentage of disastrous results, while hot water, steam, blasts of flame and hot air, ends of cigars, cigarettes, and matches are less frequent causes. The severity of the symptoms depends upon the duration of contact, escharotic quality of the invader, and extent of damage sustained, *i.e.* the amount of tissue destroyed.

The chief symptom is intense pain with marked inflammatory reaction in which the lids participate, as shown by becoming greatly swollen and deep red, and it is often impossible to open them in order to discover what damage has been wrought. In this event, with lid elevators separate the lids and inspect the cornea, if this be involved use holocain and if not, use cocaine to the production of full anesthesia, in order that a thorough examination may be made. Burns from acids should be thoroughly douched with a mild alkaline solution, such as a 1 per cent solution of sodium biborate or bicarbonate, and if either of these be not at hand, with a stream of cold water from an irrigator held not more than 18 inches above the eye, the liquid being allowed to flow over, not strike, the affected structures until all of the irritant has been washed away. Lime may also be washed away because it has been conclusively demonstrated that the heat generated by the slaking is more than counterbalanced by the frigidity of the irrigating liquid. Pieces of lime or molten metal should be removed by forceps or a spud before douching. Burns from alkalies, such as ammonia, potash, etc., should be neutralized by a weak acid solution, such as a 1 per cent. dilution of vinegar

with water. Pain in the eyeball and swelling of the lids follow, therefore cold pads should be applied to the closed lids. Two and one-half inch squares of patent lint or of six thicknesses of gauze, chilled on a block of ice, are to be applied at one or two-hour intervals, for from three to six hours at a time —if the inflammation be intense they should be constantly applied—the skin of the eyelids being freely anointed with cold cream or simple cerate, and for the first twenty-four hours, two drops of sterile olive or castor oil should be instilled between the lids every hour, and continued every three hours until healing is complete. In extensive burns with considerable loss of tissue a 1 per cent. ointment of picric acid, with or without holocain, should be inserted into the conjunctival sac, four times daily, to relieve the pain, reduce the burning sensation, promote healing and in a measure modify the resulting symblepharon, particularly when the fornix has been destroyed by the escharotic. If no relief is experienced after cold has been employed for six hours, hot pads, as hot as can be borne, should be substituted because injured eyes display as much idiosyncrasy to applications, as do individuals to remedies. After a few days the healing process will be hastened by adding a mild astringent lotion to the other local treatment. A very satisfactory one is a solution of sulphate of zinc, one-half grain to an ounce of sterile water, 2 drops to be instilled three times daily. When both the palpebral and the ocular conjunctivæ or the conjunctiva and cornea are eroded, extraordinary care must be exercised to prevent union of these denuded surfaces by reason of which the eyelid and the eyeball would become firmly bound together. When this occurs it causes a pulling on the eyeball and a sense of great discomfort that interferes with vision not only because of the corneal opacity, but also by restricting the movement of the globe, from cicatricial adhesion and contraction which may cause inversion of the edge of the lid with distressing trichiasis or its eversion with undue exposure of the cornea and its subsequent destruction. To prevent such an unfortunate result the raw surfaces should be separated by a silver probe at least three times daily, and the sterilized oils or picric acid ointment employed as above directed. This treatment will interpose a protecting layer between the raw surfaces, preventing their adhesion and must be employed until healing is complete. Under no circumstances should an occlusive bandage be applied, the eye must be left open because the retention in the conjunctival sac of purulent and irritative secretion increases the pain and retards the healing. If for any reason—as in children—a bandage must be applied, it should be removed every three to six hours, and the retained secretion washed away by irrigation. Despite this treatment symblepharon may ensue and a more or less extensive operation with or without transplanted flaps or grafts will be demanded.

Gunpowder injuries require local anesthesia, as above described, remembering that if the cornea be implicated, which is usually the case, holocain should be used. All grains of powder should be removed with a sharp spud, and if the grains are well within the conjunctiva they may be grasped by a forceps and with a scissors snipped off. When the cornea has been invaded two drops of a 1 per cent. solution of atropine should be instilled two or three times daily until the corneal irritation has passed away. The subsequent treatment of these injuries is the use of a weak solution of sulphate of zinc.

The cornea is one of the most important tissues in the entire body, and any interference with its transparency produces a loss in the economic value of the individual that is disproportioned to the extent and nature of the injury; therefore the value of an undamaged cornea cannot be overestimated.

Abrasion of the cornea by any scratching, such as occurs from a foreign body on its surface, under the upper lid, or from a twig or a finger nail, is a break in the corneal epithelium without damage to the substantia propria of the cornea itself. The pain is usually severe, there is considerable lacrymation and often a varying degree of photophobia. The treatment requires the removal of the foreign body, if one be present, the application of an occlusion bandage until the abrasion is healed and the instillation four times daily of a 10 per cent. solution of protargol or argyrol. If there be much conjunctival inflammation vaselin should be introduced into the conjunctival sac three times daily.

Corneal abrasion with subsequent erosion of the corneal substance, from an unusual cause, has several times been observed by the writer. In each case it was possible to exclude every cause except that the anesthetist had touched the cornea in order to determine when anesthesia was complete. The common practice of slightly separating the eyelids and brushing the ball of a finger over the cornea thus exposed cannot be too rigorously deprecated. It is not necessary, however, to touch the eyeball at all; the light reflex is more valuable and reliable. The importance of an intact corneal epithelium has already been explained and is again mentioned only in order to emphasize its significance and thus guard against possible ruin to sight.

The most frequent cause of injury to the cornea is a foreign body on its surface or in its tissue and this occurs mostly among mechanics. These substances consist of particles of ash, cinders, coal dust, emery, iron, sand, steel, and sometimes wood. The effects and the treatment of gunpowder grains have already been considered. These injuries cause great pain unrelated to the size of the intruder and depend more upon its site than upon its bulk; attached to the cornea it causes less pain than when it is upon the conjunctiva. The acute pain is largely due to the sensitive conjunctiva brushing over the sharp edges of the intruding body. The initial requirement is to locate the interloper and the most successful means is by focal illumination. Local anesthesia, as above advised, should be produced, after which the patient is so placed that the eye is lighted from one side only, the rays from day or artificial light being concentrated by a 3-inch lens into a cone of light, the point of which impinges on the cornea, a limited area is thus brightly illuminated while the surrounding region is dark. By changing the position of the illuminated area or by directing the patient to move the eye slowly in various directions, the entire surface of the cornea may be examined. The electric lighted spud is an exceedingly valuable and accurate means of locating the foreign body. It fulfils every requisite as it illuminates only a small spot at a time, and the foreign body being located the spud is at the same time in position immediately to remove the intruder. If no foreign body can be found and the symptoms point strongly to one being present a drop or two of a fluorescine solution—2 per cent. fluorescine in a 3 per cent. watery solution of sodium bicarbonate—may be allowed to flow over the cornea, the lids then closed, and in two minutes the eyeball washed off with a

boric acid solution. The abraded surface and sometimes the intruder itself will be colored green and easily recognized.

In removing a foreign body from the cornea every manipulation should be as gentle as is consistent with thorough work, for a damaged cornea is a menace to the retention of sight. The larger number of these intruders can be displaced by a mop made by wrapping a bit of absorbent cotton around any convenient carrier; a wooden tooth pick makes a very useful one, and with this wad brush in every direction, if these attempts fail to dislodge the particle a blunt spud should be employed. The motion in its use is that of lifting not scraping, and this should be tried at every angle of the foreign body. This maneuver failing, a sharp spud should be employed. Due care must be observed to cause as little damage as possible to the corneal epithelium, and likewise not to perforate the cornea. Instead of the sharp spud a corneal curette is the safer instrument to use, notably by those not especially skilled in handling the eye. Iron and steel particles if hot, or if not at once removed, will soon be surrounded by a ring of stained corneal tissue which should, whenever possible, be entirely removed, a scraping motion being sometimes required; the pointed hook of the corneal curette, or the point of the sharp spud will often remove this ring *in toto*. In every case in which the epithelium has been disturbed the eye should be lightly bandaged until the denuded surface has been covered in with healthy epithelium, restoration being established in from two to five days. Instillations of a 10 per cent solution of protargol or argyrol, two drops three times daily, should be practised until the cornea is healed. If the corneal tissue adjacent to the abrasion show evidence of inflammation two drops of a 1 per cent solution of atropine should be instilled prior to the application of the bandage, and this instillation should not be repeated unless the iris shows signs of inflammation, as evidenced by injection of the small circumcorneal blood vessels, photophobia, an irregular dilatation of the pupil and a muddy color to the iris. If the abraded surface exhibits no tendency toward healing and an ulcerative process has been established, the patient should be placed in charge of an oculist, for corneal ulceration, unless carefully handled and sometimes even when most skillfully treated, will result in loss of sight and perhaps of the globe itself. Extensive burns, corneal ulceration from any cause, together with perforating and penetrating wounds of the eyeball fall within the domain of the ophthalmic surgeon as they demand absolutely special treatment, such as cauterization, actual and chemical, subconjunctival and intraocular injection, intraocular insertion of medicated pencils, etc., consequently their consideration has no place in this paper and they are therefore omitted.

In conclusion, let it always be borne in mind that even a trivial injury to the eye is of as much importance as if it were more formidable in degree, also that no matter how trifling the damage may appear to be, it demands the same skill and care in its treatment as if it were of the gravest nature.

When this careful consideration has been adopted for every injury to the eye, many damaged ones that heretofore have been doomed to disaster will be saved from loss, and a successful and gratifying advancement in the conservation of vision will have been accomplished.

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EPITHELIAL FUNCTION IN RELATION TO DISEASE.

By OWEN PAGET, M.D.,

FREMANTLE, WEST AUSTRALIA.

John Hunter and Sir James Paget in England, Professor Rokitansky in Vienna, and Professor Virchow in Germany removed pathology from the arena of idle speculation, and placed it on a sound morbid anatomy basis. The great French school of the Pasteur Institute, comprising Pasteur, Roux, Metchnikoff, Laveran and many others, conferred enormous benefits upon mankind by a strict attention to facts and careful exactitude in experiments. With such precedents one is diffident in proposing that speculative thought and inductive reasoning be brought to bear on pathology.

But it must be borne in mind that attempts to explain common occurrences, ignored or slighted by present-day theorists, may do much to assist clinical physicians. In a series of articles in the *Australian Medical Gazette* (1914-1915), the nose has been regarded as an organ of preventive medicine, capable not merely of protecting but also of immunizing against disease.

The subject has been further elaborated in a paper, "The Prevention, Treatment and Cure of Tuberculosis," published in the Medical Record. In this article it is claimed that the nasal epithelium has a curative capacity, even after disease has been acquired. Though not considering that these theories and experiments are proven, until they have stood the tests of time and experience, I yet feel justified in laying down the hypotheses that: (1) Nasal epithelium is able, otherwise than mechanically, to protect the body against disease. (2) It is able to immunize against disease. (3) It is able to cure or at least strongly modify disease already acquired.

Holding such beliefs, the attention turns to the intestinal epithelium, which is in constant relation with bacteria. To those who have operated as abdominal surgeons, that characteristic of our human economy, which makes feces inocuous when resting on the epithelium of the inside of the intestine, and a fierce menace when resting on the serons cells of the outside, shows without further comment that the lining cells of the intestine are at least passive resisters of microbes. Humanity at large is habitually interested in drugs, which professors of materia medica state have actions on the intestinal epithelium.

The Army, the Navy, and the Civil Hospitals alike restore to health a large proportion of their clientele with mistura alba. Such patients are said to suffer from constipation, a word which conveys a mental picture of feces obstructing the colon.

How often is such a condition of partial impaction seen by the abdominal operator, or the post-mortem demonstrator?

The virtues of Carlsbad and kindred places are ascribed to the presence of radium in the waters. It is less irresponsible to propose that they benefit their visitors through the action of their salts on the epithelial cells of the intestine. Professor Metchnikoff restores our debilitated health, and retards old age by feeding us on the Bulgarian bacillus. The physician of experience commences his treatment of a fever with a purge. Sir Arbuthnot Lane, with a vast surgical experience, considers that he markedly influences and even cures disease by his operations on the colon.

Since for long periods of time we are in good health, it is certain that the normal interaction between bacteria and intestinal epithelial cells is not harmful.

But just as in the case of the nose a proper circulation of air is necessary so that it may fulfill its functions towards bacteria, in the same way it is essential in the case of the intestine that there be a proper physiological rate of fecal flow. Interference with this causes an embarrassment to the activity of the cells, and their overthrow by microbic elements. Persons exposed to a common typhoid infection react differently. Some do not take the disease, others are severely infected, and there are an infinite number of grades between. It is as sensible to suppose that these differences are due to variations in the resisting power of the epithelium, as that they are due to the quantity or virility of the microbe ingested.

That women of the better-to-do classes, suffering from tuberculosis, who swallow their sputum from motives of delicacy, apparently hold the disease well in check, is well known. This in some cases probably leads to a cure.

At one of the hospitals for tuberculosis the following experiment was carried out in order to ascertain the cause of tuberculous ulceration of the intestine. Sixty advanced cases were selected. Of these thirty were told to swallow their sputum; thirty not to do so. All were autopsied. Of the thirty who swallowed their sputum, none had tuberculous enteritis. Of the thirty who did not, a large percentage were affected. A recent paper in the *British Medical Journal* advises the sucking of the septic wounds as a curative agent. This is, of course, employed by animals. It seems, therefore, as if the hypothesis put forward with regard to nasal epithelium having preventive, immunizing and curative action against disease had collateral support when the intestinal epithelium is studied from the same standpoint. Whilst such views help to explain the benefits of such simple drugs as the sulphates and carbonates of magnesium and sodium, they also suggest the advisability in epidemics of cholera of feeding contacts with sterilized cultures of the bacilli.

Assuming that the nasal and the intestinal epithelium have protective, immunizing and curative properties, what reactions take place in the greatest of all epithelial organs, viz., the skin, in the infectious diseases? Syphilis and gonorrhea are instructive examples to consider first. Their causative agents are known. The exact time of infection can in a large number of cases be definitely ascertained. Freely admitting that horny epithelium offers considerable mechanical protection against syphilitic infection, there is still a resistance not dependent on these superficial cells, but on the deeper layers of the epithelium.

It was not until the third attempt that Dr. Cory's unfortunate vaccination experiments were successful. Furher light on the matter has been thrown by the magnificent results achieved by the United States Naval Department in the prevention of this disease. It is hardly worth while to labor the question too much, because in the case of gonorrhea it is obvious. No one would suggest that gonorrheal infection is the result of a scratch or chafe of the urethral epithelium.

Now the moment of infection and the moment of practical expression of the disease being known, the period of resistance to disease or the incubation period is the intervening space of time. This cannot be other than the period during which the epithelium is capable of resisting, or even throwing off the disease. When this resistance breaks down it is shown locally in syphilis by the appearance of a sore and leucocytosis; or as a catarrh in the case of gonorrhea, whilst generally it is expressed by a feeling of malaise.

Practical experience shows that according to the vitality and capacity of the epithelium, proportionate of course to the virulence of infection, a disease is totally, partially, or feebly resisted.

Understanding the meaning of the "incubation period," and believing in the curative properties of epithelium, how can they be applied to such common disorders as scarlet fever and measles? The end of the incubation period of these diseases is locally expressed by the sore throat and running nose respectively. The general infection is felt as a malaise. Now the most striking phenomena in these two diseases is the rash, and if the skin is regarded as an organ capable of curing disease, this hyperemia, not inflammation, has a definite purpose. In other words, the rash is not a mere symptom, it is a definite and purposeful attempt on the part of nature to cure the disease. Since to many such an idea will seem far-fetched, the paths which have led me to such an assumption, will be here recapitulated.

In the *Australian Medical Gazette* (1914-1915), it was pointed out that in the cases of pneumonia extraordinary efforts are made to breathe through the nose. As in a large proportion of cases these people were unable to breathe through the nose when well, it was obvious that these efforts were not made by nature to obtain more air, since it was easier to do so by opening the mouth, but for some other purpose. Other observations had shown that breathing through the nose seemingly conferred immunity against certain diseases. Experimentally the sniffing of dried tuberculous sputum into the nose, provided this organ was made physiologically correct, had markedly beneficial effects upon the disease.

Carrying on the argument to the intestinal epithelium seemed to increase rather than decrease beliefs in the capacities of fixed cells to even cure disease. Applying the hypothesis to that enormous epithelial organ, the skin, the striking but unexplained phenomenon of the rash conforms to the proposition.

The most informative essay on the immunity of the skin is Sir James Paget's lecture on blood-poisoning (*Lancet* 1871). It seems as if there is at least sufficient to justify such an hypothesis as: "Epithelium is a factor in resisting, immunizing against, and even curing disease."

Epithelium and leucocytosis are not our sole protectives against disease. The former, however, is very important, and has up to now been neglected.

Other agents will not be referred to in this paper, the sole object of which is to attempt to place the commonsense knowledge of physicians on some sort of a scientific basis.

Questions of interest which now arise are: (1) Is the epithelium of one organ more specialized against any given disease, than the epithelium of another organ? (2) If the epithelium of one organ becomes incapacitated, can its functions be carried on by the epithelium of another organ?

My personal opinion as regards the first is that it is probable. For instance, the nose seems to

have higher capacities against diseases of the lungs than either the skin or the intestine. On the other hand, this does not mean that the skin and intestine have no powers against diseases of the lungs. The night sweats of phthisis, the burning skin and sweat of the crisis of pneumonia seemingly negative this.

Leaving the first question in abeyance, what evidence is there of interchangeable or assisting powers in the skin, the intestine, and the nose?

Crude savages and our ablest physicians alike pay attention to the condition of the skin and bowels in cases of fever, and prescribe accordingly. According to writers of textbooks on diseases of the skin, attention to the bowels is the most efficacious method of treatment in almost all of these complaints.

Confirmation of these ideas is found in my experiments on tuberculosis. If a tuberculosis derelict is put under treatment, one of the earliest signs of improvement is in the skin, which loses its muddy appearance. Especially is this noticeable in the conjunctiva.

It explains the use of poultices, blisters, putting the feet in mustard and hot water in cases of colds, and a thousand and one old-fashioned but effective home remedies, as also many drugs.

Having practised among Chinese, their belief in blisters has often struck me. The correctness of their opinions can, however, be shown experimentally. In an advanced case of malignant disease of the breast, which had been operated on to its utmost limits and afterwards *x*-rayed, there were in addition to the enormous growth numerous ulcerated scars. The patient was blistered over a healthy area. The fluid obtained mixed with saline solution was injected into the subcutaneous tissue. The cancer was unaffected, but the ulcerations showed marked and rapid signs of healing over, before the patient's death.

There is no wish in this paper to prove anything. It may possibly assist clinical physicians. The number of side issues is enormous. With the excitement and duties of the war it is difficult to write even in this sketchy manner.

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SYPHILITIC ARTHRITIS.

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Syphilis is responsible for about 20 per cent. of chronic joint diseases. Fifteen per cent. of joint cases seen at the Hospital for Deformities and Joint Diseases give a positive Wassermann test, and as the Wassermann is positive in only 80 per cent. of syphilis, we should infer that about 20 per cent. of cases of chronic joint conditions have their origin from syphilitic infection. Joint lesions are among the chief manifestations of syphilis. According to von Huppel, 56 per cent. of congenital syphilitics develop arthritis, and a large percentage in the acquired form. Many cases of suppurative bone and joint conditions of childhood are luetic in origin.

Owing to its frequency and the rapid improvement obtainable with specific treatment, the necessity for an early correct diagnosis is imperative. Yet, this group of cases is very often, if not in the majority of cases, incorrectly diagnosed by general practitioners. We see in this hospital daily, patients suffering from syphilitic arthritis who have been treated by various physicians and in various hospitals for years as suffering from rheumatism, rheumatic arthritis, tuberculous joints, Potts' and hip disease, malignancy, etc., without improvement.

The reason for so frequent failures of diagnosis in these cases is that the subject has not been sufficiently understood, and its frequency not realized until the Wassermann test came into use. The literature on the subject is very scant. The text books dismiss it very briefly. There is hardly any mention made of it in the medical schools.

The neuropathic Charcot joint occurring in tabes, the various bone manifestations as the localized periostitis, the local and diffuse hypertrophic osteitis, osteomyelitis, and epiphysitis, are well described and understood, and will, therefore, be omitted from this paper.

Syphilis is capable of producing almost every form of arthritis. These may be primary in the joint, or secondary to adjacent bone lesions. The form primary in joint are the arthralgias, acute, subacute and chronic simple synovitis, and gummatous synovitis. The secondary types result from neighboring bone lesions, as periostitis, osteitis, osteomyelitis, or epiphysitis, causng either a sympathetic synovitis, gummatous, or fibrous arthritis.

The classification of the various types is arbitrary and is made as to their clinical occurrence; certain forms are characteristic at certain ages; some are characteristic of hereditary syphilis, and others of the acquired form.

The clinical varieties are: (1) Epiphysitis with secondary joint involvement. (2) Hydrops. (3) Arthralgias. (4) Acute, subacute, or chronic synovitis. (5) Gummatous synovitis, primary or secondary. (6) Arthritis deformans type. (7) Chondroarthritis. (8) Mixed infections.

In hereditary syphilis, the type most common in the first year of life is that secondary to an epiphysitis, also called osteochondritis and pseudoparalysis. The process usually starts in the epiphysis of long bones, most commonly at the lower end of the femur, and the upper end of the humerus, as an irregular painful thickening caused by an increase in the number of cartilage cells. This interferes with its circulation and necrosis results, with later separation of the epiphysis into joint, suppuration, fluctuation, and discharging sinuses. Before the epiphysis separates, the joint effusion is serous. The limb affected usually is useless as far as power is concerned, and for this reason the condition is called "pseudoparalysis." As the condition favors the lower end of the femur and the upper end of the humerus, which are the important centers for growth of the extremities, there is often interference with the growth of the limb. This type is most commonly mistaken for tuberculous joints with sinus formation.

In children between the ages of eight and fifteen years, a simple symmetrical synovial effusion or hydrops is the usual occurrence. The knees are usually affected, either one or both. The condition is often intermittent following some systemic disturbance, such as sore throat, cold, etc. The swelling from effusion into the joint is variable in amount and is usually the only symptom. Pathologically, there are no changes except the effusion into the joint.

Arthralgias, or joint pains, are among the first manifestations of acquired syphilis and occur in the

larger joints in the early secondary stage, before the rash appears. There are no physical findings, no limitation of motion, but vague pains around the joints, worse at night.

In the later secondary stage, there is a condition resembling acute articular rheumatism, with high fever, multiarticular joint involvement with pain, tenderness, and swelling. The joints most commonly affected are the knees, elbows, shoulders, and sternoclavicular. There are no acid sweats, and no cardiac involvement. It may resemble gonorrheal rheumatism.

Subacute or chronic synovitis or hydroarthritis occurs in the late secondary stage, usually affecting one joint, and may be the remains of the acute type or develop gradually. The knee is usually affected. This condition is sometimes intermittent. There is but little pain, worse at night, slight limitation of motion, and a variable amount of effusion.

Gummatous synovitis (Frauenthal) occurs in both congenital and acquired syphilis. It is usually monoarticular and the knee is the favorite site. The process may be primary in joint or secondary to a gummatous periostitis. Those starting in bone produce the most destruction and greatest deformity. The condition starts as an irregular lumpy thickening of the synovia, with a variable amount of effusion into the joint. It resembles and is frequently mistaken for tumor albus. Gummata occur around ligamentous attachments and as villi protruding from synovial membrane into joint. These may break into the joint, causing suppuration and later sinus formation. The joint affected presents marked deformity from effusion and gummy masses, but limitation of motion is usually not so marked as appearances would indicate. Pains are not so marked but are worse at night. Remissions or almost complete cures with relapse are characteristic of this condition.

The arthritis deformans type is the most common form in acquired syphilis, but frequently occurs in the congenital forms. The condition is usually multiarticular, except when it follows an injury to a joint, when the monoarticular form is the rule. Joints subjected to strain, as in certain occupations, are the chief ones to be affected. In monoarticular forms, if syphilis exists, the synovite following an injury does not subside but becomes proliferative, and produces fibrous changes in the joint. In multiarticular forms, joints subjected to strain are affected, as the spine, elbows, wrists, and knees of bricklayers; spines of laborers; shoulders, elbows, wrists, and knees of laundresses, etc. The process may be gummatous, fibrous, or mixed, starting as an osteoperiostitis and spreading to perisynovial tissues, causing osteophytes, contraction of ligaments and tendons, producing limitation of motion with partial or complete ankylosis and deformity. Here again, pain is not a pronounced symptom unless there is much destruction; it is much worse at night. Limitation of motion is not so marked as the appearance of the joints indicate.

Chrondroarthritis occurs in congenital syphilis in children about fourteen. The chief feature is a recurring synovitis, with a chronic inflammation of neighboring bone, with pain and tenderness. Pathologically, it is a rarefying osteitis with deposit of caseous material in the cancellous tissue. It extends to the articular cartilage resulting in its grooving and pitting. The larger joints are favorite sites.

By lowering the resistance of joints, secondary infections are frequently implanted on the syphilitic base. Tubercle bacilli and streptococci from some focal infection are the germs commonly responsible for the mixed infections.

The symptoms of syphilitic arthritis vary with the types, but in general it may be said that the pain is not the leading symptom except in the acute forms and those accompanied by much bone destruction, and in most cases, it is worse at night; the limitation of motion is not so marked as the appearances would indicate, and tenderness is not marked. The joints subjected to strain or injury are most likely to become affected.

The diagnosis must be made from rheumatic arthritis, arthritis deformans, tuberculous joints, acute articular rheumatism, gonorrheal rheumatism, traumatic synovitis, and malignancy.

It depends upon (1) very careful personal and family history; (2) examination for concomittant signs of syphilis, as general adenopathy, keratitis, retinitis, iritis, Hutchinson's teeth, scars on tonsils, etc.; (3) Wassermann test; (4) luetin test; (5) the *x*-ray in many cases is an important diagnostic aid; syphilis usually causes hypertrophic changes in contrast to the rarefying changes of tuberculosis; (6) therapeutic test, whenever in doubt; specific treatment should be given in doubtful cases. If the patient is improved, it is reasonable to suppose that the condition is luetic; sometimes a negative Wassermann becomes positive when provocative treatment is commenced. The treatment is antisyphilitic.

Conclusion.—1. Syphilis of joints is of frequent occurrence and comprises about 20 per cent. of cases seen at the Hospital for Deformities and Joint Diseases.

2. It produces almost every form of arthritis and may be either primary in the joint or secondary to involvement of the adjacent bone.

3. It must be diagnosed from acute articular rheumatism, gonorrheal rheumatism, rheumatic arthritis, arthritis deformans, tuberculous joints, malignancy, and traumatic synovitis.

4. In infants, epiphysitis with secondary joint involvement is the most common type. In children from 8 to 15 years of age, hydrops or simple synovitis is the usual manifestation. The arthritis deformans type forms the bulk of cases occurring in acquired syphilis.

5. Pain as a rule is not severe and is worse at night.

6. Limitation of motion is not so marked as the appearances would indicate.

7. The diagnosis depends on history, concomittant signs and symptoms of syphilis, Wassermann and luetin tests, *x*-ray, and therapeutic test.

8. The possibility of syphilis should be considered in every case of joint disease of vague origin.

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Impairment of the Suprarenals in Scarlet Fever.—S. Dutoit reports three cases of scarlet fever in which a low blood pressure and symptoms of meningeal irritation pointed to an insufficiency of the suprarenals. Hutinel was the first to call attention to the frequency with which the suprarenals are involved in scarlet fever; giving rise to a clinical picture that suggests Addison's disease. With a pronounced lowering of the blood pressure there occur tachycardia and arrhythmia. The extremities become markedly cyanotic. The symptoms of meningeal irritation are particularly common. —*Klinisch-therapeutische Wochenschrift.*

DOES THE GENERAL PRACTITIONER UTILIZE THE MEANS AT HIS DISPOSAL FOR THE DIAGNOSING OF EARLY PULMONARY TUBERCULOSIS?*

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THE annual report of this Association shows that during the year 1914 over $20,000,000 was spent in combating and preventing the spread of tuberculosis. The question naturally arises, do the results obtained as "shown by a lowered death rate which is the final criterion by which the success or failure of the anti-tuberculosis campaign must be determined" seem to be commensurate with this immense sum expended, and if not, where does the fault lie? I believe that most men engaged in the work of prevention and treatment of this disease will admit that the results are not what they should be as regards this lowered death rate. True it is that during the past ten years the death rate has been reduced from 166.7 to 127.7 per 100,000, but it seems as though we should expect a greater cut when one thinks over the widespread and active campaign that has been waged against this enemy of the human race.

Ten years ago it was said that those among the general public suffering from tuberculosis consulted the physician only when the disease had reached an advanced stage and the chance of arrest was small or entirely lost. After these years of an active publicity campaign of education, no such indictment can be brought against the laity and we must seek the cause of this continued high death rate nearer our own door. It would not be at all amiss to ask is the general practitioner doing his share by utilizing all the available methods at his disposal for the diagnosing of early pulmonary tuberculosis, and having made the diagnosis, does he give the patient the proper advice as to his future course of life? I say the general practitioner because it is in his hands that most of these cases fall in the beginning.

In order to see just what was being done by the family doctor in his efforts to diagnose pulmonary tuberculosis correctly, and to advise those consulting him, I undertook a study of one thousand cases that had been admitted to the Gaylord Farm Sanatorium from October, 1907, to January, 1915, and I think that some of the figures and facts obtained are, to say the least, interesting.

In the study of these cases they were divided up into groups determined by the stage of their disease on admission, and these show the following:

There were 31 non-tuberculous cases (or 3.1 per cent. of the total number); 148 incipient cases (or 14.8 per cent.); 741 moderately advanced cases (or 74.1 per cent.); 80 far advanced cases (or 8 per cent.).

We undertook to find out how many physicians had been consulted before a diagnosis was made or before the patients applied for admission to the sanatorium.

Taking up first the 31 non-tuberculous cases, we found that they consulted 56 different physicians, of whom 37, or 66 per cent., made a physical examination only, one of these taking an *x*-ray picture in addition. Two others examined the patients through clothing; six, or 10.7 per cent., examined chest and sputum; six, or 10.7 per cent., examined chest, took temperature, but made no sputum examination; four, or 7.1 per cent., examined chest, took temperature, and examined sputum; three, or 5.3 per cent., made no examination whatever.

It certainly seems that something is woefully lacking when 6 per cent. of the physicians consulted make no examination whatever, and only 7 per cent. utilized all the methods at their disposal to make a correct diagnosis.

The figures obtained from the incipient class do not show up as well as this non-tuberculous group. Here we have 148 cases who consulted 254 physicians, of whom 160, or 62.9 per cent., made an examination of chest only, and 11 of these made this examination through the patients' clothing; two, or 0.8 per cent., took temperature only; three, or 1.1 per cent., examined sputum only; thirty-seven, or 10.7 per cent., examined chest and sputum, but did not take temperature; fifteen, or 6 per cent., examined chest, took temperature, but did not examine sputum; one, or 0.4 per cent., took temperature and examined sputum, but made no physical examination; seven, or 2.8 per cent., examined chest, took temperature, and examined sputum; thirty-nine, or 15.3 per cent., made no examination whatever, but treated the patients for various ailments as "run down," anemia, malaria, and "walking typhoid."

Here we have only 3 per cent. of doctors making use of most of the diagnostic methods available, while over five times that number made absolutely no effort whatever to find the seat of the trouble, but would, by their negligence or carelessness, allow a case with an excellent opportunity of arrest and a return to normal life go on to a far advanced stage. Nor does this condition of apathy as regards complete examination apply only to those who have been admitted to our institution.

Stoll,[2] in a study of 150 cases at Wildwood Sanatorium at Hartford, showed that of 37 incipient cases 35 per cent. were not examined on their first visit to their physician, but he does not say how many were not examined at all. Further on he says that of 147 cases, 16, or over 10.5 per cent., were never told they had tuberculosis until they entered the institution, though 75 per cent. of these cases had symptoms for at least five months before consulting their medical adviser.

Think of the amount of infection that such cases might spread, either because the physician consulted had not taken the time or trouble to find the underlying cause of his patient's complaint, or, if having found it, he neglects to lay down a few fundamental principles that could at least prevent the unfortunate victim of tuberculosis being a menace to his family and to the community at large.

Dearholt, quoted by Hawes,[3] in a study of 1400 cases of tuberculosis in the State of Wisconsin, showed that of 195 registered cases 60 either were not told the nature of their complaint or had their condition misrepresented to them by the first physician consulted, and of 159 cases not registered 91 were deceived or left in ignorance of their true condition. Hawes also shows in this same article that during the six months between August, 1903, and February, 1904, of 100 cases that had applied to the tuberculosis clinic of the Massachusetts General Hospital, but 15 were incipients and that 12 of these had a positive sputum before applying, making a diagnosis easy. From November of 1911

*Read before the National Association for the Study and Prevention of Tuberculosis, Seattle, Wash., June 15, 1915.

to May of 1912, of 100 cases coming to this same clinic, 30 were incipients, of whom 16, or 53.3 per cent., had a positive sputum, and were thus enabled to get an early start in their treatment.

In our incipient group but 38 physicians, or 26 per cent. of the 148 consulted, examined the patient's sputum; furthermore, 25 patients, or 16 per cent., of this same class, found to have a positive sputum on admission, had never had their sputum examined by their own physician. So we see that a large percentage of the general practitioners neglect to avail themselves of the opportunity of having a sputum examination made at no cost of money or effort to themselves. Frequently the diagnosis of pulmonary tuberculosis could be made by them weeks before it is, and these are indeed valuable weeks to the patient.

Our moderately advanced group consists of 741 cases, who consulted 1,468 physicians; 809, or 55.1 per cent., of these made a physical examination only, of whom 122 made this examination through the patients' clothes; 316, or 21.5 per cent., examined chest and sputum; 29 of this number made the physical examination without the patient removing his clothing; 88, or 6 per cent., examined the chest and took the temperature, but made no sputum examination, and 13 did not have the patients strip to the waist; 10, or 0.7 per cent., took temperature only; 11, or 0.7 per cent., examined sputum only; 2, or 0.02 per cent., took temperature and examined sputum, but made no physical examination; 106, or 7 per cent., made a thorough physical examination, took temperature, and examined sputum; 126, or 8.6 per cent., made no examination of any kind nor took temperature. There was absolutely no effort made to discover any abnormal condition, and you may rest assured that the advice given was in accordance with the examination.

I did not take into consideration the number of patients in this moderately advanced group that first consulted their physician for hemorrhage and who even then were told that there was nothing the matter with their lungs. It seems that even today many physicians have not learned that the spitting up of blood generally means tuberculosis, but will assure the patient that the blood comes from the back of the throat or any other conceivable place. There seems to be need of educating the general practitioner that hemorrhage is always to be considered tuberculosis, as Hawes says, unless there is clear evidence to the contrary. One of our cases consulted her physician for hemoptysis, and he, after listening to the history and without making an examination of any kind, told the patient that a diseased appendix was the cause of her hemorrhage and advised an immediate operation. There may be some excuse for a man who carefully examines his case but makes a wrong diagnosis, but there is absolutely no excuse for the man who takes neither time nor trouble to go over his patient.

The examination of sputum in the moderately advanced cases should be of great value to the physician, yet in these 741 cases 250 had never had a sputum examination before admission and 130 of these were found to have a positive sputum when they entered the sanatorium. Of the 1,468 physicians consulted but 425, or 28.9 per cent., thought it worth while to have a sputum examination made. Furthermore, as to the value of sputum examinations to the general practitioner may be cited the fact that there were 59 cases under treatment for various conditions for a period of one to thirteen months, during which time there was present both cough and expectoration, and yet the assurance was given that there was nothing the matter with their lungs until the sputum was returned positive. Barnes,[4] in 165 cases with expectoration, showed that the physician failed to diagnose tuberculosis accompanied by a failure to have the sputum examined in 31, or 18.7 per cent., and the delay in diagnosis by such failure was from two to ninety-six months, with an average of 10.3 months.

When 126, or 8.6 per cent., of physicians consulted make no attempt to make an examination of any type little progress can be made to wipe out this great menace to humanity. Barnes shows that of 66 cases 8, or 12 per cent., did not have their lungs examined by the physician first consulted and the delay in diagnosis was from two to twenty months, with an average delay of 5.1 months.

Even when we come to our far advanced group there is not the care taken to have the diagnosis made as promptly as it should be. We have studied the histories of 80 advanced cases, or 8 per cent. of the entire number, and obtained these figures:

They consulted in all 162 physicians; 79, or 48.7 per cent., made only a physical examination and 16 of this number made the examination through clothing; 1, or 0.6 per cent., took temperature only; 32, or 20 per cent., examined chest and sputum; 5, or 3 per cent., examined chest and took temperature; 16, or 9.8 per cent., examined chest, took temperature, and examined sputum; 29, or 17.9 per cent., made no examination of any kind.

In the last two items we are brought face to face with the fact that there are more men who make no examination whatever than there are men who are utilizing all the means at their disposal in their efforts to make a correct diagnosis.

Perhaps a summary of all our study at this time would not be out of place. There were, as I said in the beginning, one thousand cases, and these consulted 1,940 physicians, of whom 1,085, or 55.1 per cent., made a physical examination only, and of this number 151 did not deem it worth while to have the patient strip; 13, or 0.7 per cent., took temperature only; 14, or 0.7 per cent., made a sputum examination only; 381, or 20 per cent., made a chest and sputum examination; 114, or 6 per cent., examined the chest, took temperature, but did not make a sputum examination; 3, or 0.02 per cent., took temperature and made a sputum examination, but no physical examination; 133, or 7 per cent., made a chest examination, took temperature, and examined sputum; 197, or 10.2 per cent., made no examination of any kind.

Laverson[5] of California, in a similar study, made, however, on only 54 patients who consulted 72 physicians, got the following figures: 52.7 per cent. made only a physical examination, against our 55.1 per cent.; 12.8 per cent. made a physical examination and took temperature, against our 6 per cent.; 4.1 per cent. made a physical and sputum examination, but made no temperature record, against our 20 per cent.; 13.8 per cent. made no examination of any kind, against our 10.2 per cent. and Barnes' 12 per cent.; only 1 physician, or 2 per cent., took all the means necessary to make a diagnosis, against our 7 per cent.

The value of a temperature record appears to have been overlooked by the great majority of physicians consulted. Only 263, or 13.4 per cent., made use of a thermometer, and there is no doubt but that many of those who did not use one would

have obtained as much, if not more, information than they did with a stethoscope. The average practitioner should have it thoroughly impressed upon him that a continued afternoon or evening rise of temperature, in spite of the absence of physical signs or his inability to locate them, should at least make him suspicious of a tuberculous infection.

From these figures it can be seen that the attitude of the general practitioner in not making use of the routine measures of physical examination, taking temperature, and examining sputum is not confined to any one locality but seems to be widespread from the Atlantic to the Pacific.

The problem of the eradication of tuberculosis has been put wholly up to the physician, and Miller[6] said last year before the Canadian Medical Society that "it is not only the delay and ignorance of the patient in seeking advice, but the inability of practitioners to diagnose the disease in time that is today the greatest clog in the forward movement to meet and cope with tuberculosis." He also read replies received by him from the sanatoria men in Canada and a few in this country as to the average practitioner's ability to recognize (*a*) incipient, (*b*) moderately advanced, and (*c*) far advanced tuberculosis. The answers gave the general impression that the average practitioner rarely, if ever, diagnoses incipient tuberculosis. As to moderately advanced cases but one-quarter to one-half are recognized and then called incipient, and the ability to recognize far advanced cases is about on the same level as the moderately advanced type.

There is something radically wrong when a very large percentage of men in the practice of medicine are unable to recognize not only in its incipiency but even in the moderately advanced stage the most common disease on the face of the earth to-day. Why this state of affairs should exist is to most minds, I believe, unaccountable, and it must be put down in a great many cases to nothing more than carelessness.

The medical schools are not without blame for this above state of affairs, for until very recent years the teaching of tuberculosis was done wholly in a haphazard manner. Few if any of the men who acted as instructors in this disease had any special training either in its diagnosis or treatment; there were no special clinics for the patients suffering from tuberculosis nor was any attempt made to systematically follow up these unfortunate sufferers. Even to-day there are but a small number of medical schools in the United States that give an adequate course in tuberculosis, and up to one year ago but one school in Canada thought this disease of enough importance to have a chair for the teaching of it. Such conditions must be materially remedied if we hope to have the newly graduated medical men recognize incipient tuberculosis and to intelligently treat it.

Abrahams,[7] in a recent article on "Errors in Diagnosis," puts down those due to an incomplete examination as the most prolific cause of all, and he further states that many avoidable blunders result from this. He speaks, especially, of the haste with which physicians work; of not carefully examining the seat of trouble; that sometimes patients object to special examinations, and adds that it is far better to relinquish such a case, lose a patient, and save your reputation; he especially refers to the examining of patients through their clothing, and asks how it is possible in such cases to distinguish slight modification of breath sounds and to discern fine râles which are present in the early cases of tuberculosis.

It now seems as if there should be an awakening of the general practitioner to the part he is to play or should play in the overcoming of pulmonary tuberculosis and he should not be allowed to sit supinely by and see his cases left at home or sent to sanatoria in an incurable condition, when, by a little work on his part, such a case might have had a chance for an arrest and be able to return to his work and family.

Such figures as 133 men, or 7 per cent., of 1,940, making a conscientious effort to make a correct diagnosis by means of physical examination, taking of temperature, and examining sputum, against 197 men, or 10.2 per cent., who make absolutely no effort whatever to get at the seat of the patient's complaint, do not reflect any great credit upon the body of the medical profession. And as I have said before, this same percentage of conscientious and non-conscientious men as regards the diagnosing of tuberculosis seems to be the same in all parts of this country and Canada.

The advice given to most of these patients for whom the diagnosis was made was, in a majority of cases, of little value. They were told to stay in the open air, get an outside occupation, and to take eggs and milk. Absolutely nothing was said to them as to the amount of rest that they required, or anything told as regards the care of the sputum or the shielding of the mouth during coughing or anything else that would tend to lessen their being a source of danger to those with whom they came in contact. It is evident then that when the general practitioner does diagnose pulmonary tuberculosis he is unable to line out a systematic course of treatment for his patient.

These then are the facts as deducted from our study and now appears to be the time that the members of this association should seriously consider and devise some means of impressing upon the members of the medical profession the necessity of utilizing all the means at their disposal for the diagnosing of tuberculosis in its incipiency when the chances for arrest are excellent and so to drive this relentless and unmerciful foe of the human race from the face of the earth.

I wish to thank Dr. David R. Lyman for the use of his records and the encouragement given me in the preparation of this paper.

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The Effect of the Thymus on the Leucocytes.—Gino Baggio has found that the injection into the growing or adult rabbit of aqueous extracts of the thymus causes an increase in the number of leucocytes, the increase being in the polynuclear neutrophiles and the lymphocytes, sometimes predominantly or exclusively the one or the other, and sometimes both to an equal extent.—*Archivio per le Scienze Mediche.*

ON THE USE OF THE TERM "PSYCHOANALSIS" AND ITS SUBSTITUTE.

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THE terms "psychoanalysis" and "psychoanalyst" have become very familiar to all physicians, not to say many laymen, since the widespread dissemination of the Freudian theories. Psychanalysis is but an abbreviation of psychoanalysis. For this reason, and for euphonic and other reasons, I prefer the latter term. Psychoanalysis is, indeed, a good term, but it has been so much misused and abused that it is generally misunderstood and misapplied.

So far as I know, Freud was the first to introduce this now popular word. Owing to the numerous writings of Freud's followers, this word has found its way into diverse and far-distant lands. It is a term which seemed to speak volumes and was apparently seized upon by many with avidity and made a part of medical, especially neurological, psychopathological and psychiatrical literature.

So universally has this term been adopted that it surely seems to have made itself at home among many of us and to have installed itself so securely that it is a question whether it can be dislodged. And yet the way in which we use this term means much for science and for our patients. The meaning of a word, especially such a widely used term as "psychoanalysis," should be clearly and unequivocally understood by all who employ it. This is the apology for briefly discussing this subject.

Freud not only introduced this term but both he and his school have attempted to give it a specific and restricted connotation. They would limit the term "psychoanalysis" to mental analysis according to Freud's method, with his attitude and in accordance with his general conclusions. In this sense the term has a peculiar and artificial meaning. By Freud's method we mean his free association. His attitude (which is based upon his psychology) and his theoretical and practical conclusions include his conceptions of the intimate, individual and psychological significance of the resistance met with in the course of association of ideas, as evidenced in the application of the method of free association; the *a priori* cause to effect relationship which is subsumed to exist between the earlier and later experiences in the life of the individual, with the consequent false interpretation of the associations which present themselves and of coexistent ideas; the conception of rigorous psychical determination in the present life of the individual without regard to the evolutionary or racial history of mankind; the conception of psychical repression, by the endopsychic censor, as the cause for the disappearance from consciousness of all ideas, mental states, or trends not clearly conscious; the far-fetched, highly fantastic and peculiar conception of symbolism; the strange concept of the unconscious; the sexual theories which all lead to a theory of pansexuality with a neglect of the other instincts of man; the reasoning and proof by analogy, coincidence, or coexistence. These and other concepts or attitudes have led to various errors in analysis and interpretation, with the resulting conclusions of the greatest importance to psychopathology, psychiatry, psychology, and to mankind in general. The acceptance of the various dicta have been made by many Freudians a prerequisite for the use of the term "psychoanalysis." In other words it is maintained by them that since Freud first introduced this term it must mean mental analysis in accordance with his ideas. And some even go further and insist that Freud's method of free association must be used. This would thus limit the term psychoanalysis to mental analysis according to the set tenets and dogmas of their school. One must then first adopt the theories of this school *in toto*, before one can practise what they would call psychoanalysis and before one can be labeled a psychoanalyst.

Now, it so happens that psychoanalysis means the same thing as mind or mental analysis. No one will deny that mental analysis has been practised in some form or other by all peoples of the earth since man first came into contact with his fellow beings; in fact, since man first came upon the earth. And psychologists, clergymen, and physicians have been very active in this respect. Surely in recent years, even before the advent of Freudism, mental analyses were not neglected by psychopathologists and psychiatrists. Indeed, the French school paid much attention to the mental study and the mental history of their patients. Janet, Prince, Sidis, and others have surely not neglected mental analysis. It is true that the Freudian movement has given many an added or the needed stimulus in this direction, but we must not forget that analysis of the mental state and the origin and evolution of the mental condition was not new with Freudism. And all such work by others was mental analysis or psychoanalysis, using the latter word in an unrestricted sense to have the meaning which it etymologically should have. As a matter of fact I find certain writers and workers in the field of psychopathology who are not Freudians employing the word "psychoanalysis" as descriptive of their own work. Here they are making use of this convenient and euphonic and etymologically correct word, without any special implications, connotations or restrictions. They are indeed psychoanalysts and are practising psychoanalysis, although not of the Freudian or exclusively Freudian sort. Are they, then, or are they not psychoanalysts? Is or is not their work psychoanalysis? It all depends on what you mean by psychoanalyst and psychoanalysis. If you permit the words to mean what they etymologically do mean, then these men are psychoanalysts and do practise psychoanalysis. But if you have assumed the standpoint of many of the members of the Freudian school and insist on giving this word a special connotation which it etymologically is not entitled to, then these men are not psychoanalysts and do not practice psychoanalysis. Indeed, many of the men of whom I speak would object to being labeled psychoanalysts or of having it said of them that they practise psychoanalysis, since these words have been used by the Freudians and by many others in the narrow sense explained earlier in this paper, and explanations would be in order to signify that they are not full-fledged Freudians or do not subscribe to the Freudian doctrines. Now, there are many differing opinions among the members of the Freudian school itself. Jung, for instance, has come forward with certain criticisms and opposing standpoints. Shall we call Jung, and the others who agree with him as well as others who differ from Freud in one or more point, psychoanalysts, and shall we say of them that they practise psychoanalysis? Surely no one will deny that Jung is a psychoanalyst and that

he practises psychoanalysis. This would be agreed to by all, even the most rigid followers of Freud, in spite of the fact that, with his present views, he is not a full-fledged Freudian. He does, however, adhere to many of the concepts and attitudes of the original Freudian school, as represented, for instance, by Freud himself, and so decidedly differs in many respects from such workers as Sidis, Prince, and Janet, for instance. Jung is not, at present, a true Freudian, but is rather an offshoot of the Freudian school. He has taken more rational and more sensible viewpoints than were adopted by Freud in the field of psychopathology but still differs radically from most other students in this field. Yet his substitution of his theory of regression for Freud's theory of repression and fixation and his modification of Freud's theory of sexuality make him, in many respects, non-Freudian, although still a psychoanalyst. To this, I believe, not even the staunchest adherents of Freud would object. And yet by this very admission they would be agreeing to the employment of the terms psychoanalysis and psychoanalyst in a sense different from that originally conceived by Freud and his school.

Although, as is seen from what has been said above, the limitation and restriction of the words psychoanalyst and psychoanalysis as carried out by the Freudian school are unscientific, narrow-minded, and arbitrary, nevertheless the history of the term would, for a number of years at least, if not for all time, preclude its use in any other sense than that in which it has been employed by the Freudians. So much so has this been the case that to most, if not almost all of those who are at all acquainted with the recent work in psychopathology, the words psychoanalysis and psychoanalyst immediately call up in association the word Freud or Freudian and all that goes therewith. It is thus understood by them that the terms under consideration are used in the narrow, truly Freudian sense. Many of the men who are opponents of the Freudian movement thus immediately and unhesitatingly and emphatically declare that they object to the use of the term psychoanalyst and psychoanalysis in any other sense than that generally accepted and understood. So fixed has this idea become with most of those who are interested in this work that I feel it cannot be done away with. And since the Freudians insist on limiting this term in the way in which I have described and since this definition and understanding of the term has taken such deep root among physicians and others, it seems to me that it would be best to so limit the application of the word psychoanalysis or any of its derivatives. Thus, in spite of the desirability of this word, we must restrict its use as above mentioned. In this way the term is practically dropped from scientific nomenclature. This means that some other, more desirable term must be found to apply to the study of the origin, evolution and history of mental conditions, particularly of an abnormal nature.

The terms *abnormal psychology*, *psychopathology* and *psychiatry* are of old standing but do not refer specifically to the origin, nature and evolution of the mental states under consideration. Psychoanalysis really includes psychogenesis and psychoevolution.

Psychological analysis suggests itself. But there are definite objections to this phrase. To quote Prince[1] on the distinction between psychological and psychical we may say: "A distinction should be made between psychological and psychical, these not being coextensive and always interchangeable terms. Psychological pertains to the empirical data of consciousness (thoughts, ideas, sensations, etc.) while psychical pertains to the inner or ultimate nature of these data. Though the data as given in consciousness are psychical, that which is psychical may not be solely manifested as psychological phenomena. It may be manifested as physical phenomena and perhaps be identified with the energy of the universe. Hence the doctrine of Panpsychism. And so it may be that in its ultimate analysis an unconscious process is psychical (monism) although not psychological and not manifesting itself as a datum of consciousness." Psychological analysis would include the various psychoeducational tests, such as the Binet-Simon tests and their modifications, as well as the various tests for special abilities which have been introduced, as, for example, in studying the immigrant and the juvenile offender.

The writer[2] has suggested the terms "bioanalysis" and "psychobioanalysis." Bioanalysis to many may seem too broad a term, since, in the broad sense, it would include biochemical reactions and similar processes, and, furthermore, it would not lay sufficient stress on the psychic aspect of conduct. Psychobioanalysis would be broad enough and no valid objection to its use could be urged except its length, complexity and its lack of euphony.

Praxiology, the term suggested by Mercier[3] for the science or study of conduct, does not sufficiently bring to our minds the vitalistic and dynamic as opposed to the purely mechanistic and static standpoints.

"Anamnestic analysis," the phrase offered by Haberman,[4] and *psychoanamnesis*, suggested by Taylor,[5] would receive more consideration if we had no better terms.

Sidis[6] has recently introduced the useful term "psychognosis." We shall permit him to tell us in what manner he uses the term. "Psychognosis is not a special method. All I wish to convey by it is what the term means, namely a study, an acquisition of a working knowledge of the patient's soul, so to say." As he further explains, "we must learn to understand not only the patient's physical, nervous, and mental condition, not only his history and the development of his present trouble, but also his personality as a whole, his attitude to his external surroundings, his *Weltanschauung* so to say." And as to the method to be employed Sidis declares: "This can only be accomplished by all methods at our disposal, by hypnoidal and hypnotic states, by examination in the waking state, by constant watching and observation, by drawing out the patient in discussion, and by closely observing him in his actions and behavior in regard to his friends and strangers for a long period of time." Sidis would not exclude the various laboratory tests now employed, although personally he does not approve of them, and considers them cut and dried, clumsy, awkward, and highly misleading. The knowledge thus obtained of the patient's psychic life Sidis regards as psychognosis.

I find psychognosis to be a very valuable and convenient acquisition to our nomenclature. It is, moreover, full of meaning. It is a good substitute for psychoanalysis, and indeed would include information obtained by free association. Although psychoanalysis, as a term, appeals to me more

strongly than does psychognosis, yet, in view of the restricted use of and the ban put upon the term psychoanalysis we should be glad to adopt psychognosis in its stead.

Mental analysis, too, is a good phrase. It might be used to displace any or all of the terms hitherto considered. In fact, under the circumstances, it is the phrase that could be adopted without offense to anybody. Psychognosis, however, is such a fine term that it should not be dropped from scientific nomenclature and may well be generally adopted.

I must repeat that the term psychoanalysis, on account of its connotation and associations, must be dropped from scientific, psychopathological terminology. When used, it should be used in the restricted sense given to it by the Freudian school and others. To this conclusion I am forced, although I have in the past insisted on the broad, unqualified, etymological employment of this word. Mental analysis or psychognosis, preferably the former, are worthy substitutes.

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PRINCIPLES OF BROMINE THERAPY IN EPILEPSY.

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WHEN we question if it is at all useful to treat idiopathic epilepsy, we can say that rational therapy cures a small number and a great number become happier and socially useful. Every neurologist knows there are cases in which epileptics after treatment become free from attacks for several years. We know the epileptic feels subjectively better without the spells than with them, that without the spells he is able to be socially useful and happy, while with them he feels handicapped in life and is therefore emotionally dejected. From our experience we know that rational therapy at least reduces the number of attacks, and consequently they suffer less from the post-epileptic condition. The mental and physical deterioration progresses rapidly when the epileptic is left without treatment and when the seizures become frequent and the period between attacks short. It is known also that each attack places the epileptic in danger not only directly from the mechanical or internal complications, as for instance, suffocation or cerebral hemorrhage, but also from external accidents, such as burning, drowning, etc., which easily occur.

As regards drug treatment we still consider bromides the best, but the treatment with them should be individualized and based upon the following principles: It has been established by experiments that the administration for a long period of equal doses of bromides and alkalies produces an increased retention of the bromine and a simultaneous reduction of the chlorine content in the organism. This retention is the result of insufficient elimination of the bromine ions through the kidneys, which treat the bromine ions and the chlorine ions equally. The volume of the retention depends on the amount of the bromine ions and chlorine ions introduced into our body. The less sodium chloride is administered together with the bromides (especially sodium bromide) the greater is the accumulation of bromine in our organism, and vice versa.

The administration to and the excretion of fluid from the body, our weight, and probably other individual unknown factors promote also this bromine accumulation. The retained bromine remains as bromine ions in the blood serum and tissue fluids, and the osmotic pressure in them remains constant through the elimination of some chlorine ions. These experiments bring to light the antagonism between chlorine and bromine in our body, and establishes the fact that the presence of chlorine ions reduces, and the absence of them increases the effect of bromides. This has brought about the necessity of developing a standardized schedule of dieting in which the amount of salt would be reduced, and has pointed out the principles directing bromide medication in epilepsy.

Toulouse and Richard in 1899, and later Balint, Ulrich, and others, made careful observations and investigations on the salt-free diet. This diet contained only 2 grams of salt per day and did not gain popularity and acceptance. After a certain period the patient refused to follow it because it did not taste good, and the physicians discontinued it because the appetite and nutrition of the patient suffered. The patients showed some symptoms of cachexia and became sensitive to bromides and chlorides, that is, the patient had convulsions when a small increase of sodium chloride in the diet was allowed, or he showed intoxication symptoms when a small amount of bromides was added.

The regulation of the amount of salt in the diet was resorted to. Such a schedule of dieting contained 10-12 grams of salt a day, while the normal content of salt in palatable food contains 20-30 grams. The meals were prepared partially without salt, using it on the table. A combination of sodium bromide, sodium chloride, and extracts of vegetable albumin and condiments, known as Sedobrol, was dissolved in warm or hot water and put on the food to make it palatable and to substitute the necessary bromide medication. For instance, meat was cooked without salt and when served on the table it was covered with the above solution. Potatoes were boiled without salt, sauerkraut was thoroughly washed before cooking, other vegetables were slightly salted, and the bread contained 0.8 to 0.9 per cent. of sodium chloride. Tablets of this preparation made this régime or dieting easy and the treatment of certain cases possible at home.

In the treatment of epilepsy we have to bear in mind that all cases of idiopathic origin represent two groups: (1) Epileptics who are meantally and physically intact and strong; (2) epileptics who are mentally and physically defective and debilitated. In the first group we should start with bromides, 15 grains a day, giving the usual food but eliminating soups or preparing them without salt. Meat,

vegetables, and bread are given as usual with salt. In one, two, or three weeks, depending on the intensity of the case, this dose should be doubled and continued for a long period (several months). Only exceptionally later is it necessary to resort to 3, 4, or 5 grams a day of the bromides. Soups and vegetables can be prepared without salt and made palatable by the addition of Sedobrol. Strong salted foods, such as cheese, ham, and similar things should be avoided.

The treatment in cases of epileptic insanity and demented epileptics included in the second group should be directed quite differently, and cannot be successfully conducted at home. It is a great mistake in such cases to strive to reach a period free from the convulsive seizures. Instead of the suppressed convulsive attacks there appear the so-called status equivalents, excitement and confusion with hallucinations, which are worse than the motor seizures. It is known also that epileptics with confusions and twilight conditions clear up after the convulsive attacks. In such cases one should start with half a gram (8 grains) of bromide salts, continue for several months with this dose and then gradually increasing the dose reach two or three grams a day. When the equivalent symptoms appear one should reduce the dose gradually or give small doses of sodium chloride (2-5 grains or more per day) in the food. All these difficult cases require strict control until a standard is found. When this is found the patient can be treated with a constant dose.

In puberty many epileptics are sensitive to bromides, which warns us at this age to be more careful with the dosing. In all cases bromide therapy must be uninterrupted to reach the best results. The discontinuance of bromides for several days, weeks, or months will spoil the whole course of treatment, the convulsive attacks may appear with a new vigor and not yield to treatment as promptly as before, or even a status epilepticus may be provoked with a fatal ending. There is no strict indication for the discontinuance of bromide medication for a long period. Only in feverish conditions and in difficult bromism should bromide medication be reduced for a certain period or discontinued for more than a few days. Neither the increased number of attacks at the beginning of the bromide medication nor the bromide acne should be a reason for a discontinuance of it. The patient should be prepared for and informed about these points before starting treatment, and the dose of bromide which is empirically established as inhibitory for the convulsions or equivalents ought to be continued for years, as the reduction of the standardized dose causes only disadvantages.

The bromide medication should be started as early as possible. The patient does not usually submit to a systematic treatment when the spells occur only once or twice a year, especially when they are slight. They are usually considered as fainting spells or a consequence of gastrointestinal disturbances. The bromide medication should be applied in small doses when the regularity of the attacks is established as above, and no doubt the epileptic can be made free from attacks for years. The dosage should always be a gradual and prolonged one. It is also wrong to strive for an immediate suppression of the attacks, or to reduce the dose after the patient has been free from seizures for a long period. On the contrary, it is advisable to increase the dose of bromides at the time approaching the seizure.

The amount of sodium chloride has to be gradually reduced, and it is sufficient in all cases to give first the soups without salt, and later to gradually reduce the amount of salt in the vegetables. Reduction of the amount of sodium chloride increases the effect of bromide salts. In cases in which 5 or 6 grams of bromides are not sufficient, which is unusual, and in cases in which attacks occur in the night, one should combine the bromide medication at night with one dose of 0.5 to 1 gram of chloral hydrate. In cases in which a series of convulsions are prone to occur in close succession, it is advisable at the beginning of such series to administer per os or per rectum 1 to 2 grams of chloral hydrate.

In connection with bromide therapy I would like to say a few words about the symptoms and treatment of bromism. French authors speak of the syndrome of cerebrospinal bromism, the symptoms of which are as follows: General delirium, hallucinations, ideas of persecution, violence, ataxia of the limbs and tongue, and disturbance of speech, but these symptoms we do not observe in rational institutional treatment. We observe the following symptoms: The patient becomes indifferent, apathetic, careless in his work, gait and attitude, forgetful and somnolent. Perceptibility is disturbed and the patients are depressed, lacrymose and irritable, but seldom elated. The gait is dragging, the writing is ataxic, the patient cannot find the proper words for expression or proper letters in writing, and the writing may become illegible. The mucous membrane and corneal reflexes are reduced, while the tendon reflexes are increased. The pulse sometimes becomes small, frequent, and irregular. The appetite is poor with constipation or diarrhea, the tongue coated, and a fetor ex ore develops.

The treatment of bromism is very simple. Reduce the amount of bromide salts by 1 to 2 grams per day and increase the amount of salt, or prescribe sodium chloride 1 to 5 grams a day for a few days or weeks. It is surprising how patients with bromism, who are not able to stand, walk, or speak, entirely recover after a few small doses of sodium chloride. The efficiency of this treatment is so pronounced that it is seldom necessary to discontinue the bromide medication for more than a few days. The skin affection in bromism is not coincident with symptoms of the cerebrospinal type, but depends on the skin constitution of the individual. The most frequent of these skin affections is bromide acne, which is treated successfully by arsenic. This should be given in the form of Fowler's solution, 2 to 6 drops twice a day after meals and continued for a long period (weeks or months., and the bromide medication should not be interrupted.

Another affection of the skin, but a rare one, is the bromide ulceration. It is about the size of a silver dollar, flat, with slightly elevated edges consisting of small wart-forming excrescences covered, when neglected, with scabs. This affection is treated with compresses of sodium chloride solution and arsenic internally. A third form of skin affection in bromismus has been described and is also very infrequent. The so-called bromoderma nodosum is similar to erythema nodosum but it is not accompanied by fever and is without pain in the joints. This skin affection is usually located on the legs. They are painful and present, first, deeply circumscribed infiltrated spots, which gradually become superficially seated and more visible, the skin over them becoming red. The treatment is also arsenic.

The bromide stomatitis is treated by a solution of potassium permangate, prescribed as follows:

℞ Potassium permanganate, 1 gram.
Sodium chloride, 50 grams.
Water ad, 1000 grams.

M. S.—One teaspoonful to a glass of water for a mouthwash.

Regarding the bromide preparations, it is known from literature on this subject that sodium, potassium, ammonium, calcium, lithium and strontium bromide have been used with almost the same results. The organic bromide preparations do not have sufficient anti-epileptic effect. Sodium bromide is recommended as the least toxic and is preferred in cases in which the nutrition is poor, especially in women and children. Potassium bromide is the most efficient. Ammonium bromide is preferred when the circulation is weak. Strontium bromide is recommended when gastric disturbances are also present. I have used with good results the pentabromide combination of sodium, potassium, calcium, lithium and ammonium bromide. Only in cases of gastrointestinal torpidity have I been compelled to give either sodium bromide or strontium bromide. Where the heart action is disturbed and digitalis is indicated this has to be properly administered. Not only in Jacksonian epilepsy, but also in cases in which cerebral irritation is suspected trephining after Koche is advisable, leaving a persisting soft fascia-fat covering. The bromide medication should be continued after the operation.

The treatment of epilepsy in all cases should, in the first place, be physical and dietetic. Proper environment, regulation of diet, absolute abstinence from alcohol, proper clothing, sufficient exercise and sleep are important. Hydrotherapy and gymnastics help the metabolic process, and in addition to this appropriate culture of the mind and morals is beneficial. All these measures are best accomplished in an institution conducted on the colony plan or in one conducted especially for this purpose. When institutional treatment is impossible epileptics should always be given some employment, preferably of a physical and congenial nature and out of doors. Diet should be easily digestible, not much water should be taken at meals, but sufficient water should be taken between meals. Food of animal origin, which is likely to generate intestinal poisons and bring on the seizures, should be taken in limited quantities only. More vegetables, fruit, starches, honey and preserves may be given. The correct management of the limitation of the protein intake so as not to exceed the patient's maximum is important. The limitation of protein must be compensated by an increase of the carbohydrate and fatty constituents, and these can generally be taken without limitation.

A HEALTH WEEK IN THE PUBLIC SCHOOLS.

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THE plan I propose aims to devote special time and attention to the subject of health within a period of one week in each school year; so that all school children and their parents will receive clear and definite instruction on matters of hygiene and sanitation.

For school children, a series of a dozen or more fifteen-minute talks on personal hygiene, public sanitation, and prevention of disease may be delivered by physicians or other qualified persons. The topics to be food, milk and water, fresh air, cleanliness, care of the teeth, contagious and communicable diseases, the home, the streets, safety, fire prevention, and kindred subjects; each talk carefully worked out to present the essentials in brief and easily-remembered form. Children are quick to apprehend the central fact; for example, the visiting tuberculosis nurse in a certain district is called "the spit lady." Moreover, children may be appealed to on the side of self-interest. Let a boy be told he cannot become a policeman or a fireman, or join the army or the navy, if he has bad teeth, and he will sit up and take notice. Likewise, a girl will quickly make note of the fact that she is less likely to be popular or to make an advantageous marriage, if she has ill-kept teeth.

For adults, a special stereopticon lecture could be given that would set forth the chief facts of the talks to the children; this lecture to be delivered every night of the week, with cards of admission carried home by the children to their parents. In child welfare work we find that a great many parents are deeply concerned about everything relating to the health and well-being of their little ones. Not only the mothers but the fathers make their interest manifest in various ways. For instance, at a baby contest that was kept going into the early evening, a man came bearing a note he had found at his home: "I have gone to the Baby Show—get your own supper." At first it was thought that he was mad about it; but soon it was found that he had come to meet the other men and to bet on his baby. Whenever there is a fine boy baby in the family the man seems to want to take all the credit to himself.

In conjunction with the day-time talks to children and the evening lecture for adults, there should be a series of panels, or "screens," of the usual type, bearing appropriate pictures, titles, and explanatory legends; these to be displayed in the indoor playground or other suitable space during the whole of the Health Week. There should also be suitable leaflets, or better yet, a primer pamphlet, for free distribution.

In the event that every school cannot have a Health Week every year, it would be desirable to give the course every other year; so that each child would receive this instruction at least three times while passing through the grammar grades. Lectures of a more advanced type might be arranged for high school pupils.

In our own city such a plan might be carried out co-operatively by the following:

Board of Education: Department of Physical Training; Bureau of Lectures.

Department of Health: Division of Child Hygiene; Division of Education and Publicity.

The Life Extension Institute: Educational Bureau; Publicity Department.

Assistance could be had from the Parents' Association in each school, and from neighborhood clubs, settlements, and similar agencies of the vicinity. It might be well to add some arrangements for organizing the children to assist in certain matters of public health and welfare, with an element of competition between classes and schools.

The last week in May of this year there was given in New York City a remarkable demonstration of what can be done by organization and concentration on one health topic. Under direction of Dr. C. Ward Crampton, director of Physical Training in the Public Schools, the week of May 24-29 was made Dental Hygiene Week. In preparation,

special meetings of principals, teachers, and adult high school pupils were held. During the week scores of lectures were delivered to thousands of children by specially trained lecturers, members of the District Dental Societies in the various boroughs of the city; with special talks by principals and teachers in all the schools. The week ended with Dental Hygiene Field Day, which included a competitive drill in Central Park and Van Cortlandt Park by several hundred children, representing Manhattan, Bronx, and Brooklyn. Cooperation was secured through numerous Parents' Associations and mothers' meetings; and several commercial houses contributed great quantities of tooth brushes and tooth powder for demonstration purposes. The press gave much space to Dental Hygiene Week, and by means of moving picture films of Field Day the event has been heralded throughout the country.

The old-fashioned, diffuse way of teaching hygiene in half-hour periods once a week throughout the year, ought to give place to a method whereby the children and their elders will have presented to them with lucid brevity all the information they need on the important topic of health.

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PRIMARY MASTOIDITIS.*

REPORT OF TWO CASES.

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VISITING OTOLARYNGOLOGIST, PEOPLES HOSPITAL; ASSISTANT LARYNGOLOGIST, CITY AND POLYCLINIC HOSPITALS AND GOOD SAMARITAN DISPENSARY.

Mastoiditis may be divided into primary and secondary. In primary mastoiditis, as the name implies, the infection begins and involves the mastoid cells. In secondary mastoiditis the infection follows middle ear disease, extension taking place usually through the aditus. A typical form of secondary mastoiditis with the classical signs present is easy of diagnosis. The symptoms pathognomonic of mastoiditis are a congested and bulging membrane with or without a perforation; a profuse thick discharge; drooping of the posterior superior wall of the external auditory canal near the drum; an edematous condition of the mucous membrane of the middle ear; a point of localized tenderness over the antrum tip or point of exit of the emissary vein; external swelling behind the ear; diminution in hearing as shown by watch, acoumeter, conversation and whisper voice, and tuning forks; together with the systemic symptoms indicative of a septic process. An examination of the aural discharge may throw considerable light on the condition. The urgency for operation and the prognosis will vary according as to the type of germ present. With the streptococcus mucosus capsulatus early operation as well as complete exenteration of all cells is advisable.

In atypical secondary mastoiditis with absence of the characteristic symptoms diagnosis may be extremely hard, and the originating point of inflammation difficult to locate. However, careful examination will reveal the mastoiditis to be consecutive to middle ear inflammation. Various anomalous conditions may mask the symptoms. The anterior portion of the mastoid process may be very thick so that there is little, if any, drooping of the posterior superior wall of the external canal. A thickened condition of the tympanic membrane may be sufficient to resist the suppurative process in the tympanic cavity. In fact, cases have come to operation in which middle ear and mastoid disease has been complicated by intracranial and sinus disturbances without the drum membrane ever having ruptured or the ear having discharged. Mastoid abscess also may occur a long time after a suppurating ear has apparently healed and the discharge has ceased. In such cases some infective focus has remained quiescent in the mastoid cells. These atypical cases of mastoiditis are the bane of the otologist. With the absence of all definite signs the disease may extend and produce marked destruction of tissue, symptoms not showing until the inflammation has invaded vital structures, giving rise to labyrinthitis, meningitis, brain abscess or sinus thrombosis, or has progressed outward with the formation of a subperiosteal or a Bezold abscess. In these cases, therefore, early diagnosis is urgent. In primary mastoiditis the inflammation begins in the mastoid bone and may show definite symptoms. It differs therefore from atypical or symptomless mastoiditis in which the infection has proceeded from the middle ear and in which objective signs are wanting.

In my service at the People's Hospital I have lately operated upon two cases of primary mastoiditis.

Case I.—M. B., three months old, seen March 10, 1913, showed a large swelling behind the left ear. The mother stated that the child had received a sharp blow on the left side of the head a week before. The tympanic membrane and the auditory canal were normal in appearance. The case looked like a typical subperiosteal abscess. No history of measles, scarlet fever or diphtheria. No tubercular or specific dyscrasia. Ears all right previous to this trouble. A slight increase in temperature, pulse, and respiration. Blood examination gave a slight leucocystosis with a moderate polynuclear increase. A preliminary paracentesis was negative. On operating, the first incision through the skin and periosteum freed profuse thick pus. There was necrosis of the bone with involvement of the antrum. The entire mastoid cavity was cleaned out and then packed. Healing was rapid. The infection here probably was through the lymphatics, irritation of the periosteum being followed by inflammation with extension and involvement of the bone. The case is of interest as showing the development of mastoid abscess following traumatism, together with the absence of local evidence of middle ear disease.

Case II.—Y. S., seven years old, seen April 13, 1914, presented a left retroauricular bulging. The mother had noticed the swelling for five days previously and could assign no reason for it. A careful examination failed to elicit any connection with the middle ear. There was a very slight haziness of the drum, but the markings were clear, and no congestion or bulging was visible. There was no swelling in the canal wall or any furuncular condition. Functional examination showed some impairment as compared with the other ear. There was a history of frequent attacks of tonsillitis and chorea. On operating a general destructive process was noted, necrosis involving the tip, the zygomatic and perisinus cells. Examination of the mastoid pus showed a coccus with a tendency to form small chains similar to the coccus often noted in tonsillar inflammation. The source of infection here probably was the tonsil, the infective agency passing through without involving the eustachian tube and middle ear into the antrum, in which lodging in a mastoid cell, it is walled off from the tympanic cavity by inflammatory closure of the aditus.

In postauricular cases without local symptoms indicating middle-ear disease careful examination is necessary. Mastoid tenderness and pain may be due to abnormal or functional postaural nerve conditions. Furuncle of the canal is a common cause of swelling of the skin back of the ear. An inflamed

*Read before the Clinical Society of the People's Hospital, May 13, 1914.

condition of the mastoid glands may closely simulate mastoiditis. These anomalous cases demand prompt and exact recognition in order to avert serious consequences, and all aids including transillumination and radiography should be utilized.

221 Second Avenue.

A CASE OF INTENSE FOOD ANAPHYLAXIS.

By LOWELL C. FROST, M.D.,

LOS ANGELES, CAL.

The following case of food anaphylaxis is so typical and clear cut in its symptoms and so intense in its manifestation, as, I believe, to merit presentation. I was called by telephone at 7 P.M., June 2, to see a patient who was reported to be suffering from very acute indigestion. On arriving at the house twenty minutes later I found the condition as follows:

The patient, F. K., a well nourished young woman of about thirty, was in bed in a semi-recumbent posture. The skin over the entire body was bright red with an intense erythema, except the lips and finger nails, which were somewhat cyanotic, and the eyelids, upper and lower, which were bloodless with an edema so marked that it was impossible to open the eyes. The tongue almost filled the mouth, and the patient, although using all the auxiliary muscles of respiration, was able to get very little air into the lungs owing to edema of the glottis, tongue, and nasal mucous membranes. I immediately prepared 2 c.c. of a 1:1000 solution of adrenalin chloride and forcibly injected 1 c.c. into the left nostril, which seemed to be comparatively free, with the intention of allowing it to flow down the nasopharyx to the glottis to relieve the edema at that point. I then injected the remaining 1 c.c. subcutaneously and followed it with a hypodermic of atropine 1/75 grain and morphine 1/6 grain. Meanwhile crushed ice was applied to the throat. The stethoscope at this time showed asthmatic musical high-pitched râles over most of the anterior chest. The heart action was rapid, 104, and of tense quality. The patient felt no better and I was considering tracheotomy, but found that the nasal application of adrenalin had so depleted the edematous membranes of the turbinates that it was now possible to throw a stream of the same solution into the nasopharynx. The edema of the tongue prevented any direct application of the adrenalin to the glottis or any attempt at scarification. The respiration now improved very rapidly and the edema of the eyelids grew less, and in less than thirty minutes after my arrival the condition of the patient was nearly normal except for some erythema, which faded slowly and was gone by the next morning. The bowels had then acted thoroughly as the result of an active catharsis. At that time I gave her general dietetic advice and obtained the following past history and details of the present attack:

Family history: Negative. No trace of asthmatic or gouty diathesis on either side, and no history of any anaphylactic attacks, or reactions against special foodstuffs.

Past history: The patient has been generally healthy. She had measles, mumps, and whooping cough as a child, but with no especial severity. Puberty at thirteen years. Catamenia always normal and regular. She does not remember ever having suffered any attacks similar to that of last night until about one year ago. At that time while walking in the evening, about an hour after supper, she suddenly had a violent paroxysm of sneezing, and this was followed within five minutes by a very marked edema of the eyelids and nasal membranes; at the same time she had a choking sensation and some difficulty in breathing, doubtless due to a similar condition of the glottis and bronchi. At this time she had no erythema, urticaria, or nausea. She had been feeling perfectly well up to the moment of the sneezing, and had eaten a good supper, although she cannot now remember of what it consisted. Three weeks ago she had another attack with the same, although milder, symptoms. This time the paroxysm occurred while she was attending a theatrical performance about two hours after a supper consisting of tea, toast, chops, and blackberries. One week ago she suffered again in the same way, this time about one-half hour after a supper of which strawberry shortcake was the principal part. Recovery was in each of these cases complete and rapid, averaging about three hours, following a self-administered castor oil catharsis and large enemata.

Present illness: The patient had been feeling comparatively well ever since the last attack, and had eaten a supper of toast, tea, milk, ripe strawberries and cream. Immediately after leaving the table she went into the kitchen to help wash the dishes. She had been doing this for not more than five minutes when she suddenly sneezed violently several times in succession. This was accompanied by a rapidly developing edema of the eyelids and nasal membranes, and a feeling of nausea. Emesis followed, the whole supper being rejected. A choking sensation then came on with whistling and difficult breathing, and in this condition I found her, as described above.

One factor in each of the attacks I have not yet mentioned, and it is, I believe, of great importance in the etiology. She did not recall it when first giving me her history, but subsequently remembered that it had been constant at each crisis. This was the fact that for several days before each attack she had passed only small quantities of very dark urine, which burned her during micturition. For the eighteen hours before the last crisis, she had had complete urinary suppression. Questioned as to the daily quantity of water ingested she stated that it was on the average not more than two glasses. Questioned further, she stated that during the previous day she had experienced several rather sharp paroxysms of pain in the lumbar region—a symptom which she had never before felt.

The diagnosis would seem to be anaphylactic reaction to some article of food, probably berries, against which the patient had established an idiosyncrasy, the intensity of the reaction being greatly enhanced by a chronic acidosis of high degree, with acute "acid crises." In the case of each attack the catharsis was profuse, and was followed by great thirst, which led to a markedly increased intake of water. This apparently relieved the acidosis temporarily. The exact relation of acidosis to anaphylaxis has never been fully worked out, but I hope to prove through guinea pig experiments that such a relation exists. Meanwhile I should be glad to obtain through other physicians reports of cases showing this syndrome.

6404 Hollywood Boulevard.

REPORT OF A CASE OF TETANUS WITH RECOVERY.

By JAMES MURPHY, M.D.,

MIDDLETOWN, CONN.

ASSOCIATE MEMBER OF THE MEDICAL STAFF OF THE MIDDLESEX HOSPITAL.

The surgical reports from the armies in the great European War have brought to our attention very conspicuously the treatment of tetanus. The interest in the subject in general and the fact that my patient recovered, which is rare enough in this disease, prompts me to report the following case:

The patient was a man, age 26, in exceptionally good physical condition. On March 17 last he had his right hand caught in the grinder of a grist mill. Upon examination I found the middle finger severed through the second joint and hanging by a tendon, and the ring finger badly lacerated with an open fracture of the second phalanx. I amputated the middle finger through the joint, removed a fragment of bone from the ring finger and applied the usual antiseptic dressing. The wounds seemed to be healing and the patient's condition was good up to March 26. On the afternoon of that day I received word that the muscles of his jaw seemed stiff, I thought immediately of the possibility of tetanus and as the patient lived four or five miles from my office I determined to save as much time as possible and accordingly procured as much antitoxin as I could and lost no time in visiting him. I found him in bed,

temperature 99.4°, pulse 80. The muscles of his jaw were stiff and his neck muscles slightly rigid. The mouth could be opened, but with great difficulty. He complained of pain in his jaw, tongue, and neck, and also of pain in the wounds, which began late the night before, and had kept him awake. I administered 3000 units of antitoxin (all I had) subcutaneously, opened up the wounds and treated them with iodine.

That night the patient was restless, complained of great pain at the site of injection and his temperature went up to 101°. His jaws were more tightly set and the neck muscles more rigid. The following morning I gave him 3000 units subcutaneously and found his condition about the same. March 28 he was admitted to the Middlesex Hospital. At this time his jaws were closed tightly, his neck almost immovable and the spinal muscles were beginning to contract.

Upon examining the fingers at the hospital I found that the wounds did not look healthy, and with the assistance of Drs. Loveland and Walsh I amputated the stump of the middle finger and the whole of the ring finger close to the hand, leaving the flaps open and dressed the stumps with gauze soaked in Harrington's solution. Two hours after admission I began the intramuscular injections of 10 per cent. solution of carbolic acid, 10 minims every two hours, until the urine became smoky in appearance. That evening the patient was given 9000 units intravenously. Temperature on admission 101.4°, pulse 100, respiration 20.

The following day, March 29, the temperature and respiration remained about the same as the day previous. During the day muscular twitching began and continued at intervals of a few minutes. There was no convulsion. The twitching was controlled by bromides, 20 gr., and chloral, 15 gr., p.r.n. At 8 P. M. Dr. Wm. F. Verdi of New Haven was called in consultation and advised an intraspinal injection. Dr. Verdi did the lumbar puncture and injected 6000 units of antitoxin. There was some difficulty in introducing the needle owing to the backward arching of the spinal column.

Four hours after the intraspinal injection the patient became delirious and the temperature went up to 107°. Respirations 40 and irregular, pulse 120. Cold bathing seemed to have a decided effect on the temperature and by 4 A. M. the temperature had dropped to 102°. Pulse 90, respiration 30. For the next twenty-four hours the temperature remained at 103°, remitting slightly after each cold bath. On the fourth day after admission the temperature began to decline and the symptoms began to improve. On April 3 I gave the last dose of antitoxin (1500 units) subcutaneously. April 5 the temperature was normal. April 13 the patient sat up in a chair, and on April 15 he could masticate solid food. He was discharged April 23, cured. In this case the period of incubation was rather long, nine days, which favored the prognosis, and the symptoms developed slowly, another favorable point.

Was this a case which would have recovered without specific treatment? If not, which part of the specific treatment, the antitoxin or the carbolic acid, was effective? Another question: Did the amputation of the fingers have a favorable effect upon the progress of the disease? It is impossible to answer these questions satisfactorily. I am unable to express any opinion as to whether the carbolic acid had any curative influence or not. My patient received 12 gr. before reaching the therapeutic limit, and it was three days after the last dose before the symptoms began to decline. The most favorable comment I can make of Baccelli's method in this case is that it certainly did no harm. The total amount of antitoxin administered was small, 22,500 units, but the first injection was given within a very few hours of the beginning of the symptoms. This circumstance, together with the fact that the symptoms began to improve less than twenty-four hours after the intraspinal injection, leads me to believe that the antitoxin was curative. In another case I would advise a much earlier intraspinal injection and also much larger doses in a vein during the first twenty-four hours.

In regard to amputation, I think that the majority of surgeons are opposed to it on the ground that the shock is more than a patient seriously ill can bear. I think this reasoning applies to major amputations only. It would be obviously poor surgical judgment to subject a patient desperately ill with tetanus to a major amputation unless the operation was clearly indicated for other reasons. In the case of fingers or toes, however, the shock is not great and if our belief that the tetanus bacillus remains localized is true it would seem to be a good prophylactic measure to remove the source of further elaboration of toxins, leaving us to deal only with those already absorbed.

GOUT.

By MAX STRUNSKY, M.D.,

NEW YORK.

For two and a half centuries gout was accepted as a pathological fact. It was recognized to be a disease of common occurrence and was divided into rich man's gout and poor man's gout. Millions of people went to their graves with the belief that they suffered and died of gout. Innumerable physicians became specialists on gout and thousands of volumes were written on the subject. Even to-day one hears of famous and celebrated gout specialists.

For eight years the writer has been working in a hospital for bone and joint diseases where undoubtedly the richest material in this line in New York City is to be seen. He was struck with the fact at one time that of the thousands of cases he has treated he has as yet failed to see a single case which corresponded to that classic syndrome so profusely described in the nomenclature of gout. Inquiry among physicians with extensive experiences with bone and joint diseases and even among those who specialized in metabolism elicited the answer from some that they thought they saw one or two cases of gout in their lives; but in discussing these cases it became evident that they were either of an undetermined infectious origin or belonged to that innumerable class of arthropathies whose causation is yet unknown.

What is to-day was yesterday. Things do not change in this world, it is only our conception of them that changes. If one sees so little of gout now it is fair to assume that there was very little of gout before. On the other hand syphilis is getting to be recognized as a cause of chronic bone and joint diseases more and more. In our hospital, 21 per cent of the total number of cases were found to be due to this cause. Gonorrhea also, especially of the seminal vesicles, is next in its appalling frequency as a cause of bone and joint diseases.

No wonder therefore that the rich man's gout was so prevalent! His indulgence in meat and wine on which the whole trouble was blamed and which was supposed to precipitate an attack is suggestive rather of an infection, for we know that liquor flares up a Neisser infection irrespective whether these cocci make their nest in the urethra or in the articulations of the big toe. Besides people in the habit of indulging need not necessarily have limited their indulgence to the gastronomic. Bone and joint diseases due to syphilis must have existed then as they do now, but the cause lay unrecognized. For the diagnosis can be made only on the *x*-ray findings and the Wassermann reaction, and at that time Roentgen, Hoffmann and Wassermann were either not born yet or were still in knickerbockers.

But what about the poor man's gout? If the excessive consumption of meat and liquor produced gout, how about the poor man who lived on the rich man's estate and who was fed mainly on potatoes, while the one richness in his diet was perhaps the liberal admixture of husk in his bread? To quiet the protestation of reason it was argued that if excessive proteins will cause deposits of uric acid, conversely than an extremely poor protein diet will produce the same result by the law of direct opposites. An hypothesis worthly of a mystic! How much more logical it is to suspect that poor man's gout came into being from the same venereal causes as the rich man's.

Gonorrhea and syphilis, however, were not the only infections that were mistaken for gout. Pyorrhea alveolaris must have contributed legions. For at that time teeth were never cleansed at all, and cavities in the teeth were never filled. Tartar perpetually accumulated at their roots and ate far into their gums, keeping the channels open for infection.

Also flat feet must have added herds of cases, for this pathological entity was as yet unknown. The rich man in pursuit of his pleasure and the poor man from prolonged standing at his labor strained their arches then as they do now, and women by their ultra-fashionable shoes, which fashion decreed upon them in certain periods of history, produced painful feet which were undoubtedly mistaken for gout. That patients with local foot trouble were treated for gout the writer can speak from experience. A typical case is of a woman who came to his office two years ago. She had broken down anterior arches. Hallu valgus, hammer-toes, and bunions were present and the heels were small and undeveloped. Her feet were one mass of pain and they looked infantile, reminding one of the feet of a Chinese woman. All her adult life she wore high heeled, narrow pointed, tight shoes. She said that for twenty years she had been treated for gout.

Deposits of calcium salts are not considered to be a cause of a disease. Undoubtedly the deposit of urates around the joints and in the system has the same function, namely, as a weapon of defence, and is one of the many processes by which repair takes place. What evidence is there to show that deposits of urates around a joint give rise to violent pain and local circulatory disturbance as seen in gout? Gout was never reproduced experimentally on animals by the injection of uric acid, though it was tried many times. Besides, the toxicology of uric acid differs very much from the symptoms of gout. If the presence of tophi means that the individual has gout, and this is the popular conception then every enlargement and swelling of the joints, from Heberden's nodes to spurs, spina ventosa, and even calcified bursæ and degenerated sesamoid bones all help to keep alive the legend of gout.

236 West Seventieth Street.

Articular Grafts. — Roberto Falcone states that a piece of articular cartilage with a thin strip of bone attached is capable of restoring the integrity of a joint if used as a graft. The results are particularly good if the transplantation and the subsequent restoration of the joint surfaces are followed by appropriate physico-mechanical treatment. The best anatomical results are obtained if two grafts are made corresponding to the opposing articular surfaces.—*Riforma Medica.*

Medicolegal Notes.

Oklahoma Medical Practices Act Held Valid.—The Oklahoma Court of Criminal Appeals holds that the Oklahoma medical practices act of 1909 is a valid and constitutional law enacted within the reasonable exercise of the police power of the State, and does not conflict with Section 33 nor Section 57, Article 5, of the Constitution of the State, nor with any provision in the federal Constitution. The title of the act relates primarily to one subject, namely, the practice of medicine, and all its features are cognate to the title as expressed, and go to make up a complete enactment as a complement to the main purpose and intent thereof. Revenue is only an incident to the act, which is not held to be a revenue measure in contemplation of Section 57, Article 5, of the Constitution.

A statute enacted within the reasonable exercise of the police power of the State may impose reasonable fees, and the imposition of such fees in no manner changes such law from a police regulation to a revenue measure. Such fees are not required to be based either upon the cost of the enforcement of the law, or upon the issuance of permits thereunder.—Ex parte Ambler (Okla.), 148 Pac. 1061.

Expert Testimony—Examination Long After Injury.—In an action by a railroad section hand for injuries caused by falling from a hand car no physician who treated the plaintiff at the time of the injury, or near that time, testified, but physicians who examined him at the first trial of the case, which took place about two years after the accident, were called as witnesses. The examination of the physicians showed that at the time of the first trial and since then the plaintiff had suffered from a fistula in ano. There was no dispute in the medical testimony to the effect that a fistula of this kind is caused frequently by tuberculosis, sometimes by piles, but only in very rare instances by traumatic injury. The physicians called by the defendant testified that, in their opinion, it would be impossible for a fistula to result from an accident of this kind, or from any of the injuries indicated by the scars on the plaintiff, which were a scar on his head and another on one of his knees. In such circumstances it was held to be error to allow the plaintiff's medical witnesses to testify that, in their opinion, the fistula was caused by traumatic injury.—Ballard vs. Kansas City, M. & O., Kansas Supreme Court, 148 Pac. 764.

Employment of Physician by Agent of Corporation.—Although as a general rule a corporation is not required to furnish medical attention to an employee injured while engaged in its service, and, nothing else appearing, an agent cannot bind the employer unless it appears that such an authority is within the scope of his agency, yet, where an agent in charge of the business of the employer, although of limited authority, does employ a doctor for an injured employee, and the employer is notified within a reasonable time by the agent that such doctor is in charge of the case, and makes no objection, and it further appears that the agent purchased medicine for the injured man, which was paid for by the employer, this is held to be sufficient evidence to go to the jury of the ratification of the employment.—Roff Oil & Cotton Co. vs. King, Oklahoma Supreme Court, 148 Pac. 90.

Unlawful Dealing in Opium, etc.—The Tennessee act of 1913 prohibiting the sale or distribution of opium or any derivative thereof, except that a physician may prescribe the drugs when in personal attendance on a patient, does not, it is held, deprive a physician of his liberty or property without due process of law as arbitrarily curtailing his right to practise by prescribing according to methods formerly obtaining, but is a valid exercise of the police power to regulate the sale and distribution of dangerous drugs. A detective in the employment of the pure food and drug department of the State procured from a physician a prescription for morphine for an alleged friend, but in fact a fictitious person, and procured a druggist to fill the prescription. It was held that the physician was answerable as aiding in, and hence a principal in, the druggist's offense of a sale in violation of the act. He could not, it was held defend on the ground that the prescription was procured and the sale made for the purposes of a criminal prosecution, or on the theory that the person prescribed for was nonexistent.—Hyde vs. State, Tennessee Supreme Court, 174 S. W. 1127.

MEDICAL RECORD.

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AUTOGENOUS BONE GRAFTS VERSUS LANE'S PLATES.

THE popularity of the Lane plate method of treating fractures of the long bones reached its zenith and began to wane at about the time when the inlay bone graft technique was being developed, and this latter has now become the method of choice with perhaps the majority of American surgeons, particularly in the treatment of ununited fractures.

One of the requisites of success in plating was that the field must be sterile at the outset and must be kept so. In order to secure this condition of absolute asepsis, various refinements in technique were elaborated and insisted upon by Lane, the main points being that, in addition to the usual aseptic precautions such as would be practised by any surgeon, all handling of bone and other subcutaneous structures should be at long range by instruments, all plates, screws, and gauze sponges should be carried to the part desired by long-handled forceps, all hemorrhage should be controlled by clamping, there should be no ligaturing of vessels or suture of muscle or fascia, and under no circumstances should the gloved finger be introduced into the wound. Possibly it is through ultra-rigid adherents to these and other similar details that Lane's own results have been very much better than those of any other operator; hence he is justified in retaining an enthusiasm for the method that cannot be shared by others. It is certainly true that in many instances where fractures have been plated by an experienced operator, equipped with a most complete armamentarium for fracture work and with the help of assistants trained to carry out Lane's instructions to the letter, the immediate result has been good, and yet months afterward evidences of suppuration have appeared and it has been necessary to cut down upon and remove the plate. In these cases the question arises,—Was a low grade infection introduced at the time of operation six months or more previously, or did the presence of a foreign body, causing continued irritation, furnish the *locus minoris resistentiæ* so that blood-borne infection found a suitable nidus and developed months after operation? Whatever the explanation, it is a well-known fact that a great many plates, applied under the most rigid aseptic technique, have had to be removed; and, whether infection came from without or within, the fear that a second operation for the removal of the plate and screws might be required caused this type of operation to decline in favor rapidly as soon as it was found that the transplantation of autogenous bone grafts was equally or more efficacious in obtaining bony union and that secondary operations were rarely necessary.

Since the extravasated blood which always accompanies a fracture furnishes an ideal culture medium, and since even with the most perfect technique it is probable that infection often gains entrance to this area from without or from within, it is self-evident that the method which will be successful in spite of a mild degree of infection will be the method of choice. In this connection the large series of experiments by H. H. Trout and his assistants (*Annals of Surgery*, June, 1915) are of especial significance. In one series of experiments Trout undertook to show the results of small vanadium steel screws in the presence of infection and the behavior of autogenous grafts under similar circumstances. In each instance the wound was intentionally infected and the type of organism (or organisms) producing the infection was determined by culture. Omitting the cases where infection failed to develop or where the animals died from the anesthetic, screws were inserted into the tibia or fibula in infected areas in 27 cases, and in 25 of these the screws sooner or later came to the surface and were removed. In the other two cases the screws remained in position after developing sinuses, both of which finally closed. In determining the fate of an autogenous graft introduced into an infected area, small grafts were taken from each leg and transplanted to the defect in the other. Here again the type of infecting organism was determined by culture. There were 22 animals which survived this operation, thus giving 44 grafts. Five of the bone grafts worked out, while in the remaining 39 the grafts all apparently "took" and were shown by the *x*-ray and later at autopsy to be in place. Thus in these infected cases 92 per cent. of the screws had to be removed and 8 per cent. remained after developing sinuses; while with the autogenous grafts only 11 per cent. were removed and 89 per cent. remained in place. These two series of experiments seem to demonstrate that a foreign body is far more apt to give trouble in the presence of infection than an autogenous graft, and that an autogenous graft will "take" in a large proportion of cases even in the presence of various types of acute and chronic infection.

A second series of experiments was for the purpose of determining the effect of a foreign body placed in the epiphyseal line upon the future growth of that bone in its long axis in comparison with the effect of an autogenous peg under the same circumstances. In ten animals ideal conditions were obtained for determining the effect of the screw—namely, the screw was shown by the *x*-ray to be accurately placed and there was no subsequent evidence of infection. When the animals were killed at the end of six months there was a shortening of the tibia having the screw in four and no ascertainable difference in six. An autogenous spicule of bone was placed in the epiphyseal line of the tibia in a similar manner and under similar conditions in

twelve animals, and at the end of six months no shortening had occurred in any case. Thus with steel screws in the epiphyseal line 40 per cent. showed shortening, while with the autogenous pegs there was no shortening in any case.

It thus seems apparent that in the occasional cases where separation of the epiphysis requires operative treatment, as well as in the operative treatment of fractures where there is a strong possibility of infection, the autogenous bone graft is far more likely to give a perfect result than is the Lane plate.

TOOTHBRUSH TALK.

If it be true that a nation fights on its stomach it can be no less reasonable to believe that a nation fights with its teeth. Toothbrush drills were introduced into the public schools in this country long before military instruction camps were thought of. Both literally and figuratively the teeth have been most efficient weapons of defence from primeval days. The time may come when the United States must show its teeth and, thanks to the worldwide celebrity of American dentists, the demonstration need not be a discreditable one.

Of late the toothbrush has loomed large in the public eye, and while it cannot be deemed that its proper use is an important factor in preventing premature decay of the teeth, nevertheless it is possible that it may be employed too energetically and without good judgment. In their new book on "Alveodental Pyorrhea," C. C. Bass and F. M. Johns, who were among the pioneers in the treatment of the above condition by means of emetine, emphasize the important rôle of trauma to the gum margin involving the peridental membrane. They believe that it is not at all probable that endamebæ can affect the normal or unbroken tissue. The common toothpick and even the vigorous use of dental floss may damage the interdental peridental membrane, and however microscopic the resultant lesions may be, the bruised tissue will doubtless afford a favorable soil for the endameba. The writers above mentioned believe that rough brushing with a stiff toothbrush, especially if performed from side to side instead of from the gums toward the ends of the teeth, favors infection by the endamebæ. Although the bristles of an ordinary toothbrush are simply coarse hairs and appear harmless to the unaided eye, yet under the microscope they resemble coarse nails. Many of them are sharp pointed and can hardly fail to injure the gum. Of course, the softer the toothbrush the less is the damage inflicted, which is also the case if the brush is drawn from above downward in brushing the upper teeth and from below upward in brushing the lower teeth.

The toothbrush is ordinarily used for two purposes: first, to remove or prevent the formation of tartar; and second, to remove food particles from around and between the teeth. The former object, Bass and Johns say, does not justify the heroic brushing to which the teeth are sometimes subjected, and may be accomplished as well by the use of a piece of gauze or cloth. The removal of food is only partly effected by the use of the toothbrush, which even in the most bizarre arrangement of its bristles cannot reach the food particles between the teeth. Dental floss which is generally recommended for this purpose, while it accomplishes its object, tends to inflict an appreciable traumatism by striking the interdental gum with considerable force. The authors quoted above believe that food particles can be removed more effectually by thoroughly rinsing the mouth and forcing water between the teeth several times. But evidently they do not eat corn from the cob.

Not content with this severe arraignment of the toothbrush the above observers bring a sharp indictment against tooth powders and tooth pastes. The gritty material which these invariably contain is said to aid the toothbrush in wounding the delicate epithelial surface of the gums. Evidence of this traumatism is perceived in the pus cells which are found in the secretion removed from the edge of the apparently healthy gum at its attachment to the teeth. Although the enamel of the teeth is so hard as not to be ordinarily injured by repeated polishing with powders or pastes, the necks and roots of the teeth exposed by brushing or pyorrhea, being comparatively soft, cannot resist the grinding action of these agents, which thereby become one of the most patent factors in the causation of dental erosion.

It is doubtful whether any efficient substitute will be found for the toothbrush which has established for itself a firm place among the hygienic necessities of daily life. But the toothbrush might possibly be used more wisely and perhaps less vigorously and less frequently than is now the case. Yet it is well not to throw away even the stiff brush heedlessly. In the Medical Record a short time ago Head of Philadelphia urged the roughest sort of treatment with floss silk and stiff brush for a cure of the very condition which Bass and Johns assert is caused by this means.

ACIDOSIS.

There is a certain impetuous and enthusiastic manner of thinking which we are apt to associate with youth and yet which is temperamental with some of us. We will not speak now of its advantages which are many, but of one disadvantage, not the only one by any means. This is a tendency to seize upon a new theory which seems to explain a group of conditions which have hitherto been obscure and accept it whole-heartedly as the last word on the subject, forgetful of the fact that the ancient roads of medical history are strewn with the bleached bones of theories that were as flourishing in their day as any are now.

One of our present-day theories which has not yet been subjected to the touchstone of time is the explanation that certain, if not all, of the metabolic disorders are due to a toxemia caused by the production of certain toxins in the blood on the order of aceto-acetic acid. To this condition is given the name of acidosis and this title has been joyfully welcomed by that class of clinicians who have a passion for nosology. One aspect of this application of the term acidosis we must keep in mind is its effect upon the lay mind. There is, as every physician

knows, a widespread belief that such disorders as rheumatism and gout are due to an excess of uric acid in the blood and a too uncritical use of the above term by the profession will undoubtedly strengthen this prevalent idea.

In the *Lancet* of July 31, 1915, Benjamin Derham protests against too enthusiastic an acceptance of a diagnosis of acidosis, together with the feeling that when we have thus diagnosed a case we have said all that there is to say upon the subject. Such diagnoses are often based upon nothing more definite than the finding of acetone in the urine. Derham examined a number of cases in his practice and came to the conclusion that acetone probably occurs transitorily in a great many patients, but is not suspected because it is not searched for or if it is the tests are not delicate enough. For example, in the ordinary intestinal indigestion of children following dietetic indiscretions we may find acetonuria and in such a case it appears to be due to an unhealthy and irregular fermentation of the starches and sugars in the intestinal canal. Dr. Derham quotes two illustrative cases.

An acidosis of this kind is, of course, transient and trivial, and the writer says we must guard against using the same term for describing the results of acute gastroenteritis that we apply to a metabolic disorder so profound as diabetes. He gives a number of tests for acetonuria which it is neither practical nor necessary to quote here, but his protest against the indiscriminate use of such a term as acidosis appears to us to be worthy of consideration.

MYOPIA IN SCHOOL CHILDREN.

THE responsibility of the public school as an important factor in increasing the tendency to myopia has long been recognized, but unfortunately few attempts have been made to remove or diminish this source of visual impairment. A step in the right direction has been taken, however, by the appointment in New York of a representative committee, which has considered the various phases of this subject and has recently submitted a report. The committee finds that there are no reliable data upon which to base any estimate as to the extent of myopia among school children in New York City, but holds that educational authorities must take cognizance of the fact that defects of vision are most likely to develop during the school age and must adopt measures to prevent or diminish this impairment.

Attention is called to the fact that all public schools are not equipped with the requisite adjustable desks and seats, and that the adjustable furniture with which the schools are provided is not always properly adjusted. Movable furniture should be provided for the lower grades. The slope of desk tops should be capable of adjustment to the proper angle for writing purposes. Special attention should be paid to the importance of the child bringing the book up toward its eyes, instead of bringing its eyes closer to the book. School lighting may be improved by the use of prisms and other devices. If artificial illumination is employed this should be of the modern semi-indirect pattern. Tungsten lights should, of course, not be used for direct illumination, and all cluster electric illumination should be provided with full frosted globes until replaced by illumination of the semi-indirect type. The question of the proper type of window shade and of its regular and correct adjustment should also be considered. Unnecessary homework should be eliminated. The use of colored crayons for blackboard work should be interdicted except for unusual school work, and blackboards not in use might be covered with light shades.

The above facts are not of mere local interest. They should be carefully weighed by all communities in which there is a public school. Physicians cannot afford to ignore a subject of such vital interest to a large percentage of their patients and they should particularly urge upon parents the need of carefully supervising their children's posture in reading and writing at home.

NEW TESTS OF DEATH.

IT is quite natural that the subject of the speedy and accurate diagnosis of death should receive increasing interest in those countries in which the business of killing seems to have supplanted all other forms of human activity. Three methods of determining the cessation of life are discussed in *La Clinica Medica Italiana*, 1915, No. 3. The first of these is the ether test. A drop of ether is instilled into the conjunctival sac of one eye. If this is followed by a reddening of the conjunctiva it affords proof that the circulation is intact and that life is still present. The other eye is used as a control. The second test has recently been proposed by Icard. It consists in the subcutaneous injection of fluorescin, which, if the individual is still living, is soon followed by a yellowish coloring of the skin and mucosa. The conjunctiva and the mucous membrane of the mouth, and particularly of the frenum of the tongue, show this coloration most distinctly. The test consists in the injection of 8 to 10 c.c. of a solution of 20 grams of fluorescin and 30 grams of sodium carbonate in 100 grams of distilled water. A negative result is obtained in cases of marked slowing or enfeeblement of the circulation, as during the agonal condition. The third test has recently been proposed by Halluin. It consists in direct exploration of the heart by means of a stilette. This is introduced through a small incision in one of the intercostal spaces. Any movement in the heart is communicated to the stilette. In some instances of suspended animation it is possble to arouse cardiac activity by means of gentle movements of the stilette, combined with artificial respiration.

NEGRO PIGMENT AND TROPICAL HEAT.

IT is hardly anywhere disputed that the pigmented skin of the African and other dusky races is an acquired defence against the actinic solar rays, by virtue of which these people can labor in tropical heat and yet escape insolation. The pigment, however, favors absorption of the heat rays and we have therefore to take into consideration the heat regulating mechanism of the body, which makes possible the adaptation of the latter to temperature changes. Before the Royal Imperial Society of Vienna last April (*Berliner klinische Wochenschrift*, June 7) Stigler related some experiments on a negro and a white man who worked in high

degrees of heat. The ergostat was used and the blood pressure, pulse, respiration, and temperature were noted. In the Negro the temperature fell much more rapidly than in the white, and the tests tended to show that the resistance of the negro to heat stagnation is due chiefly to the fact that his cutaneous vessels dilate much more readily and completely, so that more heat is radiated. The pigment, however, serves a useful purpose because it absorbs the yellow heat rays which otherwise would pentrate to the cortex and cause sunstroke. Neither the ultraviolet nor the ultrared rays play any role in the genesis of the latter. The white man in the tropics may become acclimated to the heat to some degree in respect both to his heat regulating mechanism and the production of protective pigment, but the process is a gradual one, and not infrequently the man dies before it is complete.

"Superinfection" and Vaccination.

It is well understood that vaccination performed too late, *i.e.* after the incubation period of variola, cannot arrest or abort the latter, and that as a general rule there is no "take." In very rare cases the two eruptions, vaccina and variola, have appeared side by side, and the latter in such cases seems to have run a severe but not fatal course. In the great Leipzig epidemic of variola in 1870, in which 1700 cases were treated at the University Clinic, two or three were of this type. Vaccination had occurred within one week of the first prodromes. If the two viruses are essentially the same we would regard these curiosities as a sort of superinfection. On the other hand, however, something of the same sort has recently been noted in connection with typhoid immunization. We cannot speak of superinfection here, of course, because dead, sterile cultures were used for the purpose. At a meeting of the Leipzig Medical Society last March (*Muenchener medizinische Wochenschrift*, May 18) Buhrdt, who remembered the variola cases in question, quoted Strümpell to the effect that he had recently seen analogous behavior in enteric fever. Immunization efforts, when made well into the incubation period, appeared, so to speak, to sensitize the patient. He assumed that immunization at that late period used up some of the patient's antibodies, so that the fever ran a more severe course.

The Versatile Physician.

It is well understood that the physician must be all things to all men, a second father to the child, an older brother to the young man, a confidential friend to the mature man, and a counsellor to the old man. He must sympathize with some women, bully some, flatter most of them, and tell the truth to a few. As an ambulance surgeon in the city there are times when he must be quick with his feet and hands, as a country doctor he must often be pharmacist and hostler, and there is no trade of which he is not expected to know a little. Fortunately in this country the physician is as a rule consulted for his ability to treat disease, but this does not seem always to obtain in other lands. For instance, in the *British Medical Journal* for July 10 we find the following remarkable advertisement, under the head of "Medical Officers Wanted": "Wanted, two good fox-hunting doctors." What next? Will they be advertising for a good rat-catching doctor for an old country place? Which reminds us that our professional brethren across the sea may perhaps have seen and commented on an advertisement which appeared in one of our standard medical periodicals about a year ago. We do not care to quote it exactly, but the gist of it was that a chronic invalid wished to employ a graduate of a Class A medical college who must give him his whole time and be of a pleasing personality. His duties, reading between the lines, were to be substantially those of a male nurse and paid companion. The salary was to be $25 a month! As this advertisement appeared a number of times before being finally withdrawn we hope for the credit of our profession that the chronic invalid in question was not overrun with applicants.

Eosinophilia in Dermatology.

It has recently been shown that eosinophilia is a marked and constant accompaniment of anaphylactic reactions. M. L. Ravitch and S. A. Steinberg (*Journal of Cutaneous Diseases*, August, 1915) who discuss the significance of eosinophilia in dermatology, state that this phenomenon accompanying infestations is not due to the presence of the body of the parasite alone but may be caused by the injection of an extract of its body. They cite the observation made by Calamida, namely, that such an extract placed in the tissues in a capillary tube, exhibits a positive chemotaxis for eosinophiles. The eosinophilia following infestations occurs several days after the parasite enters the body of the host, showing that apparently a sensitization of the latter is first necessary. Eosinophilia occurs in eczema, particularly of the exudative type, in trichophytoses, mycosis fungoides, herpes zoster, iodo- and bromoderma, pellagra, dermatitis herpetiformis, leprosy, scleroderma, and psoriasis. In a simple case of pityriasis rubra, after the administration of massive doses of quinine, the eosinophile cells increased almost to 24 per cent.; after discontinuance of the quinine these cells decreased to 8 per cent. Ravitch and Steinberg believe with others that there is a close relationship between eosinophilia and the exudative diathesis.

Exclusiveness in Scientific Societies.

The subject of limited membership in a scientific society, summed up in the two words *numerus clausus*, has been accepted generally as a matter about which there could be no difference of opinion. Every organization has of course the right and the privilege to limit its membership, which right and which privilege would seem to be commensurate with the distinction of the individual members. Nevertheless the principle of *numerus clausus*, at any rate so far as it applies to strictly scientific bodies, has recently been called into question. In the presidential address before the American Dermatolgical Association at its recent annual meeting, Sigmund Pollitzer (*The Journal of Cutaneous Diseases*, August, 1915) states that this principle is utterly without reason. The only explanation for its existence, he says, is the attempt of certain men to confer distinction on themselves by voting themselves better than, or at least different from, others. Pollitzer justly characterizes this spirit as un-American, as a type of snobbishness that is unfortunately too common. He believes that numerical exclusiveness has no place in a scientific society, which should open its doors freely to all who have the requisite knowledge and who possess a high standard of honor.

News of the Week.

New York City's Mortality.—The Health Department reports that there were 1,287 deaths, giving a rate of 11.56 per 1,000 persons, during the week ending September 4, as compared with 1,344 deaths and a rate of 12.56 during the corresponding week of last year. The death rate for the first thirty-six weeks of this year was 13.58 per 1,000 of the population against a rate of 14.05 for the corresponding period of 1914, a decrease of .47 of a point.

Typhoid Fever in an Insane Asylum.—On September 8 there were 80 cases of typhoid fever in the Danville, Pa., State Hospital and 16 cases in the borough outside the institution. The outbreak was traced to one of the assistant cooks who had a walking case of typhoid and had continued on duty for three weeks while ill.

Physical Examination of Food Handlers.—The Weekly Bulletin of the New York City Health Department says the examination of persons handling food has been begun in a limited way in the case of soda water fountain attendants and others engaged in similar employments who have voluntarily presented themselves for such examinations. The revised Sanitary Code requires all food handlers to submit to a physical examination when deemed necessary. A beginning has been made in the principal hotel district of New York City, where the food inspectors of the department will enforce this section and require all cooks, waiters, and other food handlers in the hotels and restaurants to undergo examination at the Health Department's Occupational Clinic. In time it is hoped to extend this work to hotels and restaurants throughout the city.

Fight Against Vaccination.—The Anti-Compulsory Vaccination Society of Newark, N. J., has lost its fight against the exclusion of unvaccinated children from the schools, the State Board of Education having decided that children must be vaccinated before they can be admitted to the public schools. The society purposes taking the case to the courts in an appeal against this decision.

Fall in the Berlin Birth Rate.—It is announced that, as might have been expected, there has been a decrease of approximately 25 per cent. in the birth rate of Berlin for July as compared with the rate for July, 1914, the figures being 2,520 births in July, 1915, as against 3,370 in the same months last year. The number of births in Berlin in May, June, and July of the present year was 7,523, as against 10,030 for the corresponding period in 1914.

Cholera in Trieste.—Cholera is reported epidemic in Trieste and the governor of the province is said to have prevented Dr. Constantini, chief health officer of the city, from taking any measures to control the disease, alleging that there are no funds to defray the expense of sanitary work.

Visiting Sanitarians.—A number of members of the American Public Health Association, which met in Rochester last week, have been inspecting the various health activities of this city as guests of the Department of Health and visiting the institutions of the city as guests of the Department of Charities.

Tuberculosis in the Public Schools.—Notice has been given that teachers suffering with open tuberculosis will not be permitted to follow their vocation in the public schools of this city and those who have chronic coughs and colds are required to report, either personally or through their physicians, to the Board of Health or to the Bureau of Public Health Education for certificates before being permitted to continue in the schools. In the reports received from 56 Manhattan schools a clean bill of health was shown. In 200 other schools in Manhattan, however, there were 15 teachers reported as suffering from pulmonary tuberculosis, and 18 teachers affected by chronic colds and coughs.

Thirty-nine Million Bottles of Milk.—During the year ended August 31 the output of milk from the eighteen Nathan Straus stations in New York amounted to 2,175,208 bottles. In addition to this there were 1,441,580 glasses of pasteurized milk served at the stations in the parks and on the recreation piers during the three summer months. This completes the twenty-fourth year of distributing pasteurized milk to the babies of the city and the total number of bottles supplied in that time was 39,000,000, besides 21,500,000 glasses of milk during the summers. All the bottled milk distributed is supplied in nursing bottles with one feeding portion to a bottle and ready for use after being warmed, the size of the bottle and formula varying according to the ages of the babies.

The Population of New York.—According to the recent State census the population of New York City is 5,066,222. This is an increase of 300,661 since the federal census in 1910, distributed through all the boroughs except Manhattan in which there was a decrease of 187,481. The Health Department's estimate, upon which is based the published death rate each week, has been found to be in excess of the actual population by 740,310.

A New Cancer Prize.—The late Dr. Sigaut willed 8,000 francs to the Paris Academy of Medicine to be given as a prize for research work on cancer as the gastrointestinal tract.

A Portuguese Medical Senator.—Dr. J. P. Lobo, a practising physician in Fall River, Mass., has been elected a member of the Portuguese Senate to represent the colony of Goa in India.

Dr. Edward Nelson Tobey of St. Louis was a passenger on the fruit steamer *Marowijne*, which has not been heard from since August 13 and is believed to have been wrecked by a hurricane in the Gulf of Mexico or the Caribbean Sea on that date. Dr. Tobey was one of a medical party sent by the St. Louis University to British Honduras at the beginning of the summer. He was a lecturer in the medical department of the university and an assistant city bacteriologist.

Dr. M. Schaie has resigned as medical director of the Jewish Home for Chronic Invalids and Consumptives of St. Louis and will engage in private practice after October 1 in New York City.

Flies and Diarrheal Disease.—The Bureau of Public Health and Hygiene of the New York Association for Improving the Condition of the Poor has issued a special publication entitled, "Flies and Diarrheal Disease," descriptive of its three months' study in the homes of over a thousand infants in New York City on the relation of flies and diarrheal disease. Special attention has been given such influencing factors as dirt and artificial feeding and their relative importance determined. The report may be obtained by request from Philip S. Platt, superintendent of the Bureau, 105 East Twenty-second street, New York, N. Y.

Charitable Bequests.—By the will of the late Henry Schaefer of Philadelphia the sum of $2,000 is bequeathed to the German Hospital of that city.

By the will of the late Rose Payson of Wilkes-

Barre, Pa., her estate, amounting to $3,000 is, following the death of her husband and of a second beneficiary, bequeathed as an endowment for a hospital for the cure of inebriates.

In the distribution of the estate of the late Enos R. Artman of Philadelphia, the Philadelphia Home for Incurables receives $5,124.15 and the Kensington Dispensary for Tuberculosis $1,000.

By the will of the late August B. Loeb of Philadelphia the sum of $10,000 is bequeathed to the Mathilde Adler Loeb Dispensary of the Jewish Hospital.

Obituary Notes.—Dr. JAMES W. WALLACE, formerly of Greenway, Ark., died at Paducah, Ky., on August 31 at the age of 57 years. He was a graduate of the College of Physicians and Surgeons, St. Louis, in 1893.

Dr. FRANK M. PUTNAM of Gardner, Me., died on September 1 after a long illness. He was born in San Francisco on July 4, 1853, and was graduated from the Dartmouth Medical School in 1878.

Dr. CHARLES E. NICHOLS of Boston died September 2. He was a graduate of the medical department of the University of Vermont in the class of 1868.

Dr. SAMUEL BURT REED of Maynard, Mass., died suddenly at his home in that town on August 30 at the age of 41 years. He was a graduate of the College of Physicians and Surgeons, Boston, in the class of 1911.

Dr. HENRY J. MULLEN of Glancy, Miss., died on August 25 at the age of 60 years.

Dr. HENRY A. JONES of Millen, Ga., died on August 28 after a brief illness at the age of 47 years. He was a graduate of the New York University Medical College in the class of 1892.

Dr. FREDERICK CORNELL SUTPHEN of Bernardsville, N. J., died in the Morristown Memorial Hospital on September 12, at the age of 43 years. He was born in Peapack, N. J., and was graduated from the New York University Medical School in 1888.

Dr. EMIL ERNEST GUENTHER of Newark, N. J., died at his home in Mountain View on September 12, at the age of 61 years. He was a graduate of the New York University Medical College in 1877.

Dr. JAMES G. KINCAID of Pine Park, Ga., died August 25 at the age of 45 years. He was born at Holly Springs and was a graduate of the Georgia Eclectic College, Atlanta, in the class of 1904.

Dr. WILLIAM P. MARSHALL of Oklahoma City died on August 31 at the age of 72 years. He was a graduate of the Ohio Medical University in 1894.

Dr. JOHN H. SWEET, the last of the original Sweet family of "bone-setters" widely known and popular in New England for several generations, died at the home of his son in Newport, R. I., at the age of 65 years. His death was due to peritonitis following an operation for intestinal trouble.

Obituary.

JOHN EVANS SHEPPARD, M.D.

BROOKLYN, NEW YORK.

DR. JOHN E. SHEPPARD died at his country home, Putnam, Conn., on September 13, following a surgical operation. He was born in Greenwich, N. J., in 1859 and was graduated in arts from Haverford College in 1879 and in medicine from the Medical Department of the University of Pennsylvania, in 1882. After an interneship in the Pennsylvania Hospital and a period of study in Munich and Berlin, he began practice in Atlantic City, but removed to Brooklyn in 1889 and devoted himself to otology as a specialty. He was clinical professor of diseases of the ear at the Long Island College and aurist to the hospital, and was also consulting surgeon to the Brooklyn Eye and Ear, Jewish, Methodist Episcopal, and St. Catharine's Hospitals. He was a member of the American Medical Association, of the American Academy of Medicine, the American Laryngological, Rhinological, and Otological Association, the Pathological Society, the New York Otological Society, and the Associated Physicians of Long Island.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

WAR NOTES—EMERGENCY COMMITTEE—DEARTH OF MEDICAL OFFICERS—STAR AND GARTER HOTEL—WELSH MEDICAL SCHOOL—GUY'S PATHOLOGICAL CHAIR—SERBIAN ARMY MEDICAL PHOTOGRAPHS.

LONDON, Aug. 27, 1915.

THE war in some aspect or other enters into almost all our conversations, even on those of a medical nature. It is discussed in our daily papers which assume familiarity with the professional questions concerned. The sanitary conditions at the front are not what they ought to be, for a correspondent writes about the inadequate burial arrangements causing many bodies to be left for long periods unburied and the rags which once covered them hanging on the barbed wire. The pollution of the atmosphere thus arising is perceived by the men who ascribe to it the origin of what they have named the "liquid German fever." Perhaps the bacteriologists will presently decide on its place in the list of maladies. The chart is said to resemble sandfly fever and its four-day period is similar. Another correspondent at the front says the stable fly abounds there and complains that it occasionally makes open air bathing impossible by rendering anyone unable to defend his naked body against the assaults of its swarms. He relates too that in the great famine which prevailed in that country in 1892 and the land was littered with the decaying carcasses of cattle, an unknown form of fever affected nearly all the inhabitants of the district. At that time any connection between the fly and fever was unthought of, but now when in the trenches "one starts at the prick of the stable fly's proboscis, and smells the old reek of decaying flesh in the air," he admits there is some ground for Thomas Atkins' diagnosis. This trench fever produces a rise of temperature seldom exceeding 103° and lasting only about four days, but leaving debility, headache, and other general symptoms for another week. The unsanitary conditions in the trenches give us cause to wonder at the freedom from epidemic disease which has so far marked the campaign. Great credit is due to the constant efforts of the medical officers to prevent infection from some of the numerous toxic germs abounding in the air and in the soil of the encampments. In the latter the danger of tetanus is obvious and may serve as an example, for from an early period it has been the rule to give an injection of serum to every wounded man as soon as possible after the reception of the wound. The damage to tissues and the shock from the bullet wound are of secondary importance to the poison it may carry. If it has

not taken up mud by contact with the soil the soldier's clothing is contaminated with bacilli—not seldom is it thickly coated with mud in traversing which the bullet takes up some and carries it into the deepest part of the wound it inflicts. Many such cases cannot be dressed immediately and when received at the clearing hospital are found to be infected with fly maggots. In some of these, however, it is reported that the wounds were cleaner than in those in which no maggots were found.

The war emergency committee is calling the attention of all practitioners who are not engaged in the naval or military medical service to the great effort which the country is making and the necessity, as they allege, for a further response from the profession. The director-general, army medical department, Sir Alfred Keogh, has authorized this committee to act as his agent in securing more medical officers of military age. The committee has issued a circular to practitioners pointing out that fighting units cannot be complete without medical officers. They appeal personally to those of military age to come forward, to those over age to encourage the enlistment of their younger neighbors. The elder, they say, who helps to release the younger is doing his part as much as he who serves. Arrangements have been made in a number of districts for setting free a proportion of its practitioners for naval and military service and the emergency committee urge those areas which have not so combined to do so at once. Sir Alfred Keogh has addressed a letter to the committee recognizing it as an excellent medium for dealing with the great problem which, he says, now faces the profession, viz., how to supply medical officers for the forces and at the same time protect the civil population. In gladly authorizing the committee to appeal to the profession to secure these ends he declares that, in his opinion, they cannot put the claims of the medical department of the war office too strongly.

The Star and Garter Hotel on Richmond Hill, which originally cost about £80,000, has been purchased for £21,500 for presentation to the Queen as a permanent home for paralyzed and totally disabled soldiers and sailors. In accepting the gift her majesty has expressed her intention to hand it over to the British Red Cross Society in order that it may be devoted to the care of such disabled men as are retired from the service. The Red Cross Society has undertaken to equip and maintain the institution accordingly. The ground floor contains very fine rooms overlooking the Thames Valley and will make wards to be occupied by the absolutely helpless. A series of special exits will permit all the beds to be rapidly taken into the open air in case of fire or other emergency. Each bed will be run on wheels so that a single nurse can take it into the garden. Patients who can walk a little will be placed upstairs, but there will be ample provision of staircases and lifts. The garden is to be converted into a garden village with cottages and bungalows, each containing one good room with four beds. The number of disabled men who can be admitted when the alterations are completed is reckoned to be about 150.

Colonel Ahearne, R.A.M.C., has returned from a trip in Serbia, where he took many photographs illustrating medical work in the Serbian army and show a hospital unit on its way to the front. The scenes have been transferred to cinema films and are now being exhibited. There are about 3000 of them.

F. Hastings, of the Red Cross Society, said in a recent lecture that the manner in which the wounded have been treated in this unhappy war by the R.A.M.C. and the naval medical service was nothing less than miraculous. The head of the German Red Cross was appointed by the emperor and the society was more or less under the war office. The British society was a purely volunteer organization. He had visited both the trenches and the hospitals and found everything that could be done to ameliorate the suffering of the sick and wounded was being done.

Guy's Hospital has received £25,000 bequeathed by the late Sir William Dunn to establish and endow a lectureship on pathology in its medical school. This will be the most liberally endowed lectureship on the subject.

The foundation stone of a new Welsh school of medicine has been laid at Cardiff. This is the result of the gift of £90,000 by Sir William James Thomas.

A joint appeal for training medical women has been issued by Lord Curzon, Mr. Asquith and Mr. Balfour. They say that the war has been a turning point in the position and new openings have appeared in many directions. Increasing numbers of women are studying medicine and the Royal Free Hospital School is doubling its laboratory accommodation to meet their needs; £15,000 has been received for additional buildings, but as much more is required for the purpose.

The death has occurred of Inspector General H. D. Stanistreet, R.N. He qualified at the Dublin College of Surgeons and Apothecaries' Hall in 1861, joined the medical service of the royal navy the following year, and served until his retirement in 1901.

Progress of Medical Science.

Boston Medical and Surgical Journal.

September 2, 1915.

1. Scope of Public Health Service. W. C. Hanson.
2. The Operative Treatment of Fractures. C. L. Scudder.
3. Endocarditis in Children: Its Prophylaxis and Treatment in an Out-Patient Department. R. S. Eustis.
4. Social Problems Involved in the Treatment of Children with Heart Disease, from the Point of View of an Out-Patient Department. C. M. Welsh.
5. Tonsillectomy as a Therapeutic Measure in the Treatment of Chorea and Endocarditis. J. H. Young.

2. The Operative Treatment of Fractures. — C. L. Scudder states that the pendulum has swung away from the traction treatment to the frequent employment of operation in fractures. Improper and unnecessary operations are being done by incompetent men. There is no more difficult operation in surgery to-day than a carefully conducted operation upon a fractured bone. The longer the operation is done after the fracture the harder the technical work will be. Operations upon fractured bone should be done only by surgeons of very considerable general surgical experience. The conditions under which they are done should be surgically ideal. The necessary and special instruments for precision and convenience should be at hand. The nearer to an anatomical reposition of the fragments of the fracture it is possible to come the greater will be the likelihood of securing a good functional result. A primarily early operation is more desirable than a delayed operation. The results of secondary operations are unsatisfactory. There is less likelihood of the nonoperative treatment being successful as age advances. In childhood the operative and nonoperative treatment about equal each

other in good results. The mortality of the operative treatment is a negligible quantity. Many undesirable terminal conditions will be avoided if the operative treatment is appropriately employed.

3. **Treatment of Endocarditis in Children in an Outpatient Department.**—R. S. Eustis concludes that it is possible by means of a special clinic and a full-time social worker to give efficient treatment for early or threatened endocarditis to patients of the outpatient class. According to the estimates in the literature the incidence of endocarditis in the "rheumatic infections" varies from 40 to 80 per cent.; in the author's series so far it is not over 25 per cent., and perhaps less.

4. **Social Problems in Treatment of Heart Disease in Children.**—C. M. Welsh presents the following synopsis of the social-service aspects of heart disease in children: (1) Adequate medical treatment. (a) Ward treatment when necessary; (b) outpatient treatment, patients to be seen always by the same physician. (2) Adequate social treatment based upon medical treatment and following along closely with it. This should include: (a) Consideration of the home environment, both physical and mental; (b) Consideration of the school environment, both physical and mental; (c) consideration of suitable recreation and occupation. (3) Supervision over a long period of time. (4) Vocational guidance and training.

5. **Tonsillectomy in Treatment of Chorea and Endocarditis.**—J. H. Young notes that the occurrence of chorea after tonsillectomy in twelve out of twenty-one cases strongly suggests that removal of the tonsils does not offer the protection against chorea and endocarditis that many have heretofore believed.

New York Medical Journal.

September 4, 1915.

1. What Do the Newer Methods of Treatment Offer the Patient with Malignant Disease of the Uterus? J. G. Clark.
2. The Teaching of Medicine. A. H. Wright.
3. A Helpful Sign in Diagnosing Latent Syphilis. I. W. Voorhees.
4. Pruritus—For Example. W. P. Cunningham.
5. The God Man or Jehovah Complex. B. Glueck.
6. Fistula Ani. J. F. Saphir.
7. The Importance of Immunizing Nurses and Hospital Attachés Against Typhoid Fever. E. H. Funk.
8. Rickets. W. L. Rost.
9. Diastolic Pressure. L. M. Warfield.
10. Clinical Medicine and the Public. M. Schulman.
11. Squamous Cell Carcinoma of the Larynx. L. J. Goldbach.
12. Occupation as an Etiological Factor in Disease. N. Schwartz.

3. **A Sign in Latent Syphilis.**—I. W. Voorhees states that, like many other infectious systemic diseases, syphilis very frequently first manifests itself in the mucous membrane of the nose, mouth, and throat. In performing the now very common operation of submucous resection of the nasal septum on known syphilitic subjects the author has frequently been struck by the difficulty in starting the mucoperichondrium when beginning elevation at the line of incision. Is it not possible that this is due to a productive inflammation in the perichondrium and periosteum, which might go on to tertiary destruction of the septum? Whatever the explanation the author has been able in three cases to make a diagnosis of latent syphilis while doing this operation. In each case it was difficult to start the elevation, there was more bleeding than should commonly obtain with good technique, the blood seemed darker, and the cartilage and bone both had a rough, uneven feel. This latter point is of great importance, and has induced the author to examine with the finger all pieces of bone removed by intranasal surgery.

4. **Treatment of Pruritus.**—W. P. Cunningham notes that the various combinations used in the treatment of pruritus comprise mulls, pastes, salves, powders, and heavy lotions. Thoroughly applied these afford protection from air, moisture, and accidental contacts. That is the secret of success in treating pruritus. That is the explanation of the success of so many different agents in the hands of so many different investigators. It is probable that any nonirritating substance carefully applied would have yielded the same results. The odoriferous element gets the credit, but it was the liberal use of the protecting mass that actually achieved the result. This too explains why hospital cases do better than private cases, and why private patients who are followed up do better than dispensary patients who use their remedies in a slipshod, careless, and incomplete manner. How often has one seen plain olive oil afford relief unobtainable by more elaborate medication! How dependable has one found compound wool-fat ointment made up of nothing but boroglycerin, wool fat and petrolatum! How surprising has been the response to stearate of zinc, which gives an unctuous coating to the supersensitive skin and excludes, air, moisture, and friction! A trial may be made of any of the so-called active agents high in favor among dermatologists, and it will be speedily ascertained that, the menstruum being liberally applied, the results will be entirely different from those of a meager application.

7. **Antityphoid Inoculation of Nurses.**—E. H. Funk believes that antityphoid inoculation among nurses will result in a distinct reduction in the incidence of the disease among them, a reduction which has not been accomplished in the past by instruction in the application of sanitary measures alone. There has been available facts with regard to the source and frequency of contact infection, but one has been unable to reduce the incidence of the disease. The combination of sanitary measures with prophylactic inoculation has seemed to accomplish results not hitherto attained.

9. **Diastolic Pressure.**—L. M. Warfield concludes that the diastolic pressure for any individual is more constant than the systolic. As it measures the peripheral resistance it seems to be a more accurate index of high or low tension than the systolic pressure. The pulse pressure, which represents the actual head of pressure forcing the blood to the periphery, can be obtained only by measuring both the systolic and diastolic pressures. It is therefore of the greatest importance to be able to measure accurately the diastolic pressure. A gradually rising diastolic pressure is of more significance than a high systolic pressure. Large pulse pressures are essential for the compensation of hypertension cases. Decreasing pulse pressures in such cases are a sign of failing heart. Attempts by any means to reduce hypertension without a proportional reduction of the diastolic pressure may be productive of great harm. Any pulse pressure below 30 mm. Hg. must be regarded as low; above 50 mm. Hg., as high. The diastolic pressure should be taken by the auscultatory method at the sudden transition from the loud third tone to the dull fourth tone. In many cases the fifth phase or disappearance of all sound so closely follows the fourth phase that practically the diastolic can be taken at that point. No accurate observation of either systolic or diastolic pressure can be made upon decompensating hearts.

Journal of the American Medical Association.

September 4, 1915.

1. Cutaneous Cancer of the Extremities. H. H. Hazen.
2. Salvarsanized Serum in Syphilitic Nervous Disease. Some Salient Facts: the Method, the Drug, the Results. C. E. Riggs.
3. Difficulties in the Diagnosis of Sinus Thrombosis. H. B. Graham.
4. Casein-Milk Feeding in Infancy and Childhood. W. Gellhorn.
5. The Histogenesis of the Reproductive Process in Mammals. H. O. Marcy.
6. Objective Psychology or Psychobiology with Subordina-

tion of the Medically Useless Contrast of Mental and Physical. A. Meyer.
7. Comparative Results of the Wassermann Test. A Clinical Study. A. A. Uhle and W. H. MacKinney.
8. Delusions of Persecution as a Biologic Defense Reaction. C. L. Allen.
9. Some Facts Concerning the Blind. F. Allport.
10. Intratracheal Ether Anesthesia in the Surgery of the Brain and Spinal Cord. C. H. Watt.
11. Intranasal Antrum Operations, with Report of Ninety Cases. H. McNaught.
12. The Use of Convalescent and Normal Blood in the Treatment of Scarlet Fever. A. Zingher.

1. Cutaneous Cancer of the Extremities.—H. H. Hazen concludes that carcinoma of the skin of the limbs is not a common affection. The majority of skin cancers arising in these locations are prickle-celled neoplasms, and the majority of these metastasize, some at an early date. Inasmuch as a certain diagnosis can be made only in the early cases by the gross or microscopic appearance, and inasmuch as it is usually deemed unsafe to excise a bit of tissue for examination, it is plain that the proper treatment is to excise the growth *in toto* and make the diagnosis from the entire growth. If it is found to be of a cuboidal or spinal-celled variety the neighboring glands should be removed. The basal-celled growths can be treated by local removal with perfect safety. It is possible that the prognosis in some cases of malignant mole is not absolutely bad if a wide local and glandular operation be done at the onset. Malignant growths always arise from a pre-existing abnormality, so are usually preventable.

2. Salvarsanized Serum in Syphilitic Nervous Disease.—C. E. Riggs believes that every patient with constitutional syphilis, especially in the early stages, should be examined neurologically and serobiologically, and if there be found any symptoms of nervous involvement or an abnormality of the spinal fluid, intraspinal injections of salvarsanized serum should be given until a clinical and laboratory cure is effected. Bernstein advises this procedure as a prophylactic measure in all cases of syphilis, particularly in the primary and secondary stage. Lange's colloidal gold solution is a valuable aid in diagnosis, possessing a marked corroborative value. Paresis gives a characteristic curve (in over 90 per cent. of our cases) so constant, say Grulee and Moody, that "one may venture a diagnosis without other findings, either clinical or laboratory." There is a distinctive tabetic curve which was present in 50 per cent. of the author's cases. The colloidal gold reaction differentiates clearly between paresis and cerebrospinal syphilis. In tuberculous meningitis the colloidal gold solution reacts markedly. Nonsyphilitic cases sometimes give a vague discoloration which may or may not invade the syphilitic zone, but which has no special significance. Intraspinal medication (Swift and Ellis method) is a sane and safe form of therapy, and in the hands of competent men is practically devoid of danger. In cerebrospinal syphilis and tabes, results obtained by conservative workers are most encouraging, and in some cases little less than marvelous. When paresis can be treated in the early, the toxic, stage, before serious regeneration of nervous tissue has ensued, an arrest of the disease may reasonably be expected. Is it too much to hope for a cure?

4. Casein-Milk Feedings. — By W. Gelhorn. (See MEDICAL RECORD, July 3, 1915, page 39.)

10. Intratracheal Ether Anesthesia in Surgery of Brain and Spinal Cord.—C. H. Watt finds that intratracheal ether anesthesia has its greatest field of usefulness in operations on the head, neck, and spinal region. The results in cerebellar cases are the most striking. This method is much safer than the drop ether method; the anesthesia is smoother and is more readily controlled. It also offers the most efficient means of artificial respiration. A review of thirty-five cases of anesthesia by the drop ether method and thirty-five by the intratracheal method shows that the pulse is more regular and less rapid under the latter and that hemorrhage and cyanosis are reduced to a minimum. Although the use of the intratracheal method in the surgery of the brain and spinal cord is becoming more general it has by no means attained the popularity it deserves.

The Lancet.

August 21, 1915.

1. A New Theory of the Causation of Enterostasis. A. Keith.
2. Some Notes on the Bacteriology of Gas Gangrene. A. Fleming.
3. Further Observations on the Bacteriology of the Peritoneal Exudate in Cases of Perforation of the Stomach and Duodenum. L. S. Dudgeon and B. C. Maybury.
4. An Atypical Epidemic, with a Note on the Evolutionary Etiological Factors in Disease. J. T. C. Nash.
5. An Epidemic of Acute Hydrocele and Orchitis in British East Africa. L. Nicholls.
6. Temporary Blindness from a Penetrating Bullet Wound of the Occipital Lobe. A. E. Moore.
7. A New Sign and Its Value in the Diagnosis of Pulmonary Tubercle. C. Riviere.

1. A New Theory of Enterostasis. — By A. Keith. (See MEDICAL RECORD, August 7, 1915, page 236.)

2. Gas Gangrene.—A. Fleming points out that there is an increase of growth of the gas-forming organisms by association with the common pyogenic bacteria. This fact is probably of great importance in the incidence of gas gangrene. The presence of the streptococcus aids the *B. aerogenes capsulatus* to establish itself and to produce more rapidly substances which protect the bacillus from the counter attacks of the leucocytes, thus allowing it successfully to storm the defences of the tissues. As regards the treatment of gas gangrene the main essential, both prophylactically and curatively, is free drainage. The progress of the disease is too rapid to allow of any curative vaccine treatment, but it is possible that if a vaccine of *B. aerogenes capsulatus* and streptococcus were injected very early (in exactly the same way as tetanus antitoxin) the temporary increase in immunity to these organisms would be sufficient in most cases, at any rate, to prevent the spread of the infection into the tissues. Large doses of *B. aerogenes capsulatus* vaccine (up to 1,000,000,000) can be injected without any reaction and without the development of any "negative phase"; so it would appear that such a vaccine would be perfectly safe to use.

3. Peritoneal Exudate in Perforation of Stomach and Duodenum.—L. S. Dudgeon and B. C. Maybury refer to the results of their investigation of the bacteriology of the peritoneal exudate in twenty-three cases of perforation of the stomach and duodenum. The list includes eight cases of perforation of the stomach in the immediate vicinity of the pylorus and two elsewhere in the stomach, while there are thirteen instances of duodenal perforation mostly in the first portion. Examination of films of the peritoneal exudate in the above series of twenty-three cases showed an absence of bacteria in thirteen. Of the remaining ten cases cocci represented as diplococci or streptococci were seen in each instance, and bacilli also in two cases which proved to be fatal. The only characters of these streptococci of any special significance are the constant absence of pathogenicity to the lower animals and the absence of hemolytic activity on human red cells.

4. An Atypical Epidemic.—J. T. C. Nash describes a widely spread epidemic chiefly affecting children which was prevalent in Norfolk, England, in the autumn and winter of 1914. The chief characteristic was sore throat not of severe type. Careful consideration of the symptoms indicates that the cases fail to fall in with the required classical characteristics of definite scarlet fever, rubella, glandular fever, or influenza. The last term being applied frequently to protean manifestations may most conveniently be the provisional place of the epidemic in nosology. The subsequent widespread inci-

dence of cerebrospinal fever in England suggests to the author some evolutionary relationship. The author believes that the infection was not evolving so much for influenza as for scarlatina.

7. **A New Sign in Pulmonary Tuberculosis.**—C. Riviere states that in pulmonary tuberculosis characteristic bands of percussion impairment, of constant position, shape, and size are present over both lungs. If any patient the subject of phthisis be placed in the usual attitude for medical examination with muscles relaxed, and by careful gentle percussion each back be examined from below upward, areas of impairment or increased impairment will be found on both sides at certain levels. The lower area extends between the fifth and seventh dorsal spines, or sometimes a centimeter above or below this, and runs out as a peninsula over the scapular region; the upper area lies above the level marked by the intervals between the spines of the first and second dorsal vertebræ. These areas are found to skilled percussion before any other sign of phthisis, in certain cases before symptoms, and persist throughout the course of the disease. On account of their position they are liable when noted to be ascribed wrongly to the presence of tuberculous deposits in upper and lower lobes. They depend, in fact, on no morbid structural changes, but are of reflex origin; though absent in health they can be produced by appropriate means in any normal chest. Their persistent presence denotes an irritation of the lung parenchyma of some causation not necessarily tuberculous. Incidentally they are of notable value in the diagnosis of phthisis. They help to decide the presence or absence of a hidden focus in a case suspected of early tubercle and are useful in the exclusion of all catarrhal conditions not involving the lung parenchyma. Their reflex nature serves to explain the occurrence, unintelligible on other grounds, of percussion impairment in the earliest stages of pulmonary tuberculosis.

Berliner klinische Wochenschrift.

July 26, 1915

Inoculable Fowl Leucemia.—Ellermann of Copenhagen made a preliminary report on this subject last year in which he claimed that the disease is due to a filtrable virus which passes invariably through a Berkefeld filter and variably through a porcelain candle. These criteria serve to isolate the diseae from tuberculosis while at the same time they show a close resemblance to human lucemia in both myeloid and lymphatic forms. During the past year the author has studied especially the hematology of the fowl disease. Normally there should be about 3,000,000 erythrocytes and 30,000 leucocytes per cubic millimeter. The last named comprise mononuclears 65 per cent., polynuclears 35 per cent. Myeloid tissue in addition to its principal occurrence in bone marrow is found in scattered deposits in the liver and kidneys. Lymphatic tissue is also present in these organs in addition to its chief occurrence in the spleen, intestine, thymus, while fowls and nearly related birds also have ordinary lymph nodes. The phenomena of leucemia are intravascular and extravascular. The former include the anemia, the leucocytosis, etc., and the latter the hyperplasia of the lymphatic and myeloid organs. We do not see pure clinical types of disease; for example, in lymphatic leucosis, so-called, we do not as a rule see leucemia, but immense overgrowth of the lymphatic tissue of the liver and spleen. So-called intravascular lymphoid leucosis is characterized by marked accumulation of mononuclears in the capillaries of the liver, spleen, and bone marrow, so that these organs become distinctly enlarged. The blood may be simply anemic or leucemic. The leucocytes of the blood are 90 per cent. lymphocytes. In myeloid leucosis the blood contains 20 per cent myelocytes. The capillaries of the liver, spleen, and bone marrow are distended with mononuclears. In addition to myeloses of organs we also find independent myeloid tumors diffused throughout the body and involving the integument. The disease of fowl leucemia may also manifest itself as a pure anemia.

Treatment of Peroneal Paralysis.—Fleischhauer mentions the great frequency of injuries to the peripheral nerves in the present war. Even when nerve suture has proved successful, months may elapse before the motor power of the nerve returns. Naturally much can be done by prophylaxis, *i.e.* as soon as the injury is received restoration of functional power should never be lost sight of. At the same time we do not know just what amount of good is accomplished by electricity, massage, diathermy, passive motion, etc. While these must not be dropped it is perhaps more rational to support the limb in such manner that the patient can walk and get about on it. Patient should wear a well-fitting laced shoe, and a strap should be so stitched to it that the posture of the foot becomes normal when traction is made upon it. In order to effect this the distal end of the strap is fixed to the inner side of the box toe of the shoe and carried obliquely across the foot and upward along its outer side. The central end of the strap is connected with a suspensory apparatus which consists of circular cuffs above and below the knee and a sling for the shoulder. The strap which connects the shoe with the lower cuff is elastic, and serves to keep the paralyzed foot in pronation. A certain amount of overcorrection is overcome by the action of the calf muscles.

Münchener medizinische Wochenschrift.

July 27, 1915.

First Cure of Undoubted Kala-azar as a Result of Splenectomy.—Kokoris of Athens reports three cases of splenectomy for kala-azar, the last of which was quite successful. The operation was done in 1912 and the child is still living and well. First done in 1906 the operation has been only regarded as palliative. The patient was five years old when first seen, and his case was the second in the family. The disease had then lasted for over a year. The spleen extended to a finger's breadth of the crest of the ilium, and the liver was also notably enlarged. The Leishman-Donovan corpuscles were discovered in the splenic blood. Blood picture: red cells, 3,658,000, white cells, 2,000, hemoglobin 33 per cent. Splenectomy, with incision in median line followed. The spleen had many adhesions with intestines and omentum, which had to be dealt with by blunt and sharp dissection and ligation. The broad pedicle was tied off in three sections. A bit of the pancreas was accidentally included. The external wound was closed with one plane of sutures. There was marked prolonged postoperative vomiting (forty-eight hours), but the sutures held. There was also a severe postoperative bronchitis with high temperature. The patient otherwise made a good recovery which was necessarily very slow and somewhat interrupted. The liver decreased in size very slowly. At one period the lymph nodes in the axillæ and groins began to enlarge. The child went through variola successfully and ultimately its condition left nothing to be desired. Before 1912 Pappaioannou had reported a case of kala-azar cured by splenectomy, but the spleen had been removed for tuberculosis and Banti's disease, and it was merely an accident that Leishman-Donovan bodies were afterward found in the blood. The merit of the author's work is somewhat disturbed by the fact that cases of kala-azar can recover spontaneously.

Unusual Case of Tetanus.—Happel describes the case of a man with a severe shrapnel wound of the left thigh in which one whole bullet and about fifty fragments had been imbedded and healed in. A first-aid dressing was made. At the regular examination the thigh bone was found badly comminuted, with copious hemorrhage. The wound gave exit to much odorless gas. Fever appeared and a prophylactic injection of antitetanic serum was given. The wound was slit up and numerous fragments of bone removed. Conditions improved, and not until after more than three weeks did tetanus appear. An intensive serum treatment was at once instituted. The wound, which was still suppurating strongly was treated from the viewpoint of a tetanus-infected one. In sixteen days all evidences of tetanus had disappeared. The patient was in excellent shape, save that the thigh fracture had united badly with 7½ cm. shortening. A large fragment of the thigh had independently healed in, causing displacement of both the upper and lower segments. An extension shoe had been made and patient was looking forward to his discharge, nearly four months after his injury, when all at once the scar became red and tender, and fever appeared with a recrudescence of tetanus, over eleven weeks after the disappearance of the first attack. The inflammation about the wound appeared to be an abortive attack of erysipelas. Tetanus pursued a somewhat chronic but nevertheless fatal type, resisting all treatment, and death from exhaustion occurred in twenty-seven days. It was believed at first that some of the shrapnel fragments might have carried germs into the tissues and that these had remained latent for a time. Experiments, however, appeared to show that this view was untenable. More plausible is the view that germs or spores healed into the scar while inactive, had been awakened to virulence by the attack of erysipelas. The protection due to the treatment of the first attack with antitoxin had in the meantime expired.

Deutsche medizinische Wochenschrift.
July 29, 1915.

"Albumin from the Air."—Boruttau candidly admits the shortage of fodder in Germany, which cuts down cattle production, and consequently production of meat and milk. There must be forthcoming more albumin—if not from animals and plants then from other sources—the soil, water, or air. To speak of getting albumin from these sources would be merely a metaphor—what we could get would be nitrogenized matter, not necessarily albuminous. Fifty years ago Pasteur and Ducloux showed that yeast could thrive on an ammonia diet; and in 1907 Ehrlich added that albumin fed to yeast was not utilized until built down to ammonia. In other words yeast cells synthetize ammonia to albumin. As a rule, when we cultivate yeast, it is for the purpose of developing the zymase. The latter is desired because for baking and brewing purposes it splits glucose into alcohol and carbonic acid. The former is drunk (far too much) or used in the arts. The carbon dioxide has a mechanical requirement, viz., to cause bread to "sponge." A little yeast goes in this direction a long way, and a very large surplus remains which is rich in albumin, and at once a potential food for man and fodder for animals. Now we use the *N* of the air to make nitrates and ammonia, and these substances may be fed to the yeast organisms so that the 40 per cent of albumin normal to the latter is derived directly from the air. All that the yeast cells require is a culture medium and a certain temperature, while to get albumin from plants we need weeks of time, a certain soil, favorable weather conditions, and a series of processes—sowing, cultivating, harvesting, etc. In making yeast albumin we take 100 parts glucose and 52 parts of mineral matter containing some nitrogen; this yields 270 parts of compressed yeast, the balance of the *N* coming from the air. This 270 parts give 80 parts of dried substance, and of this 46 per cent. in crude albumin and 29 per cent. carbohydrates. The utilization of the two components is excellent and dogs fed on the "mineral yeast" thrive. The result is pronounced by Boruttau a triumph of the efficiency of German science, technique, and organization, but the proof of the pudding, to man, is in the eating.

Fatalities from Salvarsan.—Fischer adds some new cases to the number already known. These cases should not be straightway set down to arsenical poisoning or to carelessness or defective knowledge on the part of the medical men. In the first case the patient was far gone with tuberculosis with "a foot in the grave." The ravages were extensive. Both adrenal bodies were caseous and this fact alone doomed the patient. While in this desolate condition he contracted syphilis for which he received two salvarsan injections. The latter could hardly have been seriously accused of having caused death. The second case occurred in a young prostitute who contracted syphilis and gonorrhea and received salvarsan. She at once developed anemia and this became pernicious in type. Autopsy showed that the anemia may have been due to persistent loss of blood following abortion. The uterus still contained remnants of a fetus. Syphilis *per se* can also set up severe anemia, so that the two causes may have cooperated in bringing about this end. Salvarsan could hardly be accused in this connection. A third patient, unlike the two first described, showed some evidences of cerebral complication, which pointed to a possible salvarsan death. This opinion was negatived by the results both of lumbar puncture and autopsy. The crux of this case was the fact that patient was a very heavy drinker and this condition forms a contraindication to the use of salvarsan.

Syphilis in Cardiovascular Disease.—H. F. Stoll concludes that syphilis is the underlying or basic factor in a much higher percentage of hypertensive cases than has hitherto been realized. Of fifty individuals studied 90 per cent. either gave a positive Wassermann or luetin test, or were known to have had lues, or had children with hereditary syphilis. Nineteen were from cardiovascular families. In seventeen of them either one or both tests were positive. This strongly suggests the existence of what might be termed "familial cardiovascular syphilis." It would seem that hypertensive disease is one of the most common—possibly the most frequent—of the so-called "late" manifestations of hereditary syphilis. Apoplexy and sudden cardiac death occurring in middle life are almost always due to syphilis, and this cannot be considered a negligible factor even in the aged. The remaining parent and the children of individuals dying a cardiovascular-renal death in middle life should be tested for syphilis, as they are infected in a high percentage of cases. Specific treatment has given very satisfactory results in a few cases, for the most part individuals whose systolic pressure was under 200. The careful administration of mercury over a period of several months has not appeared to be injurious to the kidney even when there was considerable reduction of phthalien output. In a few instances the kidney function was increased several months after treatment. The luetin test, especially if activated by a week of mixed treatment, is often of more value than the most sensitive Wassermann reaction, in detecting these late manifestations of syphilitic infection.—*American Journal of the Medical Sciences.*

Insurance Medicine.

Association of Life Insurance Medical Directors.—The twenty-sixth annual meeting of this association will be held in the board room of the Mutual Life Insurance Company Building, New York, Thursday and Friday, October 14 and 15, 1915.

The first session will be called to order at 10 o'clock sharp on Thursday morning, October 14. The following papers will be read: "Comparative Mortality Experience Among Abstainers and Non-Abstainers from Alcohol"; address by the president, William Evelyn Porter, M.D., medical director, Mutual Life Insurance Company of New York; "Suggestions as to Methods to be Followed in Utilizing the Material Contained in the Report of the Medico-Actuarial Committee," by E. A. Dwight, M.D., medical director, New England Mutual Life Insurance Company; "Symposium Upon the Subject of Gastric and Duodenal Ulcer," (*a*) Medical—By Henry Wireman Cook, M.D., medical director, Northwestern National Life Insurance Company; (*b*) Surgical—By Homer Gage, M.D., medical director, State Mutual Life Insurance Company; (*c*) Roentgenological—By A. H. Busby, M.D., Mutual Life Insurance Company of New York (by invitation); "Conservative Work as Applied to Life Insurance," by Franklin C. Wells, M.D., medical director, Equitable Life Assurance Society; "A Study of 59,270 Exposures of Ordinary Life Insurance Showing Urinary Impairments at the Time of Acceptance," by J. Bergen Ogden, M.D., assistant medical director, Metropolitan Life Insurance Company; "Committee Report on Blood-Pressure Mortality Statistics," by John W. Fisher, M.D., medical director, Northwestern Mutual Life Insurance Company; "Blood-Pressure—with Special Reference to the Diastolic," by Lewis F. Mackenzie, M.D., assistant medical director, Prudential Insurance Company.

The Decreasing Mortality from Tuberculosis.—In his president's address before the Association of Life Insurance Medical Directors at the twenty-fifth annual meeting in October, 1914, Dr. Edward K. Root, medical director, Ætna Life Insurance Company, states that if the medical directors have appreciated their actuaries' lessons and followed their example in the grouping, classification, and study of the lives they, as medical directors, have selected, it must not be forgotten that the unit or individual is still to be dealt with. The human being is of infinite variety in its varied aspects, physical, mental, moral; in its heredity, in its environment. No two men ever go through a case of pneumonia or typhoid fever in precisely the same fashion, nor react to traumatism alike. In spite of the arbitrary classification of men there remains the human equation which is liable to render all calculations naught. Dr. Root believes that there is danger of depending too much on efforts at selection on groups, and subgroups, and statistics, and curves, and calculations, and too little on the personal opinion and professional recommendation of the medical examiner in the selection of the risk. It is the medical examiner who selects the members of the group, and in the final analysis it is the individual that makes up the group, and the death of the individual for which the company has to pay.

This is especially true with reference to risks that have a tuberculous family or personal history. Most clinicians will insist that once tuberculous, always tuberculous; that is, the danger of relapse from an arrested case is greater than the danger of an initial infection. Osler, however, considers that 90 per cent of a population have practically been infected at some time in their lives, yet may never suffer from active signs of the disease. Eighty per cent of all individuals coming to autopsy show some evidences of tuberculosis somewhere in the body, and yet the mortality from tuberculosis in all its forms is steadily decreasing. In 1900 in the registered area of the United States the mortality was 201 per hundred thousand of the population from tuberculous disease of all kinds. In 1912 it was approximately 149 per hundred thousand. This decrease holds good in all civilized lands. In England there has been a decrease of 50 per cent in 40 years.

Among selected lives in life insurance risks, the figures show a marked decrease, although the fluctuations are more violent owing to the smaller numbers included in the group. In 1885 the mortality from tuberculosis in the Ætna Life Insurance Company was 159.9 per hundred thousand; in 1890 it was 80.9 per hundred thousand; in 1895, 82.3 per hundred thousand; in 1900, 115.9. If coincident with the almost universal exposure to the tubercle bacillus goes a falling death rate one of two factors must be responsible for the change. Either the bacillus is losing its virulence, the disease is growing milder, or the race is acquiring a resistance; in other words, becoming immune. No disease has shown so little evidence of apparent immunity conferred by one attack as tuberculosis. Nevertheless, there are certain characteristics of the clinical course of the disease which point toward an acquired resistance, and a consideration of the mortality statistics, both of select lives and of the population at large, is most suggestive that the decreasing mortality as a whole is due to an increasing racial immunity as the most important factor causing this decrease.

Dr. Root quotes from the tables of the Ætna Company showing the decrease in mortality from tuberculosis from 1885 to 1912. A diagram showing in two curves the general death-rate in the United States, and the death-rate from tuberculosis per hundred thousand in the general population of the registration area of the United States is given. These curves each show a similar decrease and the second in some respects parallels the first. In 1900 the Ætna lost 113 per hundred thousand, and in 1912 approximately 78 per hundred thousand.

If immunity can be assumed it explains many interesting results in the mortality tables. If it can be proved, it must be done by the actuary rather than the clinician. It is evident enough whether we assume that immunity is an explanation of the lower mortality from the disease, or whether one or all of the other factors—sanitation, higher standard of living, ventilation, good food—now operative are responsible for the change, but the class of risks we have heretofore regarded as distinctly substandard can be given insurance on far more favorable terms than it was formerly thought possible.

Substitute for Company's Examiner.—A private physician who, in the absence of the regular examiner, examined the applicant for a policy to be issued by an insurance company, is not the agent of the company when he was procured by a friend of the applicant.—Sovereign Camp v. Lillard (Tex.) 174 S. W. 619.

Book Reviews.

HUMAN MOTIVES. By JAMES JACKSON PUTNAM, M.D., Professor Emeritus, Diseases of the Nervous System, Harvard University. Price $1.00. Boston: Little, Brown, and Company, 1915.

OF recent years psychological research has made great progress and we are now beginning to comprehend some of the workings of that part of the human mind termed "the subconscious." The small book "Human Motives," by Professor Putnam, is one of a series of handbooks (The Mind and Health Series, edited by H. Addington Bruce, A.M.) designed to extend knowledge of the important discoveries affecting individual and social welfare that have been made during recent years through psychological research. However, the volume noted does not enter at all deeply into the subject but is mainly intended to focus attention on the aid afforded by modern psychology to the upbuilding of a really sound and practical philosophy of life.

Undoubtedly, it is extremely difficult to delve into the motives of the human mind, but despite handicaps, the individual trained in psychology is able to explain many of these. Dr. Putnam considers the main source of motives the rational basis of religion, the psychoanalytic movement, educational bearings of psychoanalysis, instincts and ideals, and ends by an attempt at synthesis. The chapters dealing with psychoanalysis are especially interesting and instructive, and coming from Dr. Putnam carry the weight of authority.

The entire work will bear careful reading and will undoubtedly repay those who are concerned with psychology and will convince those who have not given the subject their attention that there is more in the matter than they wot of.

THE ORIGIN AND NATURE OF THE EMOTIONS. Miscellaneous Papers. By GEORGE W. CRILE, M.D.; Professor of Surgery, School of Medicine, Western Reserve University; Visiting Surgeon to the Lakeside Hospital, Cleveland. Edited by AMY F. ROWLAND, B.S. Price $3.00. Philadelphia and London: W. B. Saunders Company, 1915.

THE eight papers comprising this volume have appeared in various journals during the past few years, and their subject matter by virtue of its novelty and practical value have attracted considerable attention from medical readers. The Ether Day address on "Phylogenetic Association in Relation to Certain Medical Problems" deals with the already well-known and widely applied doctrine of anociassociation. The biological foundations of this theory are admirably laid down though one may question the zoological nomenclature which would include the turtle and armadillo among the crustaceans. The title of the second paper in this volume is "Phylogenetic Association in Relation to the Emotions." The emotions are regarded as primitive instinctive reactions which represent ancestral acts and utilize the same mechanism as that by which motive acts are performed. The remaining papers deal with the following subjects: "Pain, Laughter, and Crying;" "The Relation between the Physical State of the Brain-Cells and Brain Functions—Experimental and Clinical;" "A Mechanistic View of Psychology;" "A Mechanistic Theory of Disease;" "The Kinetic System;" "Alkalescence, Acidity, Anesthesia—A Theory of Anesthesia." The volume is illustrated with a large number of photographic reproductions. Although the same underlying thought appears in many of these essays, its significance is enlarged and its applications are multiplied. The volume represents a valuable contribution to medical literature.

MATERIA MEDICA AND THERAPEUTICS. A Text-book for Nurses. By LINETTE A. PARKER, B.Sc. (Columbia Univ.), R. N. Bachelor's Diploma in Education, Teachers College; Instructor in Nursing and Health, Teachers College, Columbia University, New York. Illustrated with 29 Engravings and 3 plates. Philadelphia and New York: Lea & Febiger, 1915.

THIS is the latest addition to the "Nurses Text-book Series," and it is one of the best volumes in that series. The author has wisely abstained from including the United States Pharmacopœia with all its preparations, and has made a very judicious selection of such drugs as a nurse may reasonably be expected to know something about. The subject is well handled, and there are many useful diagrams to aid in the explanation of the action of the drugs. The volume is well printed, and is altogether much more attractive than books on Materia Medica are apt to be. Short chapters on Psychotherapy, Hydrotherapy, Electrotherapy, Serums and Vaccines, and Ray Therapy are included. A few of the chemical formulæ are capable of improvement, and one or two of the Latin terms are incorrectly given; but the number of errors is very small indeed, and the book will compare favorably with its competitors.

THE PRINCIPLES OF BACTERIOLOGY, a Practical Manual for Students and Physicians. By A. C. ABBOTT, M.D., Professor of Hygiene and Bacteriology, and Director of the Laboratory of Hygiene, University of Pennsylvania. Ninth Edition, Thoroughly Revised. Price $2.75 net. Philadelphia and New York: Lea & Febiger, 1915.

ANY book which has passed through nine editions occupies a fixed place in medical literature. Abbott's Bacteriology is well and favorably known to a large portion of the medical profession, and its latest edition maintains the high standard of excellence set by the previous ones. It is essentially a book for the beginner which should be supplemented by didactic lectures for the purpose of elaborating obscure subjects. The revision has been a very thorough one, as is always necessary in books on this subject. It is concise and clear with the minimum of theoretical discussion, but marked with a satisfying completeness of detail in the matter of laboratory technique. The illustrations are well chosen and executed.

MODERN MEDICINE. Its Theory and Practice. In Original Contributions by American and Foreign Authors. Edited by Sir WILLIAM OSLER, Bart., M.D., F.R.S., Regius Professor of Medicine in Oxford University, England; Honorary Professor of Medicine in the Johns Hopkins University, Baltimore; Formerly Professor of Clinical Medicine in the University of Pennsylvania, Philadelphia, and of the Institutes of Medicine in McGill University, Montreal, Canada, and THOMAS MCCRAE, M.D., Professor of Medicine in the Jefferson Medical College, Philadelphia; Fellow of the Royal College of Physicians, London; Formerly Associate Professor of Medicine, the Johns Hopkins University, Baltimore. Volume V.—Diseases of the Nervous System—Diseases of the Locomotor System. Second Edition. Thoroughly Revised. Illustrated. Price $5.00. Philadelphia and New York: Lea and Febiger, 1915.

THIS the fifth volume of the second edition of Osler and McCrea's "Modern Medicine" is in every respect fully up to the standard of the former volume. The volume deals with diseases of the nervous system and of the locomotor system.

Chapter 1 is by Dr. Lewellys P. Barber, and is in the form of an introduction to diseases of the nervous system. To diseases of the motor tracts a chapter is devoted, written by Dr. W. G. Spiller. The combined system diseases of the spinal cord is the subject of a chapter contributed by Dr. Colin K. Russel. Scleroses of the brain are dealt with by Dr. Edwin Bramwell, who in alluding to drug treatment of disseminated sclerosis says that he is inclined to believe that arsenic in moderate doses is sometimes of service. Diseases of the meninges are also discussed by Bramwell. The chapter given up to a consideration of diffuse and focal diseases of the spinal cord is by E. Farquhar Buzzard and, as might be expected, is a very clear exposition of the subject. Dr. Joseph Collins discusses the topical diagnosis of diseases of the brain, and likewise considers aphasia at some length. Dr. Harvey Cushing treats of tumors of the brain and meninges and in referring to the pathology of brain tumors points out that one may say that one-half of all brain tumors are gliomas of one kind or another. Cushing also considers hydrocephalus, the text being illustrated by some extremely beautiful plates. Acute encephalitis and brain abscess, diseases of the cerebral blood vessels, diseases of cerebral nerves, diseases of the peripheral nerves, epilepsy, neurasthenia, hysteria, occupation neuroses, paralysis agitans, chorea, myasthenia gravis, astasia-abasia, adiposis dolorosa, syphilitic diseases of the central nervous system, amaurotic family idiocy, arthritis deformans, osteomalacia, and achondroplasia are severally discussed by Drs. E. E. Southard, Henry M. Thomas, E. W. Taylor, Gordon M. Holmes, L. Pierce Clark, Charles W. Burr, Smith Ely Jeliffe, Daniel J. McCarthy, B. Sachs, Thomas McCrae, George Dock and Charles P. Emerson.

The volume is well printed and arranged, adequately illustrated, and provides a valuable reference book on diseases of the nervous and locomotor systems.

THE EARLY DIAGNOSIS OF HEART FAILURE, and Other Essays on the Circulation. By I. STACEY WILSON, M.D. (Edin.), F.R.C.P. (Lond.), B.Sc. (Edin.), Senior Physician, General Hospital, Birmingham, Lecturer on Medicine in the Dental School in the University of Birmingham. With Illustrations. Price $4.50 net. New York: William Wood and Company, 1915.

WORKS concerning the heart in all languages have been very numerous of late years, due to the fact that knowledge regarding that organ has vastly increased within a comparatively short period. Perhaps it might rather be said that knowledge respecting the heart has been revised, amplified, and rendered more accurate. In the acquirement of this knowledge English-speaking writers have been conspicuous, especially Dr. Mackenzie.

The volume before us consists of separate essays dealing mainly with heart failure from the standpoint of early diagnosis. In this direction it covers more or less fresh ground, recognizing types of cardiac failure which are frequently passed over, and indicating certain methods of clinical diagnosis which have received scant mention in the ordinary text books.

The numerous diagrams with which the book is supplied profusely serve to make clear the new theories, the advocacy of new methods, and the dealing with matters not hitherto regarded as of proved clinical importance.

INTERNATIONAL CLINICS. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, etc. Edited by HENRY W. CATTELL, A.M., M.D. Vol. II. Twenty-fifth Series, 1915. Price, $2.00. Philadelphia and London: J. B. Lippincott Company.

IN this issue of the Quarterly there are twenty-three articles on Diagnosis and Treatment, Pediatrics, Medicine and Surgery. Over forty pages are devoted to operations on the nose and throat and the frontal sinuses in articles by Hays and Ballenger. There is a very good article on painful conditions of the foot by Miller, and Eggleston has a brief but comprehensive statement on the "Present Status of Digitalis Therapy." The Quarterly continues to bring to the light subjects of live interest which for the most part are presented in an adequate manner.

THE MEANING OF DREAMS. By ISADOR H. CORIAT, M.D., First Assistant Visiting Physician for the Diseases of the Nervous System, Boston City Hospital, Instructor in Neurology, Tufts Medical School. MIND AND HEALTH SERIES. Edited by H. ADDINGTON BRUCE, A.M. Price, $1. Boston: Little, Brown & Company, 1915.

THIS small volume surveys the principles and results of scientific dream analysis along the lines first formulated by Freud of Vienna. Dr. Coriat, the writer of the book, is by his knowledge of psychology and psychoanalysis, as well as by his familiarity with the views and methods of Freud, peculiarly well fitted for the task he set himself. The work is useful and valuable from many standpoints.

OPERATIVE GYNECOLOGY. By HARRY STURGEON CROSSEN, M.D., F.A.C.S. Associate in Gynecology, Washington University Medical School, and Associate Gynecologist to the Barnes Hospital; Gynecologist to St. Luke's Hospital, Missouri Baptist Sanitarium and St. Louis Mullanphy Hospital; Fellow of the American Gynecological Society and of the American Association of Obstetricians and Gynecologists. Seven Hundred and Seventy Original Illustrations. Price, $7.50. St. Louis: C. V. Mosby Company, 1915.

THE author's intention—stated in the preface—to present "the technique of the various operations, the difficulties likely to be encountered, the indications for operation in the various diseases, and the selection of the exact forms of operative procedure best suited to the particular case, is well carried out. The descriptions of operations are clear, concise, and well illustrated. Essential points are emphasized effectually. The advantages and disadvantages of the several operations are well given. The grouping of these under operations for retrodisplacements is especially satisfactory.

Such operations as curettage of the cervix and specimen excision, which may be performed in one's office, are described with a care for detail which would make them easy of execution by anyone who, as Dr. Crossen puts it, has a "practical working knowledge of the establishment and maintenance of asepsis."

The importance of early diagnosis in malignant disease receives the usual emphasis, and differential methods are given. Though the work is avowedly operative, the parts on differential diagnosis make it of value to the general practitioner by whom most operative cases are first seen. The value of differential diagnosis, checked by operation, shows in many parts, of which the section on chronic pelvic inflammation is an example.

The book will be of distinct value to the young surgeon, in a study of his cases both before and after operation.

MODERN ASPECTS OF THE CIRCULATION IN HEALTH AND DISEASE. BY CARL J. WIGGERS, M.D., Assistant Professor of Physiology in Cornell University Medical College, New York City. Illustrated with 104 engravings. Price, $3.75. Philadelphia and New York: Lea & Febiger, 1915.

DURING recent years our knowledge of the circulation has increased greatly, which of course has vastly aided accurate diagnosis and rendered possible the elucidation of many obscure conditions, the recognition of new diseases, and the institution of new forms of treatment. However, while accurate observation, at the bedside or in the laboratory, is as essential as ever for correct diagnosis, there are many phenomena of the circulation, normal and abnormal, which remain undetected by our unaided senses. Hence the need for and the introduction of various instrumental methods.

In the monograph before us Professor Wiggers has shown how the new methods work. The first section presents the most recent conceptions as to how the circulation is maintained in health. The second section deals with the various instruments and procedures which are available for studying the circulation of man. The third section consists of a correlation of the data obtained by experimental investigation of abnormal conditions in the laboratory, with the results derived from the application of instrumental methods at the bedside and the relation of these, in turn, with the simpler signs and symptoms of the clinic. The entire work is an incorporation of the results of the author's own investigations on the circulation with which have been introduced several unpublished reports of the recent work of a number of colleagues. The book is excellently illustrated and is a valuable compendium of modern views as to the circulation in health and disease.

SOZIALE PATHOLOGIE. Versuch eine Lehre von den sozialen Beziehungen der menschlichen Krankheiten als Grundlage der sozialen Medizin und der sozialen Hygiene von Prof. Dr. med. ALFRED GROTJAHN. Zweite neubearbeitete Auflage. Berlin: Verlag von August Hirschfeld, 1915.

Social pathology is largely a matter of statistics, for in no other way can the social significance of diseases be brought home to the public. Diseases either kill or incapacitate and the more a disease is an enemy to the human race the more data will accumulate and the more there will be to say about it. If deadly diseases like smallpox and hydrophobia require but little space it is because they do not menace many people. To be socially significant a disease must destroy the young and the efficient. *A priori* typhoid fever should require much space, but the mortality from this disease in Germany is but 4 per 100,000 inhabitants, and it does not incapacitate many. The 6 pages given it are ample. At the other extreme 47 pages are devoted to tuberculosis, 18 to venereal diseases, not including 6 pages on blindness, 38 to alcoholism, 9 to epilepsy, etc. If a disease is necessarily fatal in a short time, like cancer and diabetes, it is not followed by any wake of disability, and cancer is preëminently a disease of advanced years, while diabetes attacks chiefly the well-to-do. Nine pages are given to mortality in the first year of life and 5 to suicide, showing the special bearing of these classes of death on social life.

It seems strange to see less than a page devoted to a scourge like influenza, but severe epidemics occur only at long intervals and the direct annual mortality in the healthy is small. The disease increases the death rate among the aged and sickly. Much of its disability is only transitory. Thus in Leipzig 2,828 cases of grip caused a total of over 44,000 days of incapacitation from work. The number of deaths was but 15.

Society Reports.

AMERICAN PEDIATRIC SOCIETY.

Twenty-seventh Annual Meeting, Held at Lakewood, N. J., May 24, 25 and 26, 1915.

THE PRESIDENT, DR. GEORGE N. ACKER OF WASHINGTON, D. C., IN THE CHAIR.

(*Continued from page* 463.)

Allergy to Common Foods.—Dr. OSCAR M. SCHLOSS of New York presented this paper in which he reported his observations derived from a study of 43 cases of food allergy. In this series there were cases of idosyncrasy to milk, egg, beef, horse protein, wheat, rice, and other cereals and food stuffs. It was unusual to find the idiosyncrasy confined to a single food substance, but, as a rule, it was confined to several of those enumerated. Urticaria and angioneurotic edema were among the most frequent symptoms and in the severer types of food idiosyncrasy followed immediately after the ingestion of the toxic food. The relation of eczema to food allergy was of great interest. During the past two and one-half years the writer had observed 18 cases of eczema and in every one there was a cutaneous reaction to the proteins of one or several foods. That the relationship of the foods to the eczema might be causative was attested by the therapeutic results obtained by the withdrawal of the toxic food substance in the cases reported. Cases of asthma provoked by the ingestion of egg were not uncommon, and while asthma might be due to the ingestion of other foods the relationship was far from constant. A third group of symptoms gastroenteric in origin with vomiting, pain, and diarrhea, were probably due to the direct irritant action exerted by these foods. In a fourth group the food idiosyncrasy was indicated by the blood reaction which consisted of eosinophilia. In the more pronounced cases of food indiosyncrasy simple massage of the food protein into the skin caused the appearance of crops of urticarial wheals. Inoculation of the food or protein into a skin abrasion caused the appearance of an urticarial wheal surrounded by a zone of erythema. The reaction was characteristic. Unfortunately a skin reaction was not always present, but in some cases an intracutaneous injection would provoke reaction although the cutaneous test was negative. The cutaneous reaction would often disappear during and directly following toxic food disturbances. Numerous observations in anaphylactic shock had shown that when an animal recovered from the intoxicating dose of protein it then became immune to further injections. This immunity lasted only from one to three months when the animal again became sensitive to the protein. In human beings it had been noted that patients once immunized to egg did not remain immune unless egg in comparatively large amounts was administered continuously. Observation served to show that anaphylactic disturbance might be cyclic even though the food causing the disturbance was ingested continuously. In some instances the idiosyncrasy was inherited while in others it was acquired. The diagnosis of food allergy was made either clinically or by cutaneous reaction. The ideal method of treatment was that of desensitization by the administration of gradually increasing amounts of the toxic protein or by eliminating the offending article from the diet. These two methods might be combined. There were many difficulties encountered in treating eczema and asthma of allergic origin, but the recognition of food allergy as the cause of the condition enabled one to arrive at a rational treatment. His own experience did not warrant the assertion that a satisfactory result could be obtained in all cases in which it was reasonble to suppose the disease was of food origin.

Report of Cases of Various Types of Idiosyncrasy to Milk.—Dr. E. W. SAUNDERS and Dr. T. WISTAR WHITE of St. Louis made this report, which comprised the histories of twelve infants showing idiosyncrasy to milk. From this series the authors summarized as follows: The most serious cases were the exclusively breast fed with a family history pointing to this idiosyncrasy. These cases often proved fatal in the first attack and might elude diagnosis because of the absence of cyclic vomiting. Idiosyncrasy to milk might be shown during the early months of life or might develop at a later period. It might continue through life or it might cease. There might also be a partial idiosyncrasy depending upon the amount and the form of administration of the milk. In conclusion the authors urged individualization in the dietetic treatment of infants and in critical cases of deleterious effects from milk, the recourse to cereal foods in spite of the fear of chronic dystrophies ensuing.

Dr. JOHN HOWLAND of Baltimore stated that Dr. Blackfan had investigated 23 cases of eczema during the last few months and found almost all of them sensitive to one or more proteins. Dr. Blackfan's experience was similar to that of Dr. Schloss. It had been impossible to produce passive immunity. Therapeuticalyl a small number could be definitely helped while a large number could not be improved in any way.

Dr. FRITZ B. TALBOT of Boston said he had been following Dr. Schloss's work and had been making observations of his own. His results had been the same as those of Dr. Schloss. The speaker said he had seen a large number of cases of asthma recently and about 60 per cent. gave a positive skin reaction to some food. He had found that egg was most commonly the offending article and that with egg allergy there was sometimes a positive reaction to nuts, and of these especially to English walnuts. The peanut produced a reaction less frequently than did other varieties of nuts. Many that reacted to egg were also sensitive to horse serum. Those that reacted positively to hen's egg also reacted positively to duck's and turkey's egg. In the majority of cases there was a definite history of intolerance either in the father or the mother or both.

Dr. JOHN LOVETT MORSE of Boston asked Dr. Schloss if he thought every case of eczema and urticaria was due to food allergy.

Dr. TILESTON of New Haven, Conn., said Dr. Schloss's work promised to throw a flood of light on many skin diseases of obscure origin; some had already been shown to be due to anaphylaxis. Aphthous stomatitis and the visceral complications of erythema might be shown to have a similar basis.

Dr. S. MCC. HAMILL of Philadelphia said they were working with this problem and attacking it in a somewhat different way. They were taking children in a condition of moderate ill health with symptoms chiefly referable to the gastrointestinal tract and trying a number of proteids by the puncture test. They used the protein of egg albumen, cow's milk, beef, mutton, fish, etc., to determine for which one an intolerance existed. At present they had a case of asthma which reacted to all the proteins thus far tried but most strikingly to egg albumen. By working back from the history of the case and testing the child's reaction to different proteins one might find some reason for the condition of ill health.

Dr. HAYNES of New York said he had seen several of these cases of food allergy. In one there was an intolerance for egg and chicken above a certain amount; if this limit was transgressed one of two things occurred, either there was a return of the eczema or of asthma, or the child would develop a night cough when it did not get an attack of asthma.

Dr. ROLAND G. FREEMAN of New York said that many children thought to have an idiosyncrasy to milk were taken off milk permanently and injured by not having a well balanced food. He had found it possible acting on the suggestion of Dr. Schloss, to obtain a tolerance to milk in such children by giving a little at first and gradually increasing the amount as tolerance increased. Such children could often eventually take a normal amount of milk.

Dr. GRIFFITH asked if possibly other food constituents might have the same effects as protein, since in some instances a large amount of carbohydrate in the form of sugar had appeared to bear an etiological relation to eczema.

Dr. ISAAC ABT of Chicago said the fact that some foods produced toxic symptoms in certain children showed that there was some peculiarity in the child. At present they had no means of classifying or designating such peculiarities.

Dr. SCHLOSS, in closing the discussion, emphasized the point that it was only in severe cases of food allergy that he had been successful in producing passive sensitization. He would not say that eczema and urticaria were always due to food allergy; they were both diseases of multiple etiology, but of 23 cases of eczema 16 gave a positive reaction to some kind of food. In only a small percentage of cases of asthma did he get a positive indication of food origin. At the time he

made his first report Dr. Schloss said he tested 75 or 80 institutional children as controls and got no reaction. Dr. Talbot in testing 100 children found only two that gave positive reactions and one of these had eczema. When it was found that a child reacted to one type of egg there was usually also a reaction to other types of egg. From his experience it seemed that sensitization could be brought about through the intestinal tract.

Energy Metabolism of a Two-Months-Old Child Fed on Prolonged Protein-Rich Diet.—Dr. RAYMOND HOOBLER of Detroit presented this paper. He stated that the injury, if any, of feeding large quantities of protein to an infant had not been studied to the extent that it deserved. To answer this inquiry the various changes which protein underwent in its transition from an external food product to the cell of the living organism would have to be considered. According to the plan outlined by Dr. Lusk for this investigation it was decided to begin with a low protein diet and determine basal metabolism for this child and then gradually to increase the protein content relatively and actually, maintaining the fat and carbohydrate content as nearly on a level throughout the observation as possible. In all 37 periods of one hour each were studied. The Atwater Benedict calorimeter was used. The results were remarkably uniform and might be summarized as follows: 1. Protein retained for growth caused no increase in metabolism. 2. Protein oxidized caused an increase in metabolism varying with the amount oxidized. 3. The cause of the increased metabolism was the stimulation produced by the aminoacids and their products, derived from protein decomposition. 4. When large quantities of protein were fed along with insufficient carbohydrates and fat, even though ample calories to cover the caloric need might have been given, there was a drain on the fat and carbohydrate stored in the body. Protein food, though greatly in excess, could not be substituted for the need of fat and carbohydrate. 5. The proportion of protein fed as advised and taught was much in excess of the need.

Dr. JOHN HOWLAND said that this work was interesting as showing the effect of high protein content in the food of an infant. In his work along this line he reported four years ago that the protein acted as a stimulant to the general metabolism and while more protein could be consumed, an excess of glycogen was stored up and the injurious effects of other food elements on the organism were more noticeable.

Dr. TALBOT said it was a curious fact that when the protein content of the food was increased, if this increase was in the form of cow's milk, the symptoms of protein excess appeared much sooner than if other forms of protein were added.

Dr. HOOBLER said that in nearly all hours tested the metabolism was low for the first hour and increased with each succeeding hour. There was a lower metabolism for the sleeping hours.

A Further Step in the Adaptation of an Artificial Food to Human Milk.—Dr. H. J. GERSTENBERGER, Dr. H. D. HASKINS, Dr. H. H. MCGREGOR, and Dr. H. O. RUH presented this paper. After describing Friedenthal's milk they stated that they had started out with the idea of making a fat for that milk which would meet the following requirements: First, that it would have approximately the same percentage of low fatty acids as were contained in breast milk; and, second, that it would have approximately the same saponification, Reichert-Meisel iodine number, etc. About that time Dr. Gerstenberger came across the statement of Arnold that a mixture of 86 per cent. lard an 14 per cent. cocoanut oil of certain saponification, Reichert-Meisel and iodine numbers would give a mixture containing the same numbers as were contained in breast-milk fat. Such a fat would float on top of Friedenthal's milk unless homogenized. They then learned of Neuman's method of washing and emulsifying butter. They found, however, that practically no fatty acids were removed by repeated washing of butter with cold water and that an emulsion of the fat could not be obtained when it was added to Friedenthal's milk. Neiman had been able to emulsify his mixture because he had added a large amount of cereal in the form of cornstarch. Washing butter oil with hot water removed but slightly more of the low fatty acids and this amount was so small as to be negligible. It was impossible by the methods which the authors worked out to rid process butter of the rancid odor and make it useful. They later acquired a homogenizer and found that the Friedenthal milk with both cold water washed butter and hot water washed butter could be thoroughly and perfectly homogenized. Most of the infants fed on this milk vomited and had thin, yellow or yellowish stools. The authors then prepared a mixture of lard and cocoanut oil, according to Arnold's suggestion, added this to Friedenthal's milk and found that it was perfectly homogenized. Various combinations of lard, cocoanut oil, codliver oil and cocoa butter were prepared, added to Friedenthal's milk, homogenized and fed to different infants. They had produced a milk which gave the following analysis: Proteid 1.1, sugar 7.07, fat 4.54, salt 0.43. The following points with reference to this study might be emphasized: (1) The giving of an artificial food containing fat of approximately the same qualitative characteristics as breast-milk fat meant a distinct step in advance toward the more complete adaptation of an artificial food to breast milk. (2) This change in the quality of the fat for the artificial food did not apply only to the low fatty acid content of the fat, but also to many of its other characteristics. (3) The homogenizer was a machine that made it possible to suspend such fat in a food that in other respects had been made similar to woman's milk. (4) It represented also a practical means of adding other substances of whatever nature they might be. (5) This scheme made the manufacture of a milk that could be given to young infants as well as to older ones without dilution probable, and this meant, specially if the product could be manufactured at low cost, an accomplishment of great practical importance to both the physician and the family. (6) Manufacture of the food did not present difficulty in keeping the bacterial content extremely low.

Dr. COIT asked Dr. Gerstenberger if he could tell the caloric value of this milk.

Dr. GERSTENBERGER replied that they had calculated the caloric value of this milk in only two proportions. With 4.5 per cent. fat, the caloric content would amount to 770 calories. This could be changed.

Dr. HOOBLER said that in the work recently done in studying the effects of feeding fats, the distinction had been made between the two kinds of fats, those from glandular tissue and those from the non-glandular. To the latter type belonged olive oil, lard tallow, etc. It was found that animals fed on non-glandular fats were not properly nourished. They might appear to be in good condition and might even increase in weight but there must be a further indication of proper nourishment; there must be the capacity for reproduction. Animals fed on non-glandular fats could not produce offspring. With this knowledge it was proper to inquire definitely whether such food as had been suggested would fulfill in every respect the standard that was desirable.

Homogenized Olive Oil and Fat-Free Milk Mixtures in Cases of Difficult Feeding.—Dr. MAYNARD LADD of Boston presented this paper in which he recalled that he had before called attention (paper read before New England Pediatric Society, February, 1915) to the possible application of the principle of homogenization of liquids of different densities to the modified milk mixtures in infant feeding. He had reported the results obtained by replacing cow's milk with olive oil, the emulsion being produced by the homogenizing machine of Gulin of Paris. The chemical composition of the milk was in no wise changed by this process, but the physical condition was so changed that the fat could no longer be separated by the ordinary cream separators. The taste of the milk was decidedly improved by this process, particularly that of pasteurized milk. Homogenized creams could be readily pasteurized. Disturbances of emulsion brought about by rising temperature and transportation were prevented by this process. If all these things were true the process would theoretically yield a more digestible milk mixture. This milk had been used successfully in Fariot's "Gout de Lait" at Belleville. When rennin was added to the homogenized milk the curd resulting was an homogenous flaky paste, resembling closely the curd of human milk. The most interesting application of this principle of homogenization was in connection with the fat constituent of milk modification. It was a question whether it was the fat *per se* which caused the symptom complex known as fat intolerance, or whether it was simply the peculiar quality or reaction of some part of the fat of cow's milk. This question had led him to experiment with vegetable oils and the fats of other animals. It was possible to combine an almost pure olein, palmatin or stearin, with fat-free skimmed milk and so eliminate almost entirely the influence of

the various fats of cow's milk. Dr. Ladd related the histories of several cases in which he had tried olive oil in a fat free lactic acid milk. In two other cases he had used 1.5 olive oil in a malt soup mixture. The results justified the hope that such cases of fat intolerance could be given a food of higher caloric value by this method, with less disturbance of nutrition and greater conservation of strength than by the methods they were now using. Dr. Ladd also reported a number of cases fed on mixtures of olive oil, maltose protein, lime water, and barley starch, in percentages suited to the individual cases in which the results were very satisfactory and which warranted the hope that further investigation would confirm the promise held out by this method of modifying milk.

The Total Non-Nitrogen and the Urea of the Blood, and the Phenolsulphonephthalein Excretion in Infancy and Childhood.—Dr. WILDER TILESTON of New Haven, Conn., presented this report. Using the method of Folin and Dennis, Dr. Tileston found that the total non-protein nitrogen and urea in the blood in childhood was from one-half to two-thirds that of the adult. Using the phenolsulphonephthalein test according to the method of Roundtree and Geraghty for the estimation of kidney function, he found that in this series of children the phenolsulphonephthalein excretion varied from 35 to 64 per cent. for the first hour and from 17 to 41 for the second hour. The average for the two-hour period was from 78 to 81 per cent. This was a higher excretion than was observed in adults. In diseased conditions estimations were made in ten cases of lobar pneumonia. In nine of these it was found that the figures were normal for the total nonprotein nitrogen and urea; in the tenth case there was but a trifling increase. This was contrary to what had been found in adults in whom it had been found to be almost double that found in children. The phenolsulphonephthalein excretion varied from 17 to 85 per cent., with an average of 57 per cent. The case that showed 75 per cent. was not distinctly different from the one that showed 17 per cent.; both had albumin with cast and both recovered. One case of pneumonia that showed a heavy albumin at the height of the disease showed normal non-protein, nitrogen and urea. The albuminuria was only transitory and disappeared with the crisis. In scarlatina they had found no variation in the phenolsulphonephthalein excretion but an increase in the non-protein nitrogen and urea. In five other cases the phenolsulphonephthalein excretion averaged 68 per cent. and the figures for the nitrogen were normal. In summing up the writer said that in general it might be said that non-protein nitrogen and urea showed a less tendency to increase in disease in childhood than in adult life. There was no doubt that it was an important guide in nephritis if there was a high nitrogen percentage, but in the normal individual one could allow for considerable latitude. A rising nitrogen in adults was an indication of some danger of uremia.

Dr. MORSE said that Dr. Hill was making similar tests and his results were the same as those of Dr. Tileston. It would seem from these results that the phthalein test would not prove as useful in children as in adults.

Dr. FREEMAN said that some cases of nephritis passed as much as 90 per cent. of the phenolsulphonephthalein in the first two hours. One child that had come under his observation passed only three per cent. in two hours and yet recovered; such a result rarely occurred in an adult.

Dr. HENRY KOPLIK of New York said that a low degree of phthalein excretion was not inconsistent with recovery. There might be severe nephritis and a quite good phthalein excretion; on the other hand there might be a quite high excretion and the patient not recover. One should make this test before undertaking a surgical operation in children.

Dr. TILESTON said that the phthalein test was only of value at the time it was taken, and did not necessarily indicate whether the patient would succumb or recover.

The Value of the X-Ray in Intra-Thoracic Lesions in Children.—Dr. ROWLAND G. FREEMAN of New York made this presentation. He stated that alone the *x*-ray was generally of little value, but like other evidence, in combination with clinical history and physical signs, it might be conclusive. Auscultation in determining the character of intrathoracic lesions was of materially less value than auscultation in combination with percussion, and auscultation and percussion aided by a good *x*-ray would show lesions in the chest of which one could obtain no knowledge by any of the means of physical diagnosis. The *x*-ray was probably of most value in making the diagnosis of miliary tuberculosis; often it was of value in determining a pneumonia of which one could get no physical signs; and also in making a differential diagnosis between empyema and pneumonia, or in corroborating a diagnosis of diaphragmatic hernia. In lesions of the heart it furnished reliable information as to enlargement modification of the shape of the heart, in dilatation, or the presence of exudate, and it would often differentiate plastic exudate from fluid. The presence of air in the chest was also well shown by the *x*-ray, and if there was a combination of air and pus one got a pus level which was very characteristic. In diseases of the heart in children the *x*-ray gave a most valuable indication of the amount of damage to the heart by the size and shape of the heart shadow and successive pictures provided one of their best means for the control of exercise in these cases. The temperature and pulse rate were of great value, but the *x*-ray would occasionally change their method of treatment to the advantage of the patient. The *x*-ray would show enlargement of the thymus, and of the bronchial and mediastinal lymph nodes and would give corroborative evidence of diaphragmatic hernia. In the diagnosis of obscure case of intrathoracic lesions it should not be neglected. Dr. Freeman illustrated his paper by lantern slides.

Dr. HOWLAND said he could not agree that the *x*-ray showed the enlargement of the thymus gland. It seemed to him that the *x*-ray more often led one into error than it gave assistance in making a diagnosis of enlarged thymus. The *x*-ray might also mislead one with reference to the diagnosis of fluid in the pericardium. Within a certain amount of fluid in the pericardium the pericardial angle became obtuse, but when the pericardium was completely filled with fluid the angle again became acute. So that with a very large amount of fluid in the pericardium one might be led astray by the *x*-ray.

Dr. KOPLIK said one should be very cautious in permitting an *x*-ray to make a diagnosis for him; this was especially true when there was a thickened pleura and a cavity. He had had one case diagnosed thickened pleura when fluid was present. When the *x*-ray picture showed spots it did not necessarily mean miliary tuberculosis. There should be a further comparison of *x*-ray and post-mortem findings before they could rely upon the *x*-ray plate in making a diagnosis.

Dr. DUNN said he wished to agree with what Dr. Koplik had just said. He had had three cases in which the radiologist diagnosed the presence of fluid but in which no fluid was found. They had repeatedly found miliary tuberculosis in cases in which the *x*-ray had failed to show it. They found that the *x*-ray did not agree with the actual findings in one-half the cases.

Dr. HOLT said they had sent the same case to a radiologist on successive days and each day a different diagnosis was made. The *x*-ray was very misleading and was a dubious procedure upon which to base a diagnosis

Dr. GITTINGS said that at the Phipps Institute they had been trying to diagnose alveolar tuberculosis by the *x*-ray; in 50 per cent. the diagnosis based on clinical findings was not corroborated by the roentgenological examination. In 18 bodies studied recently the *x*-ray had failed to differentiate enlarged thymus from enlarged bronchial lymph nodes.

Dr. D. M. COWIE of Ann Arbor, said there were sometimes spots on the flat *x*-ray plate that looked like tubercles and that the flat plate could not be relied upon. If the stereoscopic figure was used the bronchi could be seen in their natural position. The *x*-ray was only an adjunct to be taken in combination with other signs.

Dr. HAND said the *x*-ray was of great value and the more it was used the more it would be appreciated, but they had not laid enough stress on its limitations in diagnosing pneumonia and empyema. In the diagnosis of heart conditions the *x*-ray was of great value. It would show whether there was any hypertrophy of the chambers of the heart.

Dr. FREEMAN said he was not at all surprised at the discussion, in fact, he had brought the slides because he felt that the value of the *x*-ray was not appreciated. These slides showed that there were cases in which the *x*-ray was indispensable in clearing up a diagnosis. It was his own feeling that many physicians expected too much of the *x*-ray. In certain instances it showed

conclusively conditions that other signs failed to indicate.

Transposition of Viscera in an Infant.—Dr. SAMUEL S. ADAMS reported this case, which was attended by his assistant from the time of its birth. He first saw the baby when it was about ten weeks old. There was a complete transposition of the heart and the liver. An examination of the heart revealed all sorts of murmurs. He had seen the baby in April when it was eight months old and it was much better. It had had no attacks of unconsciousness or blueness for some time. The first sound was obliterated. He did not think the foramen ovale would ever close. Dr. Adams exhibited a lantern slide which showed the position of the viscera.

The Composition of Woman's Milk.—Dr. L. EMMETT HOLT of New York presented this communication which gave the result of analyses of 35 specimens of women's milk, 29 individual specimens and 6 composite specimens for 24 hours. The analyses were made for different periods, during lactation and were best understood by the tables.

Periods.	No. of cases.	Fat.	Sugar.	Protein.	Ash.
Colostrum	5	2.83	7.59	2.25	.3077
Transitional ..	6	4.37	7.44	1.56	.2407
Mature	17	3.26	7.50	1.15	.2062
Late	7	2.96	7.45	1.02	.2080

A table was also presented showing the distribution of ash during the different periods. The ash of the colostrum period was high in sodium and potassium chloride. The CaO was almost the same throughout the whole period. For the mature period from the end of the first month to the tenth month the close resemblance in the ratio between proteid and ash in woman's milk and cow's milk was astonishing.

The following table showed the percentage composition of ash per 100 parts of woman's and cow's milk:

	CaO	MgO	P(2)O(5)	Na(2)O	K(2)O	Cl
Woman's..	23.2	3.7	16.5	8.0	28.2	16.6
Cow's....	21.8	2.9	28.9	7.2	26.5	13.0

Dr. GERSTENBERGER asked Dr. Holt if they had made the determination for iron and if they had found that cow's milk had less iron than human milk.

Dr. THOMAS S. SOUTHWORTH said there was an interesting point with reference to the transitional period. This was the time when they were confronted with the bad effects of high fats in the maternal milk and got the gastrointestinal disturbances, and it was interesting to note in the tables that the fats were abnormally high at that time and then there was a tendency for them to fall; in treating these cases if they failed to overcome the difficulty by definite measures, nature came to their assistance by lowering the amount of fat.

Dr. HOLT said that in answer to Dr. Gerstenberger's question, the amount of iron in woman's milk was something like 1.7 milligrams in 1,000 c.c. They had not made this determination themselves because the quantity was so insignificant.

A Plea for Accurate Statistics in Infants' Institutions.—Dr. HENRY DWIGHT CHAPIN of New York presented this paper in which he first stated that the gravity of the problem of mortality in infant's institutions could not be correctly stated. Practically no one knew how many infants passed through these institutions each year, whence they came, or whither they went at the end of their stay. "How many die, how many of those who live, lead lives of suffering and impaired usefulness, and possibly of dependency and crime through the action of causes that might have been prevented—these were the questions for which answers must be sought." The first essential was a knowledge of all the facts, which, at present, were unknown. That the operation of these institutions left much to be desired was known to all who were engaged in the work. This statement was not intended to impugn motives, but to show that the time had come to see if all this energy was expended in the wisest way, and if not, how the methods could be improved. Statistics from the report of the New York State Department of Charities from the period 1909 to 1913 of eleven institutions in the State, in which the death rate for babies under two years of age was based on the total number of children cared for, varied in the different institutions from 183 to 576 per 1,000; while during this same period the death rate of children under two years of age, based on the estimated population of the State, was about one-fifth of that in the institutions. In a recent article the writer reported a study of the mortality in ten infant asylums located in different parts of the United States. The time covered from four to twenty years, taking the longest and the shortest intervals. The rates were based on the ratio between yearly admissions and death rates and varied from 31.7 to 75 per cent. Drs. Holselar and Rude of San Francisco reported a mortality in the foundling asylums of that city of 50 per cent. On boarding out babies with foster mothers in order to secure individual care, the mortality was reduced to 12 per cent. Other statistics were cited by the author which demonstrated beyond a shadow of a doubt that the mortality in these institutions was far higher than it should be; they also served to show that there was no uniform method of collecting data and keeping records, which were exceedingly necessary to show how and where sanitary work must be done and to exhibit the results of sanitary work already under way. In order to secure such knowledge certain specific facts should be given, which in reports accessible to the writer were rarely stated or properly analyzed. All facts that could present a fair picture of the health and hygienic condition of an institution should be carefully presented. Special care should be taken in keeping the records of babies under one year of age. The individual study of each baby should include the history on admission, age, physical condition, length, weight, general nutrition, previous feedings, history, and record of antecedent diseases. The babies should be classified or graded by ages on admission and physical condition, weight, length, and nourishment. Summaries could then be made, showing the average gain or loss under each heading. Comparisons could thus be made with non-institutional babies. There should also be kept a record of diseases acquired during the baby's stay in the institution. Summaries of individual records could then be made showng the number of cases of each disease, of communicable diseases and mixed infection, and these diseases could be classified as to their preventability. The final summaries should show the average age on admission, the average length of stay of those who lived and those who died, together with the total number of admissions and discharges. It would also be of interest to have a proper follow-up system, which could show among other data how many of those infants discharged before reaching the age of one year lived to be one year old.

Dr. HAMILL said he wished to thank Dr. Chapin for presenting this subject to them. Not only was the mortality enormously high and statistical data not definitely standardized, but in some institutions statistics were falsified. He knew of one institution where at a meeting of the Board of Managers it was stated that the mortality rate was 10.8 per cent. He had evidence that this was not correct, since he knew the medical staff in that institution. A physician was only called in when an infant was in a moribund condition, and yet that institution was permitted to exist. The responsibility rested with the medical profession.

Dr. LANGLEY PORTER of San Francisco said that the striking thing in connection with Dr. Rude's work in San Francisco was the reduction of the mortality rate from 65 per cent. to almost nil by a system of boarding out. The infants were carefully followed up by a nurse and a physician and in case of emergency a physician could be procured immediately. The foster mothers became attached to the babies and gave ready compliance to regulations, knowing that if they did not do so the babies would be promptly taken from them.

Dr. SOUTHWORTH said that such statistics as Dr Chapin desired would be very valuable but he did not have much hope that they could be obtained. He knew of one institution, no longer in existence, in which on every admission card was marked "hopeless." That covered all subsequent happenings.

Dr. JOHN MASON KNOX of Baltimore said that among 200 foundlings carefully followed up it was found that between 89 and 90 per cent. died. The 10 per cent. that lived had been taken from the institution for a time. No infant that had remained continuously in the institution lived. Either these institutions should be improved or foster homes should be found for the children. They had no trouble in Baltimore in getting good foster homes.

Dr. HENRY L. K. SHAW of Albany said he was very glad Dr. Chapin had brought this subject before them as he knew of no body of men better adapted to solve the problem than this Society. There were many difficulties and complexities involved in the collection and interpretation of statistics, but he thought that conditions had somewhat improved since Dr. Jacobi had stated that the mortality rate at Randall's Island was

100 per cent. The highest mortality rate was in institutions controlled by religious orders. A certain number of infants had to remain in institutions because of physical defects and because a child had to have certain requirements before it could be boarded out. It was important that they should get at the facts and improve existing conditions.

Dr. CHAPIN, in closing the discussion, said that the president of this society last year had said that it was one of the functions of this society to deal with subjects that touched the public at large and that they must recognize public health questions. One of the most important of these was the problem of infant mortality. While much had been done in the reduction of infant mortality, the thing that was doing more than any other to keep the death rate high was the mortality in institutions and still they allowed such insitutions to exist. The question was what could be done to prevent this high institutional mortality.

Tuesday, May 25—Second Day.

Some Studies on Sugar in Infant Feeding.—Dr. CHARLES HUNTER DUNN of Boston and Dr. LANGLEY PORTER of San Francisco presented this communication which gave the results of feeding high percentages of sugars of different varieties with special reference to urinary findings. In this series of tests there seemed to be no relation between the amount of sugar ingested and the amount excreted in the urine. The ingestion of maltose seemed to result in a greater amount of sugar in the urine than was found when lactose was given. In babies belonging to that class known as difficult feeding cases they had given sugar up to 12 and 14 per cent. and found that all gained in weight, while in some the gain was enormous. They concluded that the danger of sugar intoxication had been greatly exaggerated and that large amounts of sugar could be given in this class of infants with advantage, since the signs of sugar indigestion were easily recognized and could quickly be averted by lowering the amount of sugar.

Dr. SCHLOSS said he had been making investigations with reference to sugar in the urine by all the known methods for the determination of the reduction substances. He found sugar was present in the form of a monosaccharide.

Dr. HOLT pointed out that even though the child gained rapidly with the administration of large amounts of sugar for a short time and then a break came and the gain was lost, no real progress had been made. One of their greatest difficulties was to make children with an intolerance for carbohydrates gain in weight since one could use sugar only in small quantities. The reduction in the sugar content was probably one reason why infants fed on *eiweiss milch* did not gain; the idea that it was because the salts were not furnished, according to present theories, did not hold.

Dr. HENRY KOPLIK expressed the opinion that the sugars should be limited to normal quantities. If large quantities were given, the child gained, then stood still, and then lost. Nothing was gained in the long run by feeding large amounts of sugar.

Dr. GERSTENBERGER asked if the protein content of the food fed these children was also high. With a high protein content a higher percentage of sugar could be given.

Dr. DE WITT H. SHERMAN of Buffalo referred to tests that they had made as to the effects of the different sugars on gastric secretion. Six per cent. dextromaltose, cane, and milk sugars, dissolved in barley water were given. They found that the babies took all the solutions well; that cane sugar stimulated the secretions more than milk sugar; that dextromaltose stimulated the secretions twice as much as milk sugar. It was important to remember this in feeding infants with hypersensitive stomachs.

Dr. GRIFFITH said he had found that infants took from 10 to 13 per cent. of carbohydrates well. It was not a question of temporary gain. They had had better results with this method than with any other.

Dr. DUNN, in closing, said that in his series of cases the gain in weight was retained, fat intolerance might be caused by an excess of sugar or protein fermentation. The amount of protein in the food made a great difference in the sugar tolerance. The sugar should be boiled to avoid the possible bad effects of gas spores or other impurities that might be present. Finkelstein was now using higher percentages of sugar than formerly.

The Indications for Treatment in Severe Diarrhea in Infancy.—Drs. JOHN HOWLAND and W. MCKIM MARRIOTT of Baltimore considered a type of diarrhea which all recognized as particularly serious in infants. It was especially likely to occur in those infants that, as a result of diarrhea, were more or less mal-nourished. After perhaps a few days of mild diarrhea the stools became large, watery, and frequent. The infants were at first restless and sleepless; later it was frequent for stupor to develop, and oftentimes coma. The urine was very scanty and extremely acid, frequently containing albumen and casts, and sometimes sugar. Respiratory symptoms were very often present especially toward the close of the disease. These might consist in a slightly increased ventilation of the lungs or the disturbance might be so great as to amount to severe dyspnea. There was, however, no cyanosis. Post-mortem, the lesions were insignificant. This type of diarrhea had been called "toxicosis" by Czerny and "alimentary intoxication" by Finkelstein. During the past summer, many determinations had been made with reference to the alimentary air. In infants who had severe diarrhea, especially if dyspnea was present, the carbon dioxide tension was found to be very much lower than in health, and the more severe the dyspnea the lower the carbon dioxide tension. It was found also that as improvement took place, the tension rose. As low carbon dioxide tension was one of the evidences of an acidosis, other evidence of this had been sought. The blood serum had been examined by the phenolphthalein test of Sellards and it had been found that in infants with severe diarrhea, a change could be noticed varying from slight diminution in the color to complete absence of color. The hydrogen ion concentration of the serum had also been investigated and had been found to be increased. The urine of these infants had been found very scanty and strongly acid. These infants had a very marked tolerance for alkali, whether given by the mouth, intravenously, or subcutaneously; three, four, or even five times as much alkali had been required to cause an alkaline urine as in health. There was also evidence afforded by the influence of the alkali when given intravenously and subcutaneously. When the alkali had been taken in sufficient amount it had brought about a normal hydrogen ion concentration of the blood, had caused the Sellards test to give a deep purple with phenolphthalein, had stopped dyspnea, and had caused a return of the carbon dioxide tension of the alveolar air to normal, or even abnormally high limits. An examination of the urine for acetone bodies had usually been without result. In view of these findings it seemed perfectly fair to say that these patients suffered from acidosis and from a very severe acidosis. The acidosis was probably a relative one, caused by the loss of alkali from the intestines. It seemed therefore bad practice to give cathartics which would irritate an intestine already too irritated and cause a loss of material from the bowel which it was vitally necessary for the infant to retain. Unless an infant was distended, cathartics were contraindicated; opium was to be given in amount only sufficient to diminish the excessive diarrhea. It was also necessary to give soda by mouth, by rectum intravenously or subcutaneously. The intravenous was the method of choice, if a vein was accessible. It should be given in large doses to cause a cessation of the dyspnea and alkaline urine. This method of treatment improved the likelihood of recovery but did not mean that recovery would inevitably ensue. The severe acidosis might be combated and yet death might take place. In closing, Dr. Howland said that this condition should not be termed "food intoxication"; it was not due to the presence of abnormal substances, but to the absence of substances that were very normal and necessary to life.

Dr. GERSTENBERGER asked Dr. Howland what dosage of alkali he gave by the mouth and intravenously.

Dr. KOPLIK said that opium was a dangerous drug. It was difficult to gauge the dosage in severe cases of diarrhea in infants and he did not see why one should stop diarrhea and peristalsis which was nature's way of eliminating noxious substances. Years of clinical experience had taught him that it was best to treat babies without opium of any kind.

Dr. CHARLES GILMORE KERLEY of New York said opium was one of the best drugs they had if used in the right way. It was indicated in moderate doses sufficient to control the diarrhea.

Dr. ISAAC ABT of Chicago said he would like to hear Dr. Howland's opinion with reference to feeding these babies. The feeding was more important than the giving of alkalies. What dietary measures did he take to prevent acidosis?

Dr. BLACKADER of Montreal, Can., said he was in favor of giving small doses of opium in these cases. Opium sufficient to control the extreme peristalsis in these cases did a great deal of good. Dr. Koplik's statement should not be allowed to go out from this meeting without some modification.

Dr. MORSE said that the question as to whether opium was indicated or not depended on the individual case. If there was something in the bowel which should come out a cathartic was indicated; if the diarrhea was simply draining the tissues, then opium should be given. Another point brought out by this paper was that it was advisable to give alkalies before the appearance of severe symptoms.

Dr. TALBOT said he had recently been studying physiological acidosis, since it was necessary to know about acidosis in normal conditions in order to be able to make comparisons in pathological conditions. In studying 100 new born babies he had found the respiratory quotient very low on the second and third days of life. Such a low respiratory quotient had been found in diabetes and yet no acetone bodies were found in the urine. This substantiated Dr. Howland's statement that a low carbon dioxide tension was found in the alveolar air before acetone bodies were found in the urine.

Dr. HOWLAND, in closing, said a small amount of acetone bodies did not mean acidosis; it was only when the protective mechanism was brought into play that pathological acidosis was produced. When there were no fermentative or putrefactive substances in the bowel and the diarrhea was simply a protective process carried to the extreme, and accompanied by the excretion of a large amount of alkali, then opium should be given, but in small quantities, a few drops after each loose stool. He gave four grams of alkali at a time subcutaneously, five or six grams intravenously and three or four grams by the mouth at a time. The diet was extremely difficult to manage. The majority of these children died but with intelligent treatment it was possible to save more than if the indications for treatment were disregarded.

The Etiological Relationship of Syphilis to Chorea of Sydenham.—Dr. HENRY KOPLIK of New York read this paper. He stated that clinically there was an undoubted relationship between chorea and endocarditis and between chorea and rheumatic joint manifestations. Of late there had been an effort to connect chorea in an etiological way with syphilis. Arsenic had for decades been a favorite remedy for chorea, so that it was natural on the appearance of salvarsan that this remedy should have been tried. Bokai thought salvarsan was of great benefit in the treatment of chorea, especially in cutting short the duration of the affection. From this to the surmise that there was a connection between chorea and syphilis was but a step. The essayist reviewed the reports of various investigators who seems to have observed an association between these two conditions and stated that he had endeavored to enlighten himself as to this relationship. He had made observations on ten successive cases of chorea in his hospital service at the Post-Graduate Hospital. In five of these cases there was an endocarditis at the time of admission to the hospital with an evident lesion of the valves; in three there was a distinct history of rheumatism; in ten a Wassermann test was made, and in eight the result was satisfactorily negative. In two the reaction failed but was not positive. In all cases there was absolutely no stigmata of syphilis, hereditary or otherwise. The presence of syphilis might, of course, be an accidental find as there was no reason why a child affected with syphilis might not contract chorea just as readily as another. Nine children having chorea were injected with salvarsan in doses of varying size. In seven of these no striking amelioration of the symptoms such as had been reported was observed. In another case nephritis occurred and the child was ill for some weeks with chorea although recovery finally took place. In the opinion of the writer they had not in salvarsan an agent of any value above those hitherto employed in the treatment of chorea minor, nor were they warranted in tracing any relationship between chorea and hereditary or acquired syphilis.

Dr. HOOBLER said that Dr. Koplik stated that he had been able to obtain no positive findings from the blood culture in cases of chorea. The streptococcus viridans had been isolated four times from the blood of choreic patients at Bellevue Hospital and a number of times by English investigators.

Dr. E. W. SAUNDERS of St. Louis said that they did not have many definite signs in chorea but there was one sign which he had used for years which was very useful. That was that during the first septima of life when a child was asked to open his mouth he also separated his fingers. The choreic child lost this associated movement at once. He made it a practice to keep a child with chorea in bed and out of school until this association of movements returned.

Dr. ISAAC ABT of Chicago said he had used arsenic in the treatment of chorea for some years but noticed that its use was sometimes followed by neuritis. He had now abandoned the use of arsenic in chorea and relied upon the rest treatment and in cases in which rheumatism was present on the salicylates.

Dr. KOPLIK, in closing, said he had mentioned in his paper that others had found organisms in the blood of choreic patients, but that he had not been successful though he had taken cultures of as many as two dozen cases. He was rather annoyed that others could find organisms that he had been thus far unable to find. Arsenic was useful as a tonic in the treatment of chorea, but he felt rather uncertain as to its usefulness in the disease itself.

(*To be continued.*)

THE PRACTITIONERS' SOCIETY OF NEW YORK.

Two Hundred and Seventieth Regular Meeting, Held Friday, April 2, 1915.

Dr. WALTER B. JAMES IN THE CHAIR.

Notes on the Schick Reaction.—Dr. WILLIAM H. PARK made this presentation. He showed two students on whom he had tried the Schick test. Schick had made a test two years ago that was a reversal of the usual laboratory methods, that is he endeavored to get a negative reaction. Roemer had suggested the question whether a neutral mixture could be obtained by injection of toxin and antitoxin, together, intradermally. They now used this mixture of toxin and antitoxin, and if they had any free toxin present they got an inflammatory reaction. Schick tried to find out if there was any free antitoxin in the skin that would neutralize any toxin. He tried 1/50 of the fatal dose for a guinea pig. This was sufficient in a person to make a hyperaemia which later turned into a pigmentation. If, therefore, there was no antitoxin they got the direct effect of the slight toxin. It was the reverse of most reactions; if you got no reaction it showed you had antitoxin, as the toxin was neutralized. The positive reaction was the direct effect of the toxin on the skin. It must be done intradermally, not subcutaneously, with 1/10 c.c. fluid, with a tiny needle, and 1/50 fatal dose of toxin, but a little more did no harm. One of these students had shown a true reaction, with distinct hyperaemia and slight pigmentation, leaving later a brown pigmentation. The other man had a pseudo reaction, which came on more readily than the true reaction, and went more rapidly, leaving no pigmentation. In about 3 per cent. of the cases you got a pseudo reaction, and most experimenters learned to know them. Dr. Zingher had done about 1,000 of these tests and guessed absolutely. A very small amount would cause an anaphylactic reaction in a sensitized person and give a marked reaction.

Dr. LONGCOPE asked how soon the reaction came on.

Dr. PARK said the true reaction took about 36 hours; the pseudo, 24 hours.

Dr. MILLER asked if the test must be repeated if you got a pseudo reaction.

Dr. PARK said that if any pigmentation remained you had had a true reaction. It also gave slight constitutional symptoms.

Dr. LONGCOPE asked why one called a pseudo reaction anaphylactic.

Dr. PARK said they got it in sensitized animals as well as in 3 per cent. of human beings.

Dr. LONGCOPE asked if all patients with antitoxin gave a pseudo reaction.

Dr. PARK said that a pseudoreaction had nothing to do with antitoxin whatever.

Dr. EWING said, as he understood it, there were three types—a true reaction, a pseudo reaction, and no reaction.

Dr. PARK said if one had no reaction there was free antitoxin. The pseudoreaction had to be distinguished from the true. The true reaction was sometimes covered by the pseudo. Twenty-five per cent. of young adults had no reaction. The subject had numerous applications. Schick found that of people over 25 years,

85 per cent. had antitoxin; that is, in adults, only 15 per cent. could contract diphtheria. When, like the student shown, you had no antitoxin, you still might be immune. They were now trying to immunize all the children with the diphtheria bacilli, and not the toxin mixture, and so far they had had no case of diphtheria in the scarlet fever wards, although there were some carriers in the wards. They had found that all those who had antitoxin made antitoxin. The unfortunate group that had no antitoxin made no antitoxin. Diphtheria patients had antitoxin for two months. The diphtheria patients had a positive Schick when they came in. This test could be used to separate all that had antitoxin. Those with a negative Schick would be immune. Once immune you apparently stayed immune. Eighteen years ago Dr. Park said he had swallowed diphtheria bacilli and did not get diphtheria. Dr. Williams had a positive Schick then and now. With a positive Schick you might be susceptible and you might not be. After diphtheria all were immune for a few months, one-fourth to toxin and three-fourths to diphtheria bacilli reaction. A person with a positive diphtheria culture and a negative Schick was a carrier. The bacilli might be non-virulent. You might need to do a second test for antitoxin at the end of 14 days.

Dr. MEARA asked if you could render diphtheria patients immune by the use of the bacillus, as in active immunization.

Dr. PARK said the person had been immunized to the bacillus.

Dr. MEARA said he had understood Dr. Park to say there was usually no immunity.

Dr. PARK explained that there were two kinds of immunity—bactericidal and antitoxic.

Dr. MEARA asked if the recurrence of diphtheria were not unusual.

Dr. PARK said he believed that cases that were called recurrence were really croupous tonsillitis.

Dr. MILLER asked what was a unit for a dose, and if you got necrosis with a very strong reaction, and did the pseudo reaction vary with the character of the toxin.

Dr. PARK said the dose was 1/50 of a fatal dose; if no reaction occurred you doubled it and gave 1/25; if no reaction was obtained then you could give twenty times that amount; you could be sure of no reaction. With a strong toxin a true reaction could be very severe. The pseudo reaction varied with the toxin.

Dr. LONGCOPE asked if skin reactions were obtained with the bodies of the bacilli, and if most people gave a reaction to the bodies themselves.

Dr. PARK said in complement fixation they found very little reaction in the patients, although they were immune. The reaction to the toxin solution was more powerful than with bodies of the bacilli.

Dr. STARR asked if this test applied to anything except diphtheria.

Dr. PARK said no; he thought all other reactions were from the standpoint of sensitization. This was a reaction of the cells direct.

Dr. LONGCOPE asked if a similar reaction had been tried with tetanus toxin.

Dr. PARK said no, that that was a nerve reaction.

Autoplastic Tissue Grafting from Calf of Leg.—Dr. ABBE presented this patient, a girl, 10 years old, who had been knocked down by an automobile and run over two and one-half years before. The right heel had been torn off. The child had been walking for two years on the toes, with the help of a stick. She had a marked talipes equinus. The heel was covered by a thin scar with a hard, tender center crust. Dr. Abbe made a new heel by taking a flap from the calf of the opposite leg, putting the child's leg in plaster of Paris. The thick tissue from the calf made a beautiful cushion heel which would last a life time. The child could now walk, run, and play with other children. The graft had been taken off at the end of 14 days.

Dr. GIBSON said the result was very good. He had done the same thing with an autoplastic flap from the same leg by turning down a flap. The position of the patient was a little less irksome and the flap was fully as efficacious.

The Belgian Red Cross Hospitals of Dr. Depage.—Dr. GIBSON presented this paper (see Vol. 87, No. 17, p. 692).

In reply to a number of questions Dr. GIBSON said he had been most struck with the pluck and spirit of the Belgians in planning for the future. The work of organizing hospitals close to the firing line was being splendidly conducted. The hope was that as the Allied troops advanced former hospitals would be used as a base and new equipments would keep near the trenches. The great need was that the wounded should receive immediate attention. First care made all the difference in the world. The matter of getting to the front was surrounded with difficulties. He had seen no pneumonia. There was much typhoid in the British Army, owing to the fact that typhoid inoculation was voluntary, and the injections were so severe that many refused them. Tetanus, he thought, was a good deal localized. There was nothing done about intraspinal injection; they did not seem to have heard of it, and there was a lack of antitoxin in Belgium. He had heard a rumor that German surgeons were amputating more freely than the Allies. The latter seemed to be saving perfectly useless limbs in many cases. The whole town of Boulogne was practically an English hospital. They were using motor ambulances, mostly Ford. In Belgium these were useless as they broke down on the heavy roads. Mrs. Whitney had turned an old monastery into a hospital for 100 cases. In the American Hospital in Paris 400 cases were being treated. The French plan, however, had been not to bring the wounded to Paris at all. The reason for this was that the Germans had been within 15 miles of Paris. A very pressing need for base hospitals existed. Prompt removal of the wounded was possible in the rear trenches. In the front trenches they had to wait till nightfall, when they were taken in ambulances direct to hospital. The Germans fired upon the rescuers. Dr. Depage had told him that if the wounded did not die at once the mortality was under 10 per cent. There were often rifle wounds in the head. As to insanity, the men were often completely dazed, but after rest they recovered. He did not believe that one shell in 20 did any damage. Of the troops he thought the finest men were from England. The alcohol question had not come up when he was there, but he believed that there was more drinking in England than in other countries. In France the better classes did not drink. It was not considered good form.

MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Stated Meeting, Held April 19, 1915.

THE PRESIDENT, DR. THOMAS S. SOUTHWORTH, IN THE CHAIR.

Secretin and Its Therapeutic Possibilities.—Dr. J. WALLACE BEVERIDGE, after having referred to the wonderful advance in medicine which had been made during the past decade along the line of a better understanding of the physiological action of the ductless glands and their internal secretions, said that the hormone known as secretin, which was found in the epithelial cells of the mucosa of the duodenum, was unquestionably the most active stimulant to the pancreatic gland known to the physiologist and the internist. Following the earlier observations of Dolinski and Gottlieb and of Popilski, Wertheimer and Le Page, Baylis and Starling, in 1902, had demonstrated the fact that there was something more complex, as an activating agent to the pancreas, than the mere acid reflex previously observed. Pawlow then advanced the theory that such activating agent was not an acid which reflexly inhibited the secretion of the pancreas, but some unknown substance which increased the flow of pancreatic juice either through the circulation or by reflexly stimulating the nervous centers. Later, Baylis and Starling were able to demonstrate that Pawlow was right, and they were the first to prove by experimentation the presence of an excitant —a hormone—which was now designated as secretin. The theory that hormones play a vital part in the chemistry of digestion was thus firmly established; but although more than twelve years had elapsed since the discovery of secretin, little or no attempt had been made to utilize this most available and potent substance for the relief of pancreatic insufficiency and intestinal stasis—a fact perhaps largely due to the circumstance that no one had been able to produce artificially a secretion of sufficient activity to remain stable long enough to discover what results might be observed from its oral administration. The method first indicated by Baylis and Starling was intravenous injection, but this was not practicable because of its instability as prepared by them, which rendered such administration dangerous. Some English observers had asserted that no real physiological action resulted from the oral ad-

ministration of secretin, but from his personal observation he (Dr. Beveridge) was able to state positively that in certain conditions it could be given by the mouth without disappointment and with more advantage than from any other therapeutic agent. Chemically, it had not as yet been shown just what secretin really was. It was not a ferment, but a protein substance of low molecular weight whose activity was greatly impaired by boiling. Its stimulating action on the pancreas was not reflex, but a direct one carried through the blood-stream and probably affecting the secretory cell itself. Delezenne and Frouin had demonstrated that secretin also has an action which increases the supply of succus entericus, and Hallion had shown that, in addition, it increases peristalsis in the small and large intestine. Taking up the therapeutic possibilities of secretin, the speaker said that while he was doing considerable work in diabetes some years ago the interesting fact was noted that gastric hyperacidity occurred in over 80 per cent. of the 300 cases observed. It was reasonable to assume that if there were an excess stimulation, through an acid medium, of the delicate mechanism comprising the epithelial cell of the duodenum for a long period, a deterioration or a distinct destruction of the cell activity would result, and the ability of the cell to produce secretin would be greatly impaired, and, secondarily, the pancreas would to a great extent be unable to supply the secretion required for terminal digestion; and, as result of this condition, the protein molecule would be only partially broken down and the carbohydrate molecule remain in an incomplete state of separation. Theoretically, the exhibition of secretin should aid in overcoming the breaking down of these molecules; but clinically this was not found to be the fact, and in these cases—in which he gave secretin in periods ranging from three to seven months—in no instance had he observed any change in the sugar output. There was, however, a distinct action upon protein, though whether or not this was due to increased activity of the pancreatic secretion would require further investigation. It was a fact that after secretin had been taken for two or three weeks a material increase in the urea output was noted. In a series of over 100 cases of thyroidism accompanied by chronic constipation of from five months' to eight months' standing, intestinal stasis had been one of the predominating features observed. In conditions with chronic stasis the gastric acidity, at first increased, eventually became greatly diminished, and this would result in a marked decrease in the production of secretin in the duodenum, with accompanying reduction in the pancreatic secretion. When this occurred the protein molecules were never completely broken down, and one of the main etiological factors in all thyroid conditions was the absorption of excess of protein, or protein which had not been broken down to the amino acid stage required in normal digestion. In the medical treatment of stasis the mineral oils, while of great assistance, acted only in a mechanical way, having no physiological action whatever. In cases of impaired metabolism something more was needed than a mere mechanical agent, and secretin furnished a satisfactory solution of the problem. In it we had a substance which acted in two distinct ways: increasing peristalsis, and aiding in the normal digestion of protein. This series of cases were nearly all radiographed by Dr. A. J. Quimby, and he had reported that after the systematic administration of secretin stasis no longer existed. Furthermore, under this remedy the symptoms of malaise and the pains in the knees and calves of the leg, with severe headache, entirely disappeared. The urea output, which had been uniformly subnormal, became normal, and tachycardia, present in over 60 per cent. of the patients, was diminished. For the postoperative symptoms, such as severe constipation and continued vomiting, after such procedures as gastroenterostomy and jejunostomy secretin had proved of distinct value, and in nephritis of intestinal origin it was one of our most efficient therapeutic agents. Although in the way of clearing up indicanuria he did not believe it had such a direct beneficial influence as the culture of the *Bacillus bulgaricus*, through its action in stimulating peristalsis and assisting the complete digestion of protein it aided materially in ultimately overcoming intestinal putrefaction more thoroughly and permanently than could be effected by any other means. Eventually, also, the albumin disappeared from the urine. If secretin were prepared as it should be, there could be no question that distinct results would follow its administration by the mouth; but in standardizing this substance it was necessary that considerable care should be used in its preparation. For its artificial production the duodenum of the pig was preferable to that of other animals because of the varied character of the food eaten by the pig. The process employed by Dr. Beveridge was different from that advocated by Starling. After the duodenal mucosa had been scraped and cleaned it was macerated, and a small quantity of hydrochloric acid added. It was then heated in a beaker or other suitable vessel for from three to five hours and completely digested, the temperature never being permitted to rise above 210° F. During the process of heating from 1 to 2 per cent. of the salts of the blood serum were added, and finally, after filtering, sufficient glycerin and alcohol to preserve the preparation. Ordinarily secretin was an unstable, readily oxidizable product, and unless it was fixed in some way its activity was quickly lost. Furthermore, he had found that if secretin alone was injected into the blood-stream, no pancreatic secretory excitation occurred, and the same negative result followed the similar injection of an acid, of blood serum salts, or of Locke's physiological solution; but if secretin were thus injected in combination with serum salts or the Locke solution, there was noted an immediate response in the secretory activity of the pancreas. The same result was observed in the oral administration of secretin, and the addition to it of blood serum salts was therefore essential. By way of summary it might be said: (1) Secretin is indicated in all pancreatic insufficiencies in which true organic changes have not occurred. (2) It may be employed to advantage in secondarily aiding protein digestion. (3) It constitutes the most important factor in causing a low urea output to rise to normal. (4) It has no power to aid in the digestion or breaking down of the carbohydrate molecule. (5) It is indicated in gastroenterostomy and jejunostomy. (6) It is of distinct value in nephritis of intestinal origin. (7) It increases peristalsis and is indicated in all cases of intestinal stasis.

Dr. William Van Valzah Hayes said that up to the present there had been some uncertainty regarding the action of secretin because it had not been sufficiently standardized. Personally, his practical experience with it had not been large on this account, and he was very glad to have the definite information on the subject given by Dr. Beveridge. If we had an entirely reliable preparation which could be administered by the mouth it would undoubtedly be a very valuable addition to our therapeutic resources. In some cases he had observed secretin had appeared to do wonders. As to its action in the stomach he would like to ask Dr. Beveridge how it affected the gastric secretion—did it increase the hyperacidity? If by means of it we could increase a low urea output it would certainly be a great gain. The medical profession, he thought, had not yet availed itself of the great possibilities of this agent because there had been no standardized, dependable preparation for general use, and it was to be hoped that the expense of such a preparation would not be prohibitive.

Dr. Rolfe Kingsley said that nearly all those using secretin had, because of its having a characteristic action, employed it in the treatment of diabetes, but it had been found to have no effect on the sugar in the urine. It was observed, however, that diabetics taking it gained in weight and were greatly improved in general health. This was now explained by Dr. Beveridge, who had shown the favorable action of secretin on protein metabolim and its effect in relieving intestinal stasis. Some years ago this agent was employed in about thirty cases of diabetes at the Vanderbilt Clinic, under the supposition that in its action on the pancreas was included an effect on the islands of Langerhans, but the results observed were entirely disappointing. Dr. Beveridge had stated that in the preparation of secretin it was essential that the boiling point should be avoided, but it was a fact that the secretin used at the clinic had been boiled for four hours.

Dr. Henry R. Harrower, having urged the need for a more extended consideration by the profession of the therapeutic possibilities of secretin, said he recalled some experiences in the treatment of conditions associated with low total solids in which the urea output was materially increased after a course of buttermilk given several times a day, and it seemed to him very likely that the lactic acid acted in the same way as the normal gastric acid, by releasing prosecretin from the duodenal mucosa and thus stimulating the whole digestive process. An important field for the use of

secretin preparations was in the digestive disturbances of children, especially summer diarrheas and marasmus, and he had published a paper regarding this in *Pediatrics* in 1913. Here the good effect was no doubt largely due to the re-establishment of the normal production of the digestive juices, the most efficient of all gastrointestinal antiseptics. Another field for the use of secretin which had not been mentioned was cancer, on account of the value of this agent as a means of promoting nutrition. In sarcoma, achlorhydria was the rule, and secretin liberation was reduced to a minimum because of the lack of the hydrochloric acid stimulus to the duodenum; hence, the exhibition of secretin, although it had no influence on the disease itself, would act as a natural stimulus to the digestive cycle, and should therefore prove of material service.

Dr. WILLIAM E. FITCH said that notwithstanding the contention of some of the English authorities that secretin has no physiological action when administered by the mouth, his personal experience had thoroughly convinced him that it is a potent agent when given in this way. In his own case its oral use had completely relieved him of intestinal stasis. When he stopped its employment for a time he found that the symptoms returned, as evidenced especially by putrid gases and putrid stools; but, after he had taken for a few days a dram of secretin solution three times a day these entirely disappeared. From his personal experience, therefore, as well as from his observation of its effects on others, he was an enthusiast for secretin.

Dr. A. JUDSON QUIMBY said that after having seen so many of the worst types of stasis, such as often come to the *x*-ray specialist for examination, the impressions received from the examination, following the taking of a bismuth meal, of the intestinal tract of patients who had been treated by secretin had been very gratifying. Practically no ileal stasis existed, and the delay in the colon was materially reduced. If, in the *x*-ray examination, the ileal contents were seen to remain very flocculent or fluid, and pass through the lower ileal coils in a thin stream, so that the colon received the entire amount within the normal period after the meal had left the stomach, it could be asserted that ileal stasis was absent. Again, after the administration of paraffin oils and similar laxatives this flocculent appearance of the contents of the upper ileum was frequently noted. These characteristics were observed by him in the cases treated by secretin and submitted for *x*-ray examination. Having followed with interest the progress of the several patients so examined from time to time during their treatment with secretin, he could say that he had been suprised and delighted at the remarkable improvement shown in their condition.

Dr. BEVERIDGE, in answer to Dr. Hayes' question, stated that in his cases gastric hyperacidity often seemed to have been improved.

Books Received.

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INTERNATIONAL HEALTH COMMISSION. Rockefeller Foundation. First Annual Report, June 27th, 1913-December 31, 1914. 98 pages.

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Original Articles.

AN ADULT WITH STATUS THYMICO-LYMPHATICUS OF THE HETEROSEXUAL CHROMAFFIN TYPE.

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VISITING PHYSICIAN TO THE FLUSHING HOSPITAL.

CASE reports of patients who show evidences of status thymico-lymphaticus are not many except as the condition has been uncovered at autopsy. In those few instances, where the diagnosis has been successfully made during life, the heterosexual characteristics have been depended upon to reveal this state and no especial effort has been made to detail other clinical associations. At autopsy, the incidence of status thymicus is known to be large, probably as many as three out of each hundred persons having what may be termed a pathological thymus gland. It assumes great importance in infections associated with nutritional disturbances, as such individuals are known to have low resisting powers. Hitherto, attention has been largely directed to sudden death in children, especially during anesthesia. The possibility of sudden death in adult life has not received much notice. Its importance as a factor in the etiology of exophthalmic goiter has been realized only lately (Halsted[1]), and especially in the treatment of that disorder by *x*-ray (Waters[2]). There has been no general attempt to study abnormal sexual events such as delayed puberty and climacteric from this standpoint and especially the neurotic disorders of the climacteric period. Thymic gland feeding has been shown in one case to have developed sexual life in a boy (Kerley and Beebe[3]). So little is really known of thymic glandular physiology, or of the influences which tend to its persistence or which tend to inhibit its normal involution that it will be best to define the terms to be used and temporarily justify the classification suggested by the title.

Unfortunately an attempt of this character is not possible without the appearance of drawing conclusions however innocent intent may be. In any event, further experience will modify conceptions. The term "status thymicus" will be used to indicate the presence of an enlarged thymus gland irrespective of its activity and irrespective of whether it should be classed as a permanent persistence of a gland enlarged at birth, whether it should be classed as a gland which has simply failed to properly involve, or whether reenlargement has occurred following normal involution. No standard of normality has ever been satisfactorily demonstrated, Hammar's work[4] probably approaching closer to accuracy than any other. His conclusions are based on the findings at autopsies of normal people of good nutrition who had died by accident. Nor is there any clinical measure of its normal or pathological activity at different periods of life. In conditions of hyperactivity other endocrine glands are sooner or later involved, such as the chromaffin system, the hypophysis, the thyroid, the lymphatic structures generally, and possibly the pancreas. This case, with others to be reported later, is assumed to be an instance of hyperthymization (at least during middle life), the diagnosis resting on primary and secondary symptomatology and the obviously hyperplastic condition of the gland as shown by fluoroscope and skiagram.

The old term "status lymphaticus" should be discarded until it can be shown that a genuine lymphatic struma exists without status thymicus. The complex which was formerly so-called, and which is held responsible for sudden infantile death and ether collapse is in reality as suggested by Wiesel,[5] status thymico-lymphaticus. This term presupposes a hyperplastic thymus associated with hypoplasia or hyperplasia of the mesenteric and retroperitoneal glands and general change in the enteric lymphoid tissue. The superficial lymph nodes of the body, including the tonsils, and the nasopharyngeal lymphoid tissue are sometimes involved and there is often found a lingual tonsil.

To this syndrome should be added the secondary heterosexual characteristics described by Haven Emerson,[6] viz., scantiness of hair and its distribution which with the general corporal contour, all tend to approximate that of the opposite sex. These characteristics place the diagnosis of status thymico-lymphaticus, though indirect, on a firm basis. No feasible method of establishing a diagnosis in status thymicus without these sexual evidences has yet been advanced. There are some reasons for believing that cases showing the sexual characteristics should be classified as preadolescent types, and that others not showing these characteristics should be classed as post-adolescent types, or perhaps cases of true thymus hyperplasticus.

As pointed out, status thymicus is known to be associated sooner or later with other ductless gland disturbances, apparently on the principle enunciated by Marie that oft-repeated hypersecretion of a ductless gland eventually leads to exhaustion, or that a condition of exhaustion may immediately obtain if the irritation is sufficiently intense to overpower. Low blood pressure and chromaffin exhaustion have long been associated with the thymic state, and the association confirmed at autopsy. From a pathological standpoint the association with chromaffin hyperplasia has also been noted. If, therefore, "status thymico-lymphaticus of the heterosexual chromaffin type" is used to describe the primary conditions found, the involvement of other endocrine glands than the thymus is presumed from the clinical ensemble.

Agnes C. was one of the first cases studied. The problem was to demonstrate the presence of the gland by some direct method of examination. The *x*-ray plate (Fig. 3) did this, but no other method would have served the purpose. In outlining the

Fig. 1.—Agnes C., (Flushing Hospital, Ward No. 353, Medical). Status thymico-lymphaticus of the heterosexual chromaffin type. Note the masculine contour of the face, neck, chest, and especially of the arm, with the biceps taut. The breasts during middle life were never large and are now atrophied. The hands are coarse and of a masculine type. The front hair is false, her own being short and scanty. (Photo by Russell.)

heart, percussion led to false conclusions, as the presence of tuberculous lesions near the right auricle and left ventricle changed the character of the note at a point external to actual cardiac dullness. This being true with reference to such a constant organ as the heart, and the impossibility of definitely excluding tuberculosis in the region of the thymus except by *x*-ray defeated attempts at the diagnosis of enlarged thymus by percussion. After viewing the plate, it was thought that auscultatory percussion and auscultation of the voice yielded some changes, but the results were not sufficiently definite. The organ could be roughly outlined under very favorable conditions by the fluoroscope, but the tuberculous lesions again prevented the characteristic movements (*vide* Houghton[7]).

The medical history of Agnes C. is tedious. Patients of this class are usually sickly and their complaints varied. Often these complaints are assumed to be without significance, but viewed from the standpoint of endocrine disturbance, these subjective symptoms appear in a new light.

Agnes R. C., aged 56 years, a widow of ten years, and one child now 26 years of age. She is a "practical nurse." Referred by Dr. F. L. Satterlee, Sr.

Complaints.—Dyspnea on exertion. Headache, parietal, daily. Feels as if her heart were "too big for her body," a symptom from which she has suffered for many years. The heart occasionally stops and starts with a bound. She has occasional acute pains in her ovaries.

Family History.—Her father died suddenly from heart failure; had been sick in bed some time prior to death. The heart is said to have failed during an attack of acute indigestion at the age of 76. Her mother died at the age of 76 from cancer of the uterus. She had been a nervous invalid for many years before climacteric, but the later years of her life were comfortable. Nothing further is known of previous generations. A brother in middle life has had paralysis; a brother died in infancy from "dropsy following measles;" a sister died of smallpox; a brother died of pneumonia at 52 years; a brother died at 40 of "heart trouble;" a sister died of cancer of the breast; a sister died in adult life of "clot on the brain;" a sister died at 3 months suddenly of "congestion of the lungs."

Early Life.—She was breast-fed. At nine days of age an attack of "whooping-cough" began from which she did not recover for many months. Measles at 5 years of age. Suffered much from ear-ache. Otherwise her childhood appeared to be a normal one. She was fond of play and her parents apparently indulged her a good deal.

Menstrual and Sexual History.—She began to menstruate at 15 years of age. She was married at 26 years. Between these two dates her menstrual periods were painful, the pain coming on coincident with the flow, and the amount of flow was scanty. She could always tell when periods were impending by the frontal headache which preceded them and lasted 24 hours. These were accompanied by attacks of intense nervousness, which usually lasted through the flow. Three to four day flow. After marriage these symptoms lessened. At 27 years of age had a five months miscarriage from unknown causes. This was followed by a phlebitis of the left arm and leg, the marks of which in the form of enlarged veins are still apparent. At 30 years she had a living female child. During the early months of pregnancy she suffered much from vomiting, and in the later months from headache. The fifth month of gestation was accompanied by an attack of paralysis which involved the left side, arm and leg, and which persisted until the child was born. I have been unable to learn the exact nature of this illness. She has no signs of this now. At 52 years of age her

Fig. 2.—The colon forty-eight hours after ingestion of the bismuth meal, and showing complete ptosis and elongation of the transverse colon and the presence of fecoliths in the cecum. The position of the hepatic flexure is normal, but the fixed position of the median portion of the transverse colon in contact with the cecum in successive pictures suggests the presence of adhesions. The usual preparation for *x*-ray examination was supposed to leave the gastrointestinal tract comparatively clean, but the presence of these hardened masses, some of which were subsequently recovered, raise the question as to how long they have been there, by what they had been caused, and what other effect than the presence of large amounts of indican in the urine, have they had on the organism. (Radiograph by Dr. F. L. Satterlee, Jr.)

climacteric began and lasted for three years. It was accompanied by intense nervous reactions, "hot flashes," palpitation, and headache.

History during Middle Life.—After the miscarriage she noticed that "her heart was going bad." This consisted chiefly of attacks of palpitation which sometimes

lasted for half a day and which weakened her a great deal. Her physician said that she had no organic difficulty, but that it was a "nervous heart." Another told her that the attacks came from "indigestion." She was told not to do any large amount of work and to rest frequently.

For ten winters, beginning at 32 years of age, she had periods lasting from two weeks to two months of what she termed "grip." They were characterized by coughing of the tracheal type, no expectoration of account and no fever. Following the birth of her child at 32 years of age she had a "torn womb" with backache. The tear was repaired, and the cervical stitches were accidentally left in. This operation was followed by three attacks (severe) of "nervous prostration" during the following nine months. Inquiry elicited the fact that during this period her chief complaint was early tire on exertion and muscular weakness.*

As she complained of metrorrhagia, a physician examined her and found the stitches. She was then again operated upon, a femoral hernia was repaired and the stitches which had apparently caused the nervous condition, were removed. The uterus was also curetted, and some surgical work was done on the rectum of which she does not know the nature. Her appendix was also removed. She was very sick for days after the operation and was finally told by the surgeon that she had collapsed on the operating table and that all the work which he had intended to do had not been done.

The nervousness continued, and at 46 she began to complain of digestive symptoms. These finally crystallized themselves into the following: Attacks sudden,

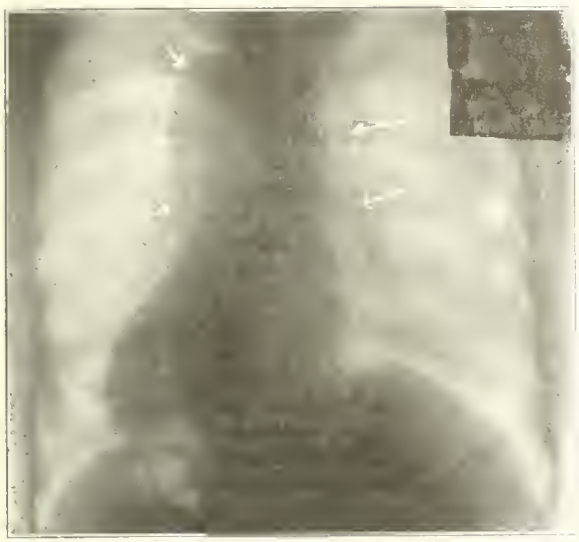

Fig. 3.—Showing the typical appearance of the chest x-ray picture in status thymicolymphaticus. The shadow of the thymic gland is marked by the arrows. The aortic arch and cardia are ptosed and the aorta presumably elongated. Premature calcification of the ribs is very evident in the original plate. (Radiograph by Dr. F. L. Satterlee, Jr.)

coming on at any time without cause, and consisting of pain in the abdomen. She would lie flat on her face, unable to move until they eased. This was finally diagnosed as gallstones and she was operated upon. This was at 53 years of age. She was eleven weeks in bed with a phlebitis of both legs. For a time she was much better of her symptoms (excepting the nervousness), but a year ago they began to return and she was advised to be operated upon again for the gall-bladder trouble. She went to the hospital for that purpose, and when her medical history was taken, and compared with her previous record at a former hospital, she was told that to operate her would mean "sure death" and that they would under no circumstances give her ether. The

*It is evident from my cases that this is a most characteristic symptom of status thymicus. The typical history as given by a patient recently is "I awake in the morning feeling splendidly though the night's sleep may have been poor. My first thought is as to how much I can accomplish during the day. After a good breakfast, I take a walk as I have been advised to do, and before I have gone two blocks I begin to feel tired. If I continue, I am compelled to sit down and rest before a half mile is covered, and for the rest of the day my strength is gone."

digestive symptoms have persisted but are growing milder.

Four months ago she went to Dr. Satterlee, whom she had not seen for several years, complaining of her heart and dyspnea. He found that her systolic arterial pressure was 262 mm. Between that time and the time when I first saw her, she was treated with aconite in small doses. Once, Dr. Satterlee informs me, the pressure touched 230 mm. of mercury. During the week previous to my first examination, medication had been discontinued.

The General Examination.—The picture illustrates the general masculine contour better than any description. The legs and feet were in harmony with the evident structural trend. The bones themselves were inclined to be small. The pupillary and various tendon reactions were inclined to be hyperactive. The skin presented a muddy appearance, though this was not marked. A possible hypothyroidism was indicated by freedom from moisture (she states that she never sweats) and by a slightly enlarged but firmly knit thyroid gland. The hair had the typical distribution. That of the head was sparse, short, and coarse. Occasional hair on the face. The axillary and pubic hair was scant, and the latter showed the masculine distribution. The skin of the abdomen was loose, with little subcutaneous fat, and scaly in areas. It apparently had no life. She stated that all her life, "black and blue spots" from bruises persisted longer than they do in normal people, and appeared with less contusion. The nails were broad and thick, and presented longitudinal rugæ. There was marked dermagraphia (which disappeared after treatment) and erythema, multiformis which rapidly appeared and disappeared especially on the chest. The breast tissue had atrophied. The nipples were small.

The physical examination of the chest revealed various areas of moderate emphysema, and prolonged expiratory murmur with moderate rise in pitch. The percussion boundaries of the heart would have led to a diagnosis of cardiac dilatation had not the examination been checked by the x-ray plate. The thymic shadow is sufficiently characteristic so that a diagnosis would have been possible without further evidence. The action of the heart was strong, perhaps too much so even with the high arterial tension. There was a marked shortening of the systolic pause, and a slight soft systolic murmur heard best in the sixth interspace on the right side. The spleen and the liver were both normal in size. There was a deep boggy feel in the iliac regions, and fecoliths could be distinctly palpated. There was sufficient weakness with ptosis of the anterior abdominal wall to justify a diagnosis of general enteroptosis. Right kidney movable. The uterus was slightly enlarged and partially fixed in moderate retroversion. Apparently there was a small fibroid near the left cornu. The left ovary was slightly enlarged and prolapsed. Perineum normal.

The nose and throat examination by Dr. Bardes disclosed no lymphatic hypertrophy in the turbinates. Lingual tonsil and adenoids absent. The tonsils were present but normal involution had occurred.

Laboratory Examinations. (By Dr. A. F. A. Wiggers.) The Urine: 24-hour specimen; 1000 c.c. passed. Sp. grav. 1.018; clear, amphoteric. Negative as to albumin by heat, Robert's test and Esbach's test. Negative as to sugar. Diazo, acetone, and bile, negative. On a basis of + as normal, the indican was ++++. There were a few hyaline, and coarse granular casts, a few oxalate crystals in the sediment.

Gastric Contents:* Test meal withdrawn one hour after administration: Free acidity, 24; combined, 56; total, 80. Microscopic examination negative.

The Blood: Total erythrocytes, 5,000,000; hemoglobin, 95%; index, .95; otherwise negative; total whites, 5,800; polymorphonuclears, 67%; small lymphocytes, 30%; large lymphocytes, 2%; eosionphiles, 1%.

A raw beef sandwich was given late in the evening and the stool of the following afternoon examined; it was a formed, brown stool of normal odor. There was nothing suggestive macroscopically. Microscopically, the food had been well digested. The muscle fibers were either faint or had disappeared and there was no indication of parasites. The differential bacterial count revealed a decided tendency toward suppression of the

*I was unable to obtain a satisfactory specimen of duodenal fluid. This often occurs in patients who on x-ray examination show a marked gastroptosis with gastric myasthenia.

coliform type and predominance of the Gram-positive cocci.*

		Normal
Gram negative organisms:		
B. coli type	5.9	45.9
Other negative rods	12.0	25.3
Negative cocci	21.8	8.4
Gram positive organisms:		
Positive rods	9.4	5.7
Positive cocci	51.3	11.3
Oval free spores	0.0	1.4
Spherical spores	0.0	.9

The approximate relation of living to dead bacteria as shown by capacity to take stain, 1 to 2.

The Report of the Radiographer, Dr. F. L. Satterlee, Jr., is as follows: The stomach presents a seven inch ptosis, with appropriate ptosis of the transverse colon as shown. The stomach is large and myasthenic, the peristalsis slow (by fluoroscope), and the peristaltic indentations shallow. The cecum and hepatic flexure were in normal position; the former was dilated. The transverse colon was looped. The general motility of the colon was slow and the presence of fecoliths plainly outlined.

Discussion.—The diagnosis of status thymico-lymphaticus appears to be complete, as shown by the portraits and the *x*-ray plate of the chest. The masculine contour, the sparsity and distribution of the hair, the presence of a few enlarged lymph glands in the groin, the aortic and cardiac ptosis are all parts of a complete clinical picture. It remains therefore to draw attention to certain clinical associations, the presence of which may disclose leads for future observation in other morbid conditions.

The Family History.—The association of chromaffin disturbance as shown by the high blood pressure appears in other members of this family, both in the same and in preceding generations. There have been no known instances of sudden infantile deaths† so far as could be learned, nor is it possible to obtain a history of difficulty in breathing after birth, which is often obtainable. Agnes C. has a daughter now twenty-two years of age who is said to be a "nervous wreck," and who has a "neurotic heart," which often keeps her in bed. She in turn has a daughter now two years of age. There was slow nutritional development in this child during the first year of life. They live at a distance and the opportunity to examine them has not presented itself.

Sexual Life.—This shows a marked deviation from the normal. Puberty and climacteric were both delayed. Neurotic disorders attending early menstrual periods, the flow was painful and scanty and the pregnancies were attended by unusually severe toxic symptoms. The climacteric period lasted three years and was of a type which is familiar to every physician, for so little success attends its treatment. There is some ill-defined antagonism between the glands of generation and the pars posterior of the hypophysis on the one hand and the thymic gland on the other. Under-development of the sexual organs, penis and testicles of under-size, accompany status thymico-lymphaticus and are external manifestations of that condition making possible a diagnosis in certain instances (v. Neusser[9]). In this connection the case of Kerley and Beebe[3] above referred to is interesting. The thymus gland persists in eunuchs. Anomalies of menstruation might profitably be regarded as manifestations of endocrine perversions such as hypothyroidism and thymic subinvolution and treated as such. The results might justify the attempt.

Anesthesia in Status Thymico-lymphaticus.—This patient has undergone two major abdominal operations. The first was apparently uneventful. The second was accompanied by collapse. The third was never attempted, for evidently the true condition was suspected. It does not appear, therefore, that all status thymicus or status thymico-lymphaticus cases pass out when under ether. Nor is it conceivable that this is true even in infants. Lange[10] has suggested that enlarged tonsils are simply manifestations of thymic activity, and that the involution of those lymphoid nodules accompany the normal involution of the thymus. What is the determining factor—the one that results in death? There is some good evidence that sudden enlargement may be concerned in the result.[11] It is to be noted that in Haven Emerson's series,[6] which consisted of 288 cases at autopsy, no other cause could be found in twenty-six cases (9.02 per cent.). Death in adults has rarely been attributed to the thymus gland alone, and only at autopsy. Yet here is evidence that the thymic state is concerned to some extent. In adults thymic death is a cardiac death; in children, respiratory. It may occur independent of shock or etherization. Some unknown factor participates, the nature of which is not yet clear.

The Gastrointestinal Tract.—So far as examination could disclose the digestive and assimilative powers of Agnes C. were normal. There was an excess of indican in the urine which proved on observation to be persistent. Obviously this is traceable to the fecoliths in the flexures of the colon, or the partial stasis. She did not complain of constipation and were it not for the *x*-rays nothing would have been known about constipation. In this case, the indican is a manifestation of colon irritation and fecolithiasis rather than poor protein assimilation in the small intestine. The *x*-ray plate also shows the complete ptosis of the transverse colon and of the splenic flexure. The hepatic has retained its position. This appears to accompany the ptosis of the cardia and aortic arch and harmonizes with the chest findings. It appears to be a reflexion of the lack of general tone, muscular and otherwise. One cannot refrain from calling attention to the fact that the enteric, retroperitoneal and mesenteric lymph nodes are presumably enlarged, as they are in all such cases. v. Neusser[9] in his monograph devotes attention almost exclusively to the sexual associations of status thymico-lymphaticus, but calls especial attention to what he calls the abnormal length of bowel which he noted at autopsy. This is practically "ptosis." Shiota[11] also speaks of the abnormal length of appendix found in his series. Lymphoid tissue is scattered throughout the intestinal tract and is especially highly developed in the appendix. The association of lymphoid exhaustion or hyperplasia in those who suffer from chronic appendicitis has been noted many times before, and here again it is customary to speak of normal involution of the appendix, or "recessional" cases.

Calcium Metabolism.—In Agnes C., calcium metabolism has been abnormal, as shown by premature calcification of the ribs. Radiographers have been in-

*After the method employed by MacNeal, Latzer, and Kerr.[5] The results obtained from a routine examination of the bacteria of the stools by this method have convinced me of its consistency, the counts in presumably normal people showing constant relations. As in the above case, many show variations, but clinical associations have not been sufficiently constant to warrant any conclusions. The relation of "living" to "dead" bacteria in this case is very high, such as is usually found with hypermotility of the gastrointestinal tract, as in gastrogenic diarrhea.

†A possible exception is the death of a sister at 3 months of "congestion of the lungs." The patient was unable to detail this event, except that the child was sick only 24 hours and the chief symptom was dyspnea.

clined to attribute this to pulmonary tuberculosis. Status thymicus is often accompanied by tuberculosis and it would be impossible to state which is the primary cause in this case. There are many who hold that rickets is a disease caused by abnormal conditions of the thymus gland.

The Blood.—The hemoglobin and hemoglobin index were normal. Before treatment the differential leucocyte count was normal and there was absence of the typical thymic picture of lymphocytosis of the mono-type. The institution of treatment by *x*-ray irradiations applied to the thymic area apparently caused the thymic picture to appear.

Total white cells 5,000; polymorphonuclears, 50 per cent.; small lymphocytes, 42 per cent.; large lymphocytes, 6 per cent.; eosinophiles, 2 per cent.

Pappenheimer has noted that after surgical removal of the thymus gland from white rats the relative proportion of lymphocytes in the blood diminished for the first few weeks after operation.

The Vascular System.—The association with high arterial tension as manifesting hyperplasia of the chromaffin system is important from many standpoints. The classical association with status thymico-lymphaticus is that of hypotension or chromaffin exhaustion (Wiesel[12]). *X*-ray treatment directed to the thymic region caused a marked lowering of the hypertension, in this case the pressure going in less than a week and after two treatments from 265 mm. to 195 mm. (administration of 4 H. units). There was a tendency to rebound, but it has failed to return to the old high level. The pressure seems to be exceedingly sensitive to the *x*-ray, ½ H. for purposes of fluoroscopy causing a marked drop. The decline was of course accompanied by the usual muscular weakness which follows reduction by other methods such as bleeding and aconite.

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IDIOPATHIC HEMORRHAGIC MULTIPLE SARCOMA OF THE SKIN (KAPOSI).

WITH SPECIAL REFERENCE TO EARLY DIAGNOSIS.

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THE early recognition of some of the rarer and more obscure dermatoses which the specialist now and then encounters, not infrequently constitutes a powerful weapon of defense, therapeutically, much in the same way as it does in syphilis, cancer, and many other maladies. This is especially true of those diseases of the skin, fortunately few in number, in which the prognosis as to life is very unfavorable, as, for example, mycosis fungoides and pemphigus. Unfortunately, the great majority of patients afflicted with grave disorders of the skin first come within the ken of the expert diagnostician (especially in dispensary practice) at a time when the malady has already made serious inroads and the damage is irreparable, or, at the most, when it is in such a stage as to lend itself only to palliative measures. It is quite likely that the high mortality figures of certain insidious dermatoses, such as the two diseases above mentioned, would be greatly lowered were it always possible to recognize the clinical manifestations of such maladies in their very incipience, and thus be enabled to take offensive measures in good time.

Diagnosis based on the recognition or identification of the earliest manifestations of certain cutaneous affections is often beset with difficulties, more especially in those instances where, for one reason or another, excision of tissue for microscopic investigation is impracticable, or where permission for biopsy cannot be obtained. We must also admit, incidentally, that even microscopic studies of early lesions, in cases clinically obscure and unidentifiable, do not invariably supply us with the missing links in the chain of diagnostic polemics. A puzzling clinical picture frequently goes hand in hand with a perplexing, or rather an undecisive, histopathological section.

Generally speaking, the clinical diagnosis of the vast majority of skin diseases rests upon either the peculiarities of an individual characteristic lesion, such as the flat, glistening, papule of lichen planus, the unbilicated body of molluscum contagiosum, the "apple-jelly" nodule of lupus, the cupped crust of favus, etc., or, on the other hand, it is dependent upon the appearance of the whole or the greater part of the eruption, as in pityriasis rosea, mycosis fungoides, xeroderma pigmentosum, the various drug eruptions, the acute exanthemata, etc. Oftentimes we are confronted with eruptions in which both these factors have to be carefully considered, *i.e.* the individual efflorescences themselves, as well as their arrangement, distribution and areas of predilection—before we are able to arrive at the correct interpretation of the lesions. An isolated patch of pityriasis rosea, for example, may very easily be confounded with ringworm, syphilis, seborrhoic eczema, etc., if the rest of the eruption be ignored or overlooked. The same holds true for many diseases of the skin—their diagnosis is based upon the *tout ensemble,* rather than upon any individual lesion.

The case herewith recorded is an interesting and unusual example of a dermatosis which, seen in its earliest stages, presents a clinical picture subject to various interpretations. The fact that a microscopic examination served to remove all doubts as to the true nature of the disease does not in any way detract from the interest which attaches to the case. It is reported partly on account of its rarity, but chiefly to emphasize the points mentioned in the preceding paragraphs.

The patient, Mr. R., aged 51, married, was referred to the writer by Dr. Louis Jacobs, of New York. He is a Hebrew, born in Galicia. His family and personal histories are entirely negative. His parents died of old age. He is the father of eight healthy children. He does not remember ever having had any illness.

Examination.—The patient is a healthy looking, mus-

cular and wiry individual, who appears to be much younger than his given age. General physical examination reveals nothing abnormal. The Wassermann test, urinary and blood examinations are negative. There is no adenitis; the mucosæ appear to be normal.

Fig. 1.—Idiopathic hemorrhagic multiple sarcoma of the skin (Kaposi). Showing the plague on the tip of the nose and the small nodule beneath the left eye.

The eruption first appeared about six months ago, in the shape of bluish spots on the inner surface of the left thigh, unaccompanied by pain, itching, or other sensation. A month later, he noticed a small, purplish patch on the tip of the nose and a small elevated nodule underneath the left eyelid. Since that time, new lesions of similar appearance, occurring on the lower extremities, attracted his attention. One of these, situated on the dorsum of the left foot, was slightly tender on pressure.

Eruption. The distribution and appearance of the lesions were as follows: A hemispherical, split pea sized nodule located just beneath the lower eyelid on the left side. It had the solid consistency of an unresolved acne papule, was dark purplish-blue in color, rather sharply defined, deeply imbedded in the skin, and smooth to the touch. It presented a glistening surface. On pressure with a piece of glass the color faded considerably, suggesting a growth of angioma-like structure.

On the left side of the tip of the nose, occupying an area about the size of a dime, was a light violaceous plaque, circular in outline, rather well defined, the surface being smooth, glistening and level with the surrounding skin. On palpation, no infiltration or other change in the consistence of the patch could be felt. Pressure here elicited slight pain.

Midway between the wrist and elbow joints, on the flexor surface of the right forearm, was a lentil sized, slightly elevated, reddish violet, flat papule, its periphery sharply defined, its surface smooth and glistening. It was slightly infiltrated.

On the inner surface of the left thigh, midway between the groin and knee, were three separate lesions consisting of slightly raised, smooth, purple plum colored, flattened nodules, each about the size of a dime. At their edges, the purple color gradually faded off to a light violet. The palpating finger met with distinct resistance in these lesions.

On the dorsum of the left foot, overlying the flexor tendon of the great toe, was a dark purple patch, roughly oblong in shape, three-quarters by a half inch in size and considerably raised above the level of the surrounding skin. The edges were sharply defined, the surface rough and hard to the touch, simulating an ordinary callosity.

On the dorsum of the right foot, over the tendon of the fourth toe, was a faint, dark blue, flattened papule, considerably infiltrated and deeply imbedded in the surrounding tissue.

Finally, there were two faintly defined, dark blue, penny sized plaques on the ball of the sole of the right foot, visible only on close scrutiny, and presenting no palpable differences in consistence from the neighboring keratotic skin. Pressure on these elicited no pain; in fact, the patient was not aware of their existence.

A tentative diagnosis of hemorrhagic multiple sarcoma of Kaposi was made. A few days later, Dr. Fordyce examined the patient and confirmed the diagnosis.

Histopathology.—For purposes of microscopic study, the split-pea sized nodule below the left eyelid was ablated under cocaine anesthesia and the small papular lesion on the right forearm was removed by the cutaneous punch. Sections were prepared and stained by the usual methods.

Nodule from the face. With the exception of a moderate grade of edema of the basal cell layer and a widening of the intercellular spaces of the rete cells, the epidermis showed no changes. Nor was there any increase in pigment granules. The papillæ were flattened from pressure exerted from below. In the pars papillaris a narrow, subepidermal band, faintly stained, showed a pronounced edema with granular degeneration of the collagen. Below this degenerated zone and extending down to the subcutaneous tissue was a dense connective tissue structure, the most prominent feature of which was the large number of new formed blood vessels and lymph spaces, lying within compact masses of fusiform cells and aggregations of small round cells, the latter uniform in size and possessing large, deeply stained nuclei. These round cell masses were located chiefly in the upper portion of the cutis. The fusiform or spindle shaped cells appeared as oblique, longitudinal and transverse bundles, situated mainly in the lower portion of the corium. Immediately adjoining the subcutaneous areolar tissue, these fusiform cells were arranged in the shape of more or less circumscribed nodules, resulting from their whorl-like disposition around a central point, usually formed by a group of numerous small blood vessels. Many of the blood vessels showed marked endothelial proliferation, resulting in partial obliteration of their lumina. In many places spindle shaped endothelial cells were seen to have their starting point in the intima of the blood vessels. There was considerable blood extravasation and deposition of blood pigment throughout the collagen. Here and there mitotic figures were seen, scattered among the fusiform cells. Many of the vessels were engorged with blood cells. As a result of the cell infiltration of the new growth, very little remained of the collagenous tissue throughout the corium.

Fig. 2.—Idiopathic hemorrhagic multiple sarcoma of the skin (Kaposi). Showing the raised and infiltrated plague over the flexor tendon of the great toe.

Papule from right forearm. The changes observed here were in every way similar to those above described, with the exception that the increase in blood vessels and lymph spaces was not at all marked, the duration of this lesion being much shorter, while the collagen was far more plentiful than in the older lesion.

This histopathological structure corresponds to the many descriptions of tissue sections derived from cases of Kaposi's multiple hemorrhagic sarcoma, conforming in its type to the round and spindle celled angiosarcoma.

Recapitulating, we have before us a dermatosis presenting a few widely scattered, irregularly distributed, painless, bluish and purplish macules, nodules and plaques, which disturb the patient only from the cosmetic point of view. The aggregate area of affected integument is scarcely extensive enough to cover the surface of a silver dollar. The problem is to interpret these manifestations from a clinical standpoint, if that is feasible; that is, to diagnosticate the eruption by means of inspection, palpation, the patient's history, etc., instead of relying solely upon the laboratory findings. As has been hinted, the permission to remove pieces of tissue for microscopic examination being as often refused as granted, the question of obtaining biopsy material frequently is dependent upon the intelligence, courage or caprice of the patient. The great value of clinical diagnosis in the obscure dermatoses must not be underrated.

Without entering into the technicalities of differential diagnosis, it should be said that, aside from the idiopathic multiple sarcoma of Kaposi, two other conditions were considered; namely, the multiple benign sarcoid of Boeck, and dermatomyoma. In various ways these two rare dermatoses bore resemblances to the eruption in our case. The weight of evidence, however, favored Kaposi's sarcoma, on the following grounds: (1) the typical distribution of the lesions on the exteremities and face; (2) the absence of pain; (3) slow growth; (4) the reddish blue and purple color; (5) the firm consistence of the nodules; (6) the blanching of one of the lesions under pressure with a piece of glass, suggesting its angioma-like structure. It will be seen that the primary diagnostic factors mentioned above—namely, the distribution of the lesions as a whole and the character of the individual lesions—both play important parts in the determination of the nature of the disease.

In its *advanced* stages the idiopathic hemorrhagic multiple sarcoma of Kaposi presents a clinical picture so striking and characteristic that the diagnosis is readily made, by the trained observer, at a glance. The distribution of the lesions, their color, consistence, configuration, mode of progression, etc., at once serve to identify the disease. The excellent descriptions and illustrations of the affection in our American text books and in numerous monographs obviates the need of taking up space here with a detailed account of the malady. The important point to bear in mind is that in its tendency to cause death by visceral metastases it resembles true sarcoma, and that early diagnosis and prompt treatment may save the life of the patient.

The majority of these patients present themselves at the clinics with the disease already involving extensive areas of the skin of the upper and lower extremities, and in whom the process had been steadily advancing for months and years. In some cases internal metastases have already taken place, and the most that can be offered them is palliative treatment. In the earlier stages the disease is almost free from subjective sensations; itching and burning may be present in a moderate degree. Later, the patients may complain of stiffness of the joints in the hands and feet, due to the edema and infiltration of the affected skin. Thus these patients frequently neglect themselves until the disease is well advanced and the more serious symptoms of pain, tenderness, and interference with the muscular functions begin to make their appearance.

It is a singular fact that the cases seen in New York almost invariably occur in men of Galician and Italian birth. The Neapolitan dermatologist, De Amicis, has seen more than fifty cases, all in males. The occurrence of the disease in the female sex has been recorded in only five instances out of seventy-three cases in the literature, according to Sequeira and Bulloch.[1] Initial efflorescences on the cheeks and nose have been recorded by Perrin[2] and by Funk.[3] The disease advances steadily, fresh macular, nodular, and tumor-like growths, some of which may later ulcerate, appearing progressively; in some cases the lesions involute spontaneously in one area, to appear in new forms elsewhere. Sometimes the mucosæ are also attacked by the process. According to Kaposi the average duration of the disease is four years. Cases of twenty-five years' duration have, however, been reported. In 1905 the writer had occasion to treat a patient, a Galician Jew, afflicted with the disease, in whom the first symptoms manifested themselves fifteen years before. The skin of the extremities was very extensively involved. He died of metastases and inanition about three years later, despite the fact that *x*-ray treatment had succeeded in causing a partial disappearance of the cutaneous manifestations of the disease. The affection usually appears between the fourth and sixth decades. Nothing is known as to its etiology.

Prognosis and Treatment.—In cases where the eruption consists of a few scattered and isolated nodules and plaques, operative treatment is certainly indicated. The nodules which were surgically removed in the patient here recorded have thus far shown no signs of recurrence, although too short an interval of time has elapsed to justify any definite opinion on the advisability of using the knife in these cases. We must always be on guard against the possible dissemination of the lesions when having recourse to surgical measures.

Several cases are recorded in which the use of arsenic, in various forms, has resulted in apparent cures and many cases have been benefited by the drug, administered by mouth and by injections.

Treatment with *x*-rays offers the best means of combating the disease, especially in its early stages. Under massive-dose exposures the lesions melt away quite readily, leaving hardly anything more than a faint stain to mark the site of the plaque or nodule. Recurrences are apt to take place, but these also subside under the influence of the *x*-ray. The combined use of radiotherapy and arsenic would seem to be the most rational course to follow in the treatment of the disease.

Such a plan of treatment is under way in our patient. He was particularly anxious to get rid of the patch on his nose and was given two Holzknecht units of *x*-ray, using a No. 9 Benoist tube. Nothing is left to mark the site of the lesion, excepting a faint reddish discoloration, which promises to fade entirely. It may not be too much to look forward to a complete arrest of the malady in his case.

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24 West Fifty-ninth Street.

AMPUTATION OF THE GREAT TOE, WITH REMARKS ON THE MUSCULAR PHYSIOLOGY OF THE LOWER EXTREMITY.*

By JOHN C. SCHAPPS, M.D.,

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In walking, the front part of one foot, fixed on the ground while the heel and the whole of the other foot are raised forms a working base and tendon anchorage to which the superjacent parts are adjusted and upon which the whole body is supported and moved. Of this base, the great toe constitutes the most important part. It has its own muscular system, the tendons of the other toes being divisions

From a photograph showing the foot supporting the entire weight of the body.

leading to muscles common to all four. From the distal phalanx of the great toe run two strong tendons, one back over the foot and through the annular ligament of the ankle where it turns sharply upward to reach its muscle on the front of the leg, the other passing back under the foot, across the arch like the string of a bow or the tie-rod of a truss and turning around a bony projection at the inner side of the ankle to reach its muscle on the back of the leg. The turning points are virtually pulleys resting on the tendons anchored in the great toe, traction upon the tendon raises the ankle in a sling, and under the body weight, the back part of the foot, carrying the leg, slides down the tendons toward the front and the arch increases in concavity.

The two muscles are known as extensor and flexor of the great toe. But their function is obviously not to move the toe in relation to the leg—a perfectly useless performance—but to move the, movable, leg in relation to the fixed toe. In fact, in studying the lower extremity as an organ of locomotion one finds that the still accepted teaching regarding its muscular physiology needs not to be revised merely but to be reversed—that, in general, muscles do not act from proximal parts upon distal, as their names indicate, and as do those of the upper extremity, but from below upward. Or when they do act from a superior upon an inferior part, the superior point must be fixed in adjustment to the working base by muscles acting from below upward. All, or nearly all, of which was presented twenty-five years ago by Thomas S. Ellis of Gloucester, England, in a valuable little work, "The Human Foot" (William Wood & Co., New York).

Rising on the ball of the foot is supposed to be effected by the upward pull of the tendo Achillis muscles on the point of the heel. Were the foot a solid bone from heel to toe, and had the muscles a fixed point above from which to act, they could, independently, perform this function. But transverse joints through the tarsus, between the tarsal and the metatarsal bones, and between the metatarsal bones and the phalanges, divide the foot into segments, and upward traction on the heel while the toes are against the ground would result simply in depression of the middle of the foot were not the segments kept in their normal arched relation, which is done principally by the muscles whose tendons lead from the great toe as described. They enter also into all adjustments of the leg to the foot, and thus help to provide the point of resistance for such muscles as the anterior tibial, which apparently does act from above downward and possibly for the heel cord muscles. But paralysis of the heel cord group does not prevent the subject from rising on the toes, which would indicate that the important function of these powerful muscles is not to raise the heel.

A true conception of the mechanism of walking is of fundamental importance in dealing with all mechanical disabilities of the lower extremity. But confining our attention now to the muscles whose tendons are anchored in the great toe, we find that they take part in raising the heel, maintaining the integrity of the foot and providing a point for muscles to act from the leg upon the foot. It occurred to me that the severe disability accompanying the loss of the toe is due to cutting loose the muscles, and might be avoided by saving the tendons and uniting them over the end of the metatarsal bone. November 27, 1914, Dr. P. H. McCarthy of Butte, Montana, adopted my suggestion in the case of a young woman whose toe he removed for sarcoma of the distal phalanx, and permitted me to take part in the operation. The end of the metatarsal bone was denuded, the tendons drawn taut overlapped for an inch or more on the dorsum and were sewn together with chromicized catgut. (It would possibly have been better to have split the thicker tendon and inserted the thinner.) The dressed foot was bandaged to a board with a pad under the instep, and the patient not permitted to stand on it for six weeks. The result is highly gratifying. She has a perfect arch even under the entire body weight with the heel raised, as shown by the accompanying photograph which was taken six months after the operation, and walks without perceptible limp.

Owsley Block.

*Read at annual meeting of the Medical Association of Montana, Bozeman, Mont., July 15, 1915.

A SINGLE STITCH APPENDECTOMY.

PRELIMINARY REPORT.

By W. FRANK FOWLER, M.D.,

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A PAPER by Dickinson,[1] in which he made an appeal for efficiency engineering in pelvic surgery, stimulated my interest in a single stitch operation. My excuse for adding this method of appendix removal to the countless existing modifications of technique is that it appeals to me as being simple, easy, and expeditious. The operation is much more easily and quickly done than its description would indicate.

Description of the Author's Clamp.—A 7¼-inch curved Pean hysterectomy forceps with longitudinal grooves was bent to approximate a 45-degree angle with a rounded shoulder, leaving a straight arm at the end of about 1 5/10 cm. A similar forceps 6½ inches long is also useful but not essential. The

FIG. 1.—Fowler appendectomy clamp.

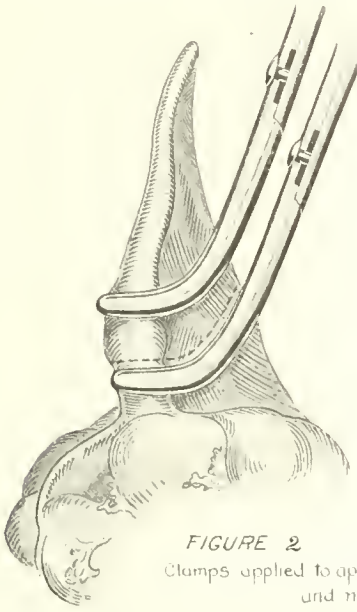

FIGURE 2

Clamps applied to appendix and mesoappendix

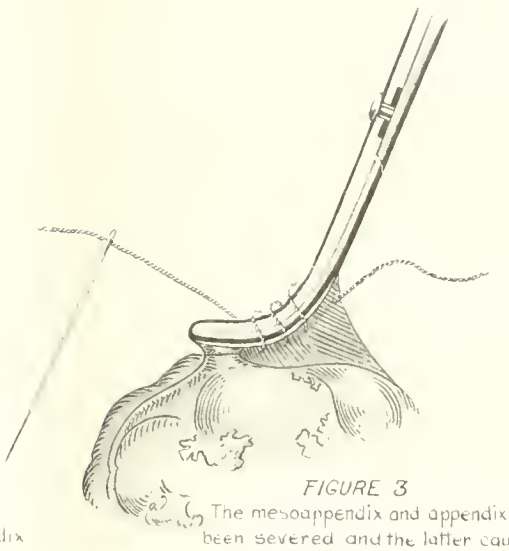

FIGURE 3

The mesoappendix and appendix have been severed and the latter cauterized, the appendix tied off beneath the clamp, and the suture-ligature on the mesoappendix placed.

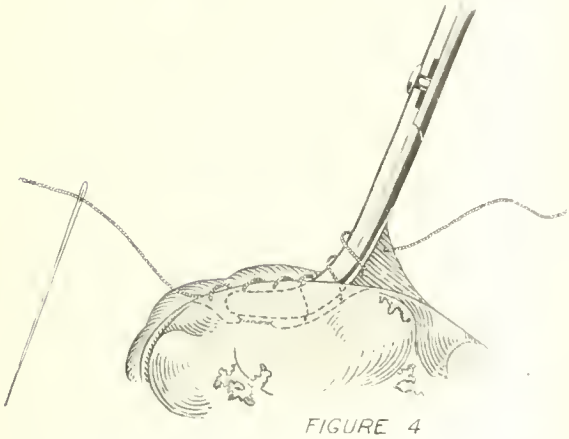

FIGURE 4

The appendix stump has been invaginated by depressing the clamp. The Lembert stitches uniting the caecum over the stump are placed. These complete the suture.

FIGURE 5

The clamp has been withdrawn and both ends of the suture are held taut.

FIGURE 6

The mesoappendix and bowel ends of the suture are tied together completing the operation.

V.E. Klippert. '15

instrument was made for me by the R. J. Strasenburgh Co., Rochester, N. Y.

The *steps of the operation* are as follows:

1. Two clamps are applied, one to the base of the appendix and to the mesoappendix about 3 10 cm. from the cecum; the other parallel to and close above the first. Small curved broad ligament clamps may be used, but the special instrument is more convenient. Close the instrument tight in order to hold the mesoappendix securely.

2. The mesoappendix and appendix are severed between the clamps close to the lower one, preferably with a scalpel, and the appendix stump is touched with carbolic and alcohol.

3. A straight round intestinal needle, conveniently 4 5 10 to 5 cm. long threaded with a number two catgut, or permanent material if desired, is passed through the mesoappendix beneath the clamp and close to the appendix. The appendix is tied off and both ends of the ligature cut short.

4. Stitches with the same needle and suture are passed through the mesoappendix and around the clamp from the outer border to the appendix. Three or four turns about the clamp are usually sufficient. These stitches are taken after the manner of securing the broad ligament in salpingectomy. (In Figs. 3 and 4 these stitches should extend to the appendix.)

5. Downward pressure is made on the clamp which depresses the appendix stump and allows the cecum to fall together over it. The appendix stump is permanently buried by suturing the approximated bowel surfaces with a few Lembert stitches, using the same needle and suture as in step four.

6. Traction is maintained upon the bowel end of the suture while the clamp is withdrawn through the loops on the mesoappendix.

7. The first or mesoappendix end of the suture is drawn tight and is tied securely to the bowel end.

With a single stitch and one knot (exclusive of the tie on the appendix) we have buried the appendix stump as with a purse string, secured the mesoappendix and tied it down to the cecum over the appendix site.

Modifications of this procedure will suggest themselves to meet varying conditions. For illustration: If the appendix tip is kinked down so there is room only for the application of one clamp to the mesoappendix we may dispense with the upper one and secure the distal end of the appendix in the usual manner.

The method of burying the stump is somewhat similar to the suture of Bartlett.[2] The entire procedure might be considered a modification of the Mayo operation.

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183 Alexander Street.

Auscultation of the Venous Pulse.—M. O. Josué describes a method for this purpose which he believes gives results equally as good as those obtained with the polygraph. The technique is as follows: The bell, 2 centimeters in diameter, of a monaural stethoscope is placed at the base of the neck of the patient between the sternal and clavicular divisions of the sternocleidomastoid muscle, and as near the clavicle as possible. The direction of the stethoscope should be toward the mediastinum. The venous murmurs heard correspond to the elevations in the polygraph tracings.—*Presse Médicale.*

NEURITIS, THE MODERN AMERICAN DISEASE.

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THERE is probably no disease which is so universal, so little understood, so unsatisfactory in its response to purely medical treatment, as neuritis. The very fact that so many therapeutic measures have been employed from time to time, and that so many methods of treatment are advocated by members of the medical profession, proves that up to the present time we have been more or less at a disadvantage in the handling of this most distressing condition.

For the past year I have studied this disease from every angle, with the object of discovering not only the pathological lesions, but also the means of putting its treatment on a rational basis, and the results of my investigation have been so remarkable, and the treatment so successful, that I am writing this article in the hope of stimulating discussion and further investigation, so that in the future we may have confidence that we are dealing with a disease which responds satisfactorily to rational therapeutic effort.

There were two things which struck me early in my experience. First, the variety of the symptoms, and second, the great number of patients who thought their trouble rheumatism, and who had been treated for rheumatism, often for years. As I began to gain a more accurate conception, however, I found that in neuritis the pain was caused mostly by muscular spasm of contraction, while in rheumatism it was due to congestion or true inflammation, with or without actual tissue change. This being the case, it follows that the pain in neuritis is much easier to relieve than that of rheumatism, because, while the name neuritis means nerve-inflammation, in practice the patient nearly always seeks relief before actual inflammation and resulting tissue-change in the nerve structure have occurred. In order for the nerves to become irritated sufficiently to induce spasm or contraction, powerful influences must have been at work for some time, the principal being a lowering of vitality from overwork or nerve-strain, and toxemia, usually intestinal in origin, although any toxin, such as alcohol or the mineral poisons, may induce the symptom-complex. From these preliminary remarks the reader will have grasped three essential points, namely, that in a typical neuritis we usually have nerve-strain or nerve-exhaustion and toxemia, together with contraction of muscular tissue from the action of the toxins generated by exhaustion, or more directly by absorption from the blood-stream.

Let us now consider the principal symptoms complained of by the patient. There is usually a feeling of tiredness in the arms or lower extremities, the patient frequently complaining that the hands have gone to sleep. There is pain, or at least tenderness, in the neck, back, or shoulders, with headache in many cases. The patient feels weak and in poor general condition, becoming exhausted by the least exertion, mental or physical. The business man finds it hard to concentrate, the society girl is unequal to fulfilling her social obligations. In many cases there is marked constipation, though occasionally diarrhea may occur, representing Nature's effort at elimination of the toxins. Loss of

sleep is frequent, especially in the cases where there are bad contractions or congestions in the upper cervical region. In the intestinal types there is quite often a failure of response to cathartics. This is due to the fact that the muscular walls of the bowel share in the exhaustion and become atonic owing to neuritis of the nerves supplying the involuntary muscular fibers, on the good condition of which adequate peristalsis is dependent.

But there are certain definite areas where contraction in neuritis and congestion in rheumatoid neuritis are most frequently found. There is usually pain on deep pressure or deep massage applied over the nerves radiating from the cervical plexus in the substance of the sternocleidomastoid muscle. There is also very commonly pain on pressure about an inch below the occipital protuberances and slightly toward the median line. Another area of tenderness often exists in the erector spinæ muscles below the level of the seventh cervical vertebra. In the cases where the neuritis is mostly abdominal, particularly where the intestinal toxemia causing it is produced by some surgical condition such as adhesions in the region of the ileocecal valve, there is an area of tenderness in the dorsal region at the level of the tenth dorsal vertebra, and electrical reaction is frequently poor at this point, especially in cases complicated by gastric ulcer or adhesions in the region of the stomach—a phenomenon readily explainable when we consider the connection of the sympathetic nerve with the solar plexus. In regard to this last remark, I would point out that the ability of the patient to stand a much stronger current over this region of the spine is a valuable aid in the diagnosis of abdominal trouble, as I have repeatedly verified by use of the *x*-ray and seen confirmed on operation.

In the cases whose symptoms consist of pain in the limbs, tender areas with extreme sensitiveness to electricity are found in the lumbar and sacral regions, the pain radiating down the sciatic or anterior crural nerves, with definite areas of congestion or contraction in the buttocks, at the sides of the knees, or in the substance of the gastrocnemius muscle. Numerous other symptoms might be enumerated, but I have called attention to the most common, and have also shown the infinite variety of the symptoms which may be encountered in this disease, different cases varying according to the location and cause of the nerve-toxemia producing them.

Having done this, let us consider the means for their relief. No treatment will be curative which does not aim at the removal of the underlying cause, be this a congested liver, a sluggish intestine, a nerve-toxemia from overwork, or abdominal adhesions interfering with peristalsis. There is no routine treatment, each case having to be handled according to the causative factor. To cases due to some surgical complication I shall not here refer. The largest class includes those associated with intestinal toxemia. In these the first indication is thoroughly to clean out the bowel, doing this slowly so as to avoid exhaustion and consequent locking up of elimination. In this connection I would like to say a word as to the method employed. At least a week is spent in the process of detoxication, telling the patient to drink as much hot water as possible the first day. A pill is then given containing calomel, cascara, rhubarb, and atropine. This should be followed in the morning with a saline. Strychnine may now be commenced for its effect on the the unstriped muscular fibers of the intestine, giving from 1/60 to 1/30 grain two or three times a day before meals, grading the size of the dose according to the individual case. The second day allow a rest from catharsis. On the following night 10 grains of blue mass or from 2 to 4 grains of calomel is given; if the lower dose of the latter is employed it should be given fractionally and followed as before with a saline. Then another day's rest, and on the succeeding night 1/8 grain of podophyllin repeated in an hour and followed in the morning with a saline series, such as a dram of milk of magnesia, repeated every hour for three or four doses. This treatment, varied in certain cases by high colonic irrigations, constitutes the cathartic or detoxicating treatment. In patients whose heart-muscle has been weakened by the toxemia, a complication by no means uncommon, excellent results often follow the use of sparteine in doses of from 1 to 3 grains by mouth three times a day.

For the actual relief of pain, effected by removal of contractions and congestions, the following method is employed, for assistance in evolving which I am indebted to Mr. Joseph Jeiter, who has cooperated with me in evolving the procedure here advocated. Having determined the areas of contraction or tenderness by thorough and deep exploration with the fingers and massage of the muscles, one electrode is placed under the abdomen and the other over the area involved. The secondary faradic current is then applied, beginning very gently and increasing to the point at which the patient can comfortably bear it. During the application of the current the electrode is moved over the affected surface with an ironing motion. After a course of such treatment, lasting for from ten to fifteen minutes, the current is shut off and the part is massaged deeply, when in many cases nearly all pain will be found to have disappeared. Each spot of contraction or tenderness is similarly treated on this or subsequent occasions, special care being devoted to the abdomen where the most obstinate contractions frequently exist. After a few such treatments the patient should feel much relieved, and the most obstinate cases are generally very much benefited in the course of three months, always excepting those due to some surgical complication or those where actual tissue-change or paralysis has occurred, though even these are generally much improved. Of course the success of the treatment depends on the ability of the physician to diagnose the spots of tenderness, and on the ability of the electrotherapeutist to carry out his part of the treatment, an ability, however, which readily comes with practice.

15 WEST FIFTY-FIFTH STREET.

THE TREATMENT OF GALLSTONE DISEASE.

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BILIARY calculi consist of cholesterin and lime; the former is excreted by the epithelium of the mucous membrane of the gall-bladder and the latter is a normal ingredient of mucus. A duodenal catarrh may advance into ducts and gall-bladder, bacilli may enter them and cause precipitates; but as long as the bladder functions well and the bile flows freely, the thrown-off epithelium, the mucus, the bacteria,

and the precipitates will be readily and completely removed.

Retention of bile and its decomposition is the primary cause of stone formations, though some degree of stasis is physiological, due to the powerful sphincter of the papilla, which permits the filling of the gall-bladder.

Gallstones may develop in an aseptic stagnating bile, due to decomposition. Infection may take place and cause the formation of new stones and an increase in size of those already formed. Conditions may change and often do so, bile commences to flow again, the inflammatory process passes, and the bearer of the stones may go through life unconscious of the calculi he carries in his gall-bladder. Gallstones are seldom found in young adult life, though they are occasionally met with in childhood. Not more than from 1 to 3 per cent. up to thirty years of age, 7 to 11 per cent. from thirty to fifty years, and 15 to 20 per cent. in the aged. A large number of these have never shown symptoms of liver or gallstone disease during life, the stones being discovered at autopsy after the bearer has died of some other disease.

The colic brought on by a moving calculus or inflammation is usually the first symptom indicating the presence of stones.

In a number of cases the diagnosis is readily made. The colic with pain over epigastrium or gall-bladder, jaundice, fever, bile in the urine, and alchoholic stools when a stone passes or has passed through the common duct into the duodenum, the large liver with smooth border, a stone or stones found in the dejections, and occasionally the Roentgen rays leave no doubt as to the nature of the trouble.

Stones passing one after another from the cystic into the common duct and occasionally a mucous plug or clot after a stone has passed, may cause repeated attacks, accompanied by continued jaundice, fever, and chills, due to an invasion of colon bacilli and pus bacteria. If the stone remains in the bladder icterus is usually absent, or if present, it is due to inflammation caused by invasion of colon bacilli and to pressure upon the common duct. A distended gall-bladder frequently visible, readily percussed and palpated with light percussion and light palpation, colics, or in mild cases only pain in the back and epigastrium, fever, and the sudden onset of the attack make the diagnosis in these cases. It is occasionally mistaken for ulcer of the stomach, appendicitis, or ileus, the nearness of the pyloric orifice and gall-bladder, muscular rigidity over the appendix region, and the colics making such mistakes possible. The first question that arises when a diagnosis of gallstones has been made, is whether an operation is necessary, and whether that has to be immediately done to protect the patient.

The views on this subject differ widely between internist and surgeons, and even between the surgeons they are largely at variance.

Some advise in all cases of biliary calculi an immediate operation, allowing only a small percentage to be treated by medical methods; others advise, and this seems to be the majority, that only a small percentage of gallstone patients should be operated upon.

Kahr operated only on 1300 of 4000 patients that consulted him for gallstones, and comes to the conclusion that only 20 per cent. of patients suffering from gallstone disease ought to be operated upon, and he is a decided opponent of an early operation during the first attack. The following table published by this author in 1909 and quoted by Lehnhartz, is of great interest:

Death rate, 1904-1909, at the Surgical Clinic of Heidelberg; Pure-stone cases, 4 per cent.; benign simple cases, 11.3 per cent.

Mayo Brothers, in 845 cystotomies, 2.3 per cent.; in 319 ectomies, 3.43 per cent.

Koerte, 327 simple cholelithiasis, 238 pus and choledochus stone, 21 with simple complications, 10 per cent.

Borelius, 50 cystectomies, none.

Surgical Clinic University of Giessen, 513 pure-stone cases, 9 per cent.; 46 with simple complications, 8.69 per cent.

Kocher, 103 pure-stone cases, 2 per cent.

Kuemmel, 169 pure-stone cases, 4.7 per cent.; 14 with simple complications, 14.3 per cent.

Kehr, 238 pure-stone cases, 2.9 per cent.; 73 with simple complications, 20 per cent.

The Mayo Brothers had a death rate in 207 choledochus operations: 105 without pressing symptoms, 2.9 per cent.; 61 with fever, chills, and jaundice, 16 per cent.; complete occulusion of common duct, 34 per cent.

Relapses with colics due to stones or adhesions have been reported by a number of observers.

In 1911, the Mayo Brothers published 4000 operations for cholelithiasis with a mortality of 2.75 per cent. In 2920 operations the disease was confined to bladder and cystic duct, mortality 1.8 per cent. In 2165 of cystotomy, mortality 2.4 per cent., and in 492 operations involving the common duct, mortality 8 per cent. In operations during quiescent state, 3 per cent.; with jaundice, 10 per cent., and with complete obstructive jaundice, 25 per cent.

It is also of interest that they found in 1244 operations for uterine myoma that 7.15 per cent. had gallstones. Dr. Fossier who has collected the cases from the records of the Charity Hospital of New Orleans for me from 1906 to 1914 found in 96 operations for cholelithiasis mortality 21.5 per cent. In 58 cases treated medically during the same time, mortality none.

Lenhartz* in his article on the treatment of the diseases of gall-bladder and ducts, in which he also discusses the indications for an operation, quotes statistics of the Eppendorfer Hospital and finds that from 109,700 patients treated from 1902 to 1908 only 515 suffered from liver or gallstone disease, exclusive of cirrhosis, and that of 1800 autopsies death was due in only 6.7 per cent to gallstones and in 72, or 0.4 per cent., to carcinoma of the gall-bladder.

From his own practice he reports 10 to 12 deaths caused by diseases of liver and gallstones from 10,000 to 13,000 patients, many of whom had passed through the surgical ward. Cause of death severe cholangitis and cholecystitis and septic pylephlebitis. He often saw most severe cases with chills and high fever recover, even with colon bacilli in the blood, if not operated upon.

Kohnheim advises not to operate till all medical treatment has failed.

I believe it is advisable to call a consulting surgeon early so as not to miss the time when an operation may become necessary.

If a stone lodges in the cystic duct, causing colics

*H. Lehnhartz-Behandlung d. Erkrankung der Gallenwege Handbuch d. gesamten Therapie, Vol. II, p. 703.

and swelling of the gall-bladder, an operation would prevent a closure of the common duct, but as it is in the experience of every physician that such stones frequently pass under treatment, leaving the patient in perfect health during the remainder of his life, an early operation in this case has not been adopted generally. In repeated attacks with renewed inflammation of the gall-bladder, physician and surgeon have to decide whether an operation is advisable. The prognosis is better if the patient is operated upon between attacks, when free of fever and with reduced inflammation. In cases with severe general infection, repeated attacks with chills and fever, especially when chronic inflammation has produced a thickened and shrunken gall-bladder, an operation is indicated, unless disease of the heart or a weak heart and a depressed general condition contraindicate the operation.

If a stone closes the common duct, it is better to wait, unless the duration of the trouble, the general condition, and the wish of the patient call for an earlier operation. *Jaundice makes the prognosis more grave.*

The treatment of the biliary colic is clearly indicated. Pain has to be stopped, the expulsion of the stone favored, inflammation subdued, and the strength of the patient supported. Morphine is a supreme remedy to stop pain, and it is best given subcutaneously. The dose should be sufficiently large to be effective. It relaxes the contracted muscles that hold the stone, the bile can flow again and push the stone onward, till the effect of the remedy ceases, a new cramp occurs, and severe pain calls for another injection, preventing injury and necrosis due to pressure. The treatment has to be repeated until the stone has passed into the duodenum.

Atropine acts in a similar way by relaxing muscular spasms, and can be given alone or in combination with morphine. It influences the inflammatory process by first contracting and then dilating the arterioles, relieving congestion. It can be given to dryness of mouth and throat and dilatation of the pupils. Opium and belladonna suppositories occasionally stop the pain. Chloroform inhalations are dangerous and have been entirely abandoned by most practitioners.

Pyramidon, antipyrin, and other coal-tar preparations do not stop the pain of severe paroxysms but often give satisfactory results in milder attacks. The salicylates in large doses are occasionally useful. Of the physiological measures of treatment rest in the recumbent posture is of paramount importance. The excruciating pain forces the patient to go to bed, and this meets the first and most necessary condition to relieve muscular spasms. Though not sufficient to stop the pain, it favors the action of other measures. Mental rest is almost of equal importance, excitement and emotion being often the cause of a paroxysm. A well-ventilated, half-darkened room and a cheerful and quiet nurse will accomplish much. Rest, physical and mental, is the most important remedy to influence beneficially the circulation. Congestions are relieved and the blood flows with ease and in abundance to diseased structures where the current is slowed and retained in the inflammed area by injured vessels. The next in importance to assist the action of drugs and of rest is heat. It may be administered as a full hot bath, as a sitz bath, in the form of poultices and cataplasms, or as electric thermophore.

If heat is applied, dilatation of vessels and reddening of the skin occur at once and gradually become more intense. The application of great heat will cause immediate paling followed by reddening, and this persists for some time after the application has been removed.

Cold acts in a similar way, and an ice-bag may be used when heat is not well borne. The direct effect of cold upon the vasomotor nerves produces a narrowing of the vessels and muscular contraction. This is followed by dilatation of the vessels and reddening of the skin, which becomes finally cyanotic when the application is not removed.

With either method we stop pain by paralysing the sensory nerves and we produce an active hyperemia by influencing the vasomotor apparatus.

Electricity is recommended and occasionally useful. It stops pain and causes an active hyperemia. Massage, when skilfully given, will produce hyperemia, ease pain, and favor the expulsion of the stone or stones. It will prove of advantage only in the hands of a physician who is thoroughly familiar with the method. Unskilful application may do great harm and cause rupture of the gall-bladder. The patient has to be carefully watched during the paroxysms, and especially the aged need analoptica like coffee, tea, strychnine and alcohol in some form. Death has been produced by shock during a paroxysm. A morphine and atropine injection relieves the cramp and will best prevent shock.

The treatment of gallstone disease is indicated by its etiology, pathology, and course. The presence of an inherited predisposition and the facts that it is only exceptionally found in childhood, rarely in the young, that it becomes more frequent with advancing years and its great predominance in women, allow of but one explanation—a poor abdominal circulation. The inherited predisposition is enteroptosis with its pendulous abdomen and relaxed abdomnnal walls or rigid recti and diastasis; the greater frequency increasing with years is due to the adoption of an indoor life and late hours, with usually a more generous diet to burden the circulation; the greater frequency in women is due to an indoor life as well as to the relaxation of the abdominal muscles after childbirth and to lacing, which interferes with diaphragmatic breathing. *A pure and free flowing bile prevents the formation of stones and dissolves them after they have been formed—this is the only solvent of biliary calculi so far found.*

Frerichs and others found calculi small and crumbling after treatment. I can confirm this observation.

Mr. T., 52 years of age, a civil engineer. He gives a history of renal colics during which he passed gravel and calculi the size of a small pea. He was to be operated upon for stone in left kidney, when the pains stopped suddenly after he had passed some blood and mucus. He has not had symptoms of gravel or renal calculi for 7 years. Early in 1912 he had his first typical gallstone colic, followed by five others up to February, 1913. At that time he called on me. He was deeply jaundiced and had chills and fever. Under treatment all symptoms passed, but were followed by another attack a few months later. Dr. Fossier, who treated him in my absence advised an operation. A gall-bladder with thickened walls was removed which contained two very friable small stones, the size of a pea, breaking readily on touch.

Mrs. P., 43 years of age, mother of eight children. Patient had a typical gallstone attack nine years ago, followed by three others four years later. Then she was in perfect health till April, 1913, when she was seized with another colic. I saw her during this attack. She was deeply jaundiced and had fever and chills. All symptoms passed and she then returned to her

home in the country, but did not continue the treatment. Eighteen months later she came back to me with another severe attack with chills, jaundice and fevers. As before the symptoms passed with the exception of occasional sharp pains in the pit of stomach. I advised operation, which was done, and two small very friable stones, the size of a pea, were found in the gall-bladder.

I have treated a large number of patients with gallstone disease and only a few had to be operated upon. The findings in these showed that medical treatment may be curative. Naunyn has shown that calculi inserted into the gall-bladder of a dog are dissolved within two months. A pure free-flowing bile is possible only when the abdominal circulation is in good condition, and our therapeutic measures must be directed to produce this. A bandage is necessary in almost every case to narrow the abdominal cavity and give counter pressure to diaphragmatic breathing. It is a substitute for muscles. I have previously described a bandage designed by me for this purpose.

Every healthy outdoor exercise tends to improve the general circulation, and as a part of it the abdominal circulation, if it is not overdone. Too much of it is injurious; it must be taken short of fatigue and exhaustion. The means that have developed the organism under constantly changing and adverse condition in the evolution of the race are the best to preserve it. Exercise is one of them—golf, tennis, borseback riding, walking, swimming, rowing, gardening, etc. Of room exercises those are to be directed that press upon the abdomen. Bending forward, going into the knee position, vigorous moving and pressing of the thighs against the abdomen, lying or standing. Whatever exercise is directed must be combined with deep breathing, and must be selected to favor the respiration.

Deep, methodical, and slow inspiration and expiration exert a forceful pressure upon the liver and all abdominal contents, and expand the chest. Exercise ought to be taken on an empty stomach or at least two or three hours after a meal.

Rest is of no less importance in the prevention and treatment of diseases of the liver than is exercise. Blood drops into the abdominal cavity when the upright position, sitting or standing, is kept up too long. Heart and vessels tire and congestion of the abdominal organs is the consequence. This is aggravated in a southern climate in which the surface vessels have to dilate to give off surplus heat and keep the body temperature normal. As with other therapeutic measures we have to individualize, in most cases one hour of rest in bed after the mid-day meal and an early bedtime are sufficient. A suitable diet is of no less importance than exercise or rest, and the literature on this subject is voluminous.

Some advise a vegetable, others a meat diet, and others again a mixed diet. Bile has no digestive action on carbohydrates, though it has to be remembered that when taken in excess the latter gives rise to intestinal fermentation. Neither has bile an influence on meat digestion, but when intestinal putrefaction is great, it is useless to give meat. Experiments on dogs have shown that a pure meat diet increases the flow of bile. Yet a vegetable diet is preferred by most observers, because the antiseptic function of the liver suffers in gallstone disease and ptomaines and toxins are ingested with a meat diet. Alcoholics, tea, coffee, and condiments have to be avoided for the same reason. Fat must be greatly reduced in quantity. The gray fatty stools when the common duct is closed prove that the absorption of fat is impaired. A vegetable diet has the further advantage of tending to produce regular bowel evacutions. Constipation favors the retention of bile.

The acute attacks require a liquid diet. The principle to save the liver from further injury is the most important consideration. During the acute attacks of cholelithiasis and cholecystitis little attention need be paid to the nutritive value of the food, for the attacks are as a rule of short duration. Frequent and small meals should be served to encourage the flow of bile. *The passing of chyme stimulates the papilla to open and discharge bile into the duodenum, and this is by far the best cholagogue we possess.* Warm and hot drinks are soothing; cold drinks may cause severe cramps. The ingestion of a large quantity of water has no direct influence on bile secretion. Small amounts of fat, especially when given emulsified, as milk, butter and cream, may be allowed unless the pancreatic function is completely destroyed. Carbohydrates are of value and may be given as toast, malted milk, milk soups, with grits, purées of tender vegetables, and fruit juices. Meat simply prepared is not injurious, if intestinal putrefaction does not make it so. A moderate amount of albumin and fat with somewhat larger quantities of carbohydrates, best in form of the green vegetables, including sugar of milk, afford the best composition to save the liver parenchyma, the food being prepared so as not to irritate the gastrointestinal tract.

If the pancreas is seriously involved it becomes a difficult problem to nourish these patients, and milk in some form with additions excluded as one or the other digestive functions of fat, starch or albuminous food fails. The administration of pancreon or similar preparation is useful as a substitute for the lacking secretion.

In prescribing a diet in this as in my other diseases it is of greatest importance to consider the present state of nutrition of the patient (glandular activity), his assimilating power, his age, his occupation, the climate, and the season. These are points rarely taken into proper consideration. It is usually the nutritive value that is considered most, often to the exclusion of all others. Hydrotherapeutic measures are always of great value in the treatment of this disease to influence the circulation, to stop pain, and to subdue inflammation. The hot, full bath, the sitz bath, scotch douches over the liver, the Priesnitz bandage, hot or cold rectal injections to encourage the flow of bile, the Murphy drip, and the ingestion of hot or warm liquids. A combination of the physiological methods with drug treatment is indicated in every case in which the disease is well established. It was formerly thought that certain drugs dissolved stones, but this view has been entirely abandoned; nothing but a pure, free-flowing bile will accomplish this. Durand's remedy, a combination of turpentine and ether, is not given any more as it is disagreeable to take, and we possess antispasmodics and cholagogues far superior to this formerly highly prized remedy.

Olive oil has become quite a popular remedy in this country as well as in Europe. It is given during the acute attacks as well as in chronic cases. A wineglass full of the warm oil morning and night, or only before breakfast, or when an acid gastritis complicates the disease, one or two tablespoonfuls three times daily before eating. It protects the

injured mucous membrane, acts as an antispasmodic and a laxative by keeping the stools soft. The taste may be disguised by adding a few drops of peppermint and by chewing a few tablets after ingestion. The oil of sweet almond or the mineral oils may be used instead. I have had good results in some cases from its use. My patients rarely object to the oil treatment.

Calomel is another remedy freely used in affections of the liver and gall-bladder. Its purgative action is due to an irritation of the intestinal mucous membrane, increasing secretion and peristalsis. Though, according to Stadelman and Pfaff, it does not increase the formation of bile, a larger quantity of the latter is found in the dejections after calomel has been administered. This is thought to be due to a reflex action upon the muscular walls of the gall-bladder and bile-ducts, as well as to a pulling and tearing on these structures, resulting in an emptying of the gall-bladder. I have often observed that liver and gall-bladder shrink considerably in size after its use, a dilated heart becomes smaller, the pulse firmer and fuller, and high tension is lowered. This influence upon the circulation is of great importance when the object is to produce a pure liquid bile.

A number of remedies are used to increase biliary secretion, and of these at present the bile salts are in great favor. It has been proved on animals and men that they increase the fluidity and quantity of bile. Sodium salicylate has been long known as an efficient cholagogue, and the modern preparations like aspirin, diplosal, etc., have the same effect; they are better borne by the stomach and cause less disagreeable systemic symptoms. This is due to the slower liberation of the acid. Podophyllin acts as a cathartic and relieves conjestion and torpidity of the liver. Sanguinarine increases the flow of bile and the digestive glands in general. Juglandin, baptisin, hydrastin, and various other drugs are all freely used for the same purpose with advantage. Ammonium chloride stimulates the secretion of all the mucous membranes of the body and is an excellent remedy in torpor of the liver and chronic hepatitis. Physicians practising in the tropics claim that it prevents abscess of the liver. It must be given in large doses to be effective.

Chologen is a combination of various drugs, among them calomel and podophyllin in minute quantities. I have used it for a number of years with excellent results in gallstone and liver disease. It has to be given from six to eight weeks.

The treatment of gallstone and liver disease with the minieral waters has stood the test of centuries, and an army of sufferers travel annually to the famous springs of Europe and of this country for relief. The numberless cures reported from these watering places testify to the efficiency of the waters and leave no room for doubt. There can be no question, however, that the change from a sedentary indoor life, with the worry and care attached to the daily occupation, to a life in the open, free of care and worry, full of hope to regain health, with regular hours and a suitable diet prescribed by a skilled physician, have much to do with these cures. Nevertheless, the waters have therapeutic properties. They represent an alkaline solution which, given warm or hot one hour before each meal, bathes the mucous membrane of stomach and intestines, frees it from mucus, stimulates peristalsis, and subdues inflammation. During their passage through the gastrointestinal tract some of the mineral water is absorbed and increases the fluidity, quantity and alkalinity of bile. It seems to be rational that a blood richer in water and alkalies produces such changes, though experiments have not shown a direct influence upon bile formation.

The discovery that many of the mineral springs are radioactive, and that this is due to emanations of radium, adds a new factor to explain the efficiency of these waters in disease.

When symptoms of a disease make their appearance every organ of the body is more or less affected, and it is irrational to try to cure the patient by treating one organ only. All organs make blood or distribute it, that is, they add to or subtract something from the blood to make it perfect, so that each cell of the body finds its proper food. When one fails, all fail. In order to function well each organ must get a sufficient supply of pure blood, and this is possible only when blood distribution is perfect. *Blood purity depends on blood distribution.* The gastrointestinal tract is outside of the body proper, and its cleanliness has to be looked after as much as or even more than that of the skin.

The treatment of gallstone disease does not differ in this respect from the treatment of any other disease. To treat gallstone disease we have to influence the general circulation, and especially the abdominal circulation, to cure inflammation and to produce a free-flowing alkaline bile, to expel stones, make them quiescent, or dissolve them with all therapeutic measures and means at our disposal. Not with one drug or with one method.

Medical treatment restores the patient to normal or as nearly so as that can be done. Surgery removes diseased tissue, and must be preceded, combined and followed by medical treatment to be of the greatest and permanent benefit to the patient.

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HOUSE INFECTION, A POTENT SOURCE OF TUBERCULOSIS.*

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For eleven years this association has been studying tuberculosis with a view of obtaining knowledge that may be applied to the prevention of the disease. Year by year our work has been enlarged until to-day when we are for the first time devoting especial attention to housing in relation to tuberculosis.

Tuberculosis is the most universal of all diseases, and there are but few adults who have not at some time or other been infected. Whether or not the disease develops depends upon the virulence of the germs, the mass of the infection, the duration of exposure, and the resistance of the body. The resistance of the body depends upon the food it receives, the work it performs, and the environment in which it lives.

To be successful in a campaign against disease we must first know its cause and then the conditions which make the cause operative. The direct or exciting cause of tuberculosis is the tubercle bacillus. The indirect or predisposing causes are lack of proper nourishment, overwork, excesses, and

*Read before the Sociological Section of the National Association for the Study and Prevention of Tuberculosis, at Seattle, June 16, 1915.

bad housing. It is my province to-day to bring to you some thoughts upon the relation of housing to tuberculosis. In doing so I would remind you that to resolve the problem of the prevention of tuberculosis into its component factors, and to assign to each its proper weight, is at present impossible. The factors which cause tuberculosis to be a problem have gradually developed along with our civilizatlon.

There is a growing opinion among those who are taking an active part in the campaign against tuberculosis that housing is one of the most important factors in the cause of the disease. Dr. E. A. Sweet[1] has recently made a study of tuberculosis among the Mexicans in El Paso, Tex. He found the death rate from that disease among those people to be 554 per hundred thousand, while for the registration area of the United States it is but 149. After discussing various theories to account for this frightful rate, he concludes as follows: "In looking further into the etiology of tuberculosis in the peon class one is struck by the frightful housing conditions which prevail, and these are sufficient in themselves to fully explain the high death rate recorded. When one witnesses the inadequacy of the quarters provided, and the overcrowding and the unhygienic lives these people are forced to lead, it is not necessary to look further for the cause of their trouble, and the entire problem is an open book."

Housing enters into the tuberculosis problem in three ways: (1) The house itself may be infected, that is the germs of the disease may be in the walls, the floors, or furnishings. (2) The house may contain a careless consumptive who may directly infect the other members of the household. (3) The general sanitary condition of the house may be such as to lower the resistance of those who reside therein.

The records of our dispensaries and sanatoria show many instances of what appear to be house infections.

In bulletin No. 27 of the Pennsylvania Department of Health, we are told of a house in Cumberland County which during the period of 1880 to 1905 was occupied by four families, aggregating thirty-two persons. At the time the report was made eleven had developed tuberculosis and there were three suspects.

In England and Scotland much attention has been paid to housing, and at the 1914 meeting of the British National Association for the Prevention of Consumption a considerable part of the program was devoted to the consideration of tuberculosis and housing. At that meeting Sir Robert Philip of Edinburgh said[2]: "Time after time it has been found that tuberculosis has appeared in different families occupying successively the same dwelling. I have before me notes of four such dwellings. In each of these, two or three families came into occupancy one after another, and in each family in course sent tuberculosis patients to the dispensary. In the majority of cases the patient fixed the beginning of his illness at a date corresponding more or less definitely to the date of entrance into the house. After ample allowance for various fallacies, the evidence seems irresistible that the house is frequently the source of infection." He further cites a house from which no less than eighteen cases of tuberculosis came.

The veterinary surgeons tell us the same story regarding stables which have housed tubercular cattle.

The question naturally arises are these cases of house infection, or are they simply incidences of the direct transferrence of the disease. It is well known that tubercle bacilli if enveloped in mucus may remain virulent in the dust of a house for a long time, provided they are not exposed to the direct rays of the sun. Bruckner[3] found tubercle bacilli in an active state in the dust of a room a year after the death of its occupant from the disease.

Hance[4] made some very extensive observations at the Adirondack Cottage Sanatorium, and was able to infect guinea-pigs from the dust of a room where a careless patient had lived.

Winslow and Kligler made a quantitative study of the bacteria in city dust and with special reference to intestinal and buccal forms, and found tubercle bacilli in from 5 to 10 per cent. of the samples of dust taken. (Am. Pub. Health Journal, Sept., 1912.)

Most tuberculous persons who are treated in their homes are far from careful, and spitting on the floor or into the stove is not uncommon. In such homes the children spend most of their time on the floor, and we should not wonder at their contracting tuberculosis.

Those of you who have done any visiting among the poor consumptives well know that, with but few exceptions, every consumptive who remains in the home is a danger to the other members of the household. We all know of exceptions to this statement, but we know of more sad cases of unnecessary infections. My experience with patients in a sanatorium where they had the most careful supervision and where I took great pains to instruct them personally and collectively in personal hygiene, is that it is most difficult to teach them to observe the precautions necessary to prevent the spread of the disease. It is easy to overcome the spitting habit, but to learn the use of the handkerchief is very difficult. I have noticed this in other sanatoria and once was associated with a nurse, "an arrested case," from a well-known sanatorium, who had to be reminded constantly about the use of her handkerchief.

In the home the instruction and oversight is very limited, and it is doubtful if many of the persons treated under these conditions use the handkerchiefs at all. I believe that the home hospital is a dangerous way to handle the consumptive.

Great as is the influence of the consumptive in the home and of the infected house, I believe that housing affects the incidence of tuberculosis mostly by lowering the resistance of those who reside in the slums. As a rule we associate the word slum with the large cities, but if you will look closer you will find that they exist in the small towns and villages, and not infrequently in the rural districts.

Dr. A. K. Chalmers[5] of Glasgow gives the following table for that city:

No. of Rooms	From Phthisis, Death Rate per 1000
1	2.5
2	1.8
3	1.2
4	0.7

The rate for the entire city was 1.8. It will be seen that death rate falls as the size of the house increases.

Several years ago while stationed at one of the forts in Arizona I became interested in the incidence of tuberculosis among the Indians of that

region. Naturally one would hardly expect to find the disease very prevalent among the natives of a climate that is lauded as a cure for the disease. I entered into the problem after reading the reports of Army surgeons who had been stationed in the Southwest during the early days of the American occupation. Most of them reported that the disease was practically unknown among the Indians. However, upon corresponding with the physicians on the several reservations, I was much surprised to learn that the disease was very prevalent among them.

Dr. John R. Walker,[6] long a resident among the Sioux Indians, says that they suffered but little from tuberculosis as long as they lived in tepees, but that the disease began to increase as soon as they built permanent houses. The same has been observed among the Apache tribe, the difference being that in the tepee there was an abundance of fresh air, while in the average Indian home there is nothing but dirt and a polluted atmosphere.

Recently we have had some very illuminating studies upon the effect of confined air upon the human body. As a result of this work we are told that it is cool air in motion that does the good in the open-air treatment of tuberculosis. Without denying the reliability of the work done by the investigators in this country and Europe, I want to say that it seems to me the question has not yet been studied satisfactorily. What we have in a slum is a prolonged exposure to a vitiated atmosphere, and we want exact experiments to show the effect of such an exposure upon the cells of the body. The work of Dr. Crile and his associates has shown that the cells of the body are markedly affected by outside stimuli, and that under certain conditions the cells are badly damaged by such stimuli. We want a study of the cells with relation to the condition of the air in the dwelling.

Those of you who are really interested in the campaign against tuberculosis will do well to investigate the housing conditions in the town of your residence. I think you will find that they are not satisfactory, and that there is no law by which you can prevent them from becoming worse.

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THE HARDENING OF CONSUMPTIVES.

BY H. BOYD MASTEN, M.D.,

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"GET out and rough it." I suppose that this advice has been given to the majority of consumptives that have been sent to the West and I am quite sure that this bit of advice has caused the death of more consumptives than any other combination of words in the English language. Yet the idea that the doctors have had in mind when giving this advice, was that the patients were to live largely out-of-doors, and by accustoming themselves to heat and cold, storm and sun so to harden their systems that they would become immune to the changing elements and thus avoid taking cold. So after all the advice was not altogether wrong. Where the trouble lay was this: Not one patient in a thousand is competent to follow out this advice in a manner suited to his particular case, for if there is any one disease in which each case is a law unto itself, it is consumption, and the doctors have not made it their business after sending patients west to see that they roughed it in the right way.

Now to start with I want to state a few facts, which from long experience I know to be facts, although I also know that they will be disputed by many of my readers.

First.—Consumptives do far better in the high altitude, dry air, and maximum of sunshine of the Rocky Mountain region than in any other part of the United States.

Second.—The treatment of the fever of a tuberculous patient differs in no respect from the treatment of the fever of other diseases.

Third.—"Getting out and roughing it," *i.e.* hardening the constitution until the patient is immune to colds, with all the accompanying train of evils, even though exposed to rain, hail, snow, and high cold winds, is the best treatment that we have for consumption at the present time.

Now it is the manner of carrying out this hardening process that I want to speak of principally.

In regard to my first proposition: I have seen it proved by statistics that more patients could be cured in the East than in the West, but I doubt very much if there is a doctor in the whole United States who has treated any considerable number of consumptives in the humid regions and an equal number in the Rocky Mountain region, who will not agree with me.

As to the second: I believe that all consumptive patients who run a fever should be kept in bed until their temperature has dropped to normal and remained there for several days, and that then the patients are to be gotten out of bed with as much care as would be used with a typhoid fever patient, for one of our main objects of treatment is to avoid fever. There is one thing that may keep them in bed even after the fever is gone, and that is a weak heart. If the sphygmomanometer shows the pulse pressure to be below 25 mm. of mercury then the patient should be kept in bed still longer and an effort made to strengthen the heart before the patient is allowed to get up.

It has been my experience that practically all patients coming from the East have fever. Either the long train ride or the change to the high altitude brings it on. So all patients coming to the West should be put to bed. The incipient cases will not have to remain there very long, a few days' rest may be all that they will need, but the more advanced cases will be there for a long time and will need constant care and attention. But the hardening process must begin even though they are in bed, so we will get the bed out into the open either in a tent or some sort of a tent cottage. Next, daily baths are to be commenced and are to be given at that time of day that the fever is found to be highest. By using a rubber sheet they can be given with very little inconvenience and without wetting the bedclothes, if the nurse is experienced. These baths must be so given that they will be a pleasure to the patient and not looked upon with dread, for in such case they will do more harm than good. It may be necessary to commence with almost tepid water and to give simply a cold rub, but each day it will be found that the water can be used a little cooler and more plentifully. To begin with, it may be found necessary to surround

the patient with hot water bottles before, and perhaps after, the bath, but in neither case should the bottles be left there long enough to cause the patient to perspire.

After the patient has become accustomed to his daily bath it is time to begin using massage, providing the fever is not running very high, and the massage should follow the daily bath. At first it must be given very gently and for only a few minutes at a time, but gradually it can be given with more force and Swedish movements and vibrations added. As the patient improves he can be taken each day on a wheel stretcher to the bath room for his bath and massage treatment and these can be given on the stretcher or on a table, but as long as the patient has fever he must not be allowed on his feet.

After the patient is up the cold bath can be given each morning to save needless dressing and undressing, and the patient should be taught that the cold douche or bath must be kept up for the remainder of his life. It is well with most, perhaps with all patients, to give them a few moments in a hot-air cabinet before giving them their douche, but care must be taken to see that they do not remain there long enough to cause them to perspire.

Much can be done in the way of hardening the patient by these cold douches but the doctor in charge must be an expert in hydrotherapy and must give individual attention to each patient if the best results are to be accomplished.

Most consumptives, if left to follow their own inclinations, will load themselves down with clothing Heavy wool underclothes, chest pads, leather vests, and all that sort of thing, keep the skin constantly moist and in a most unhealthy condition, ready to take cold at the slightest exposure. All this must be corrected and the patients taught to get along with the least clothing possible; even while confined to bed they should be urged to accustom themselves gradually to a small amount of covers. It will be found often during the heat of the day that they can throw off all covers and lie with their naked bodies exposed to the air, and this they should be encouraged to do. In the *New York Medical Journal* for November 19, 1904, I had an article on "Ideal Tent Life for Consumptives," in which I said, quoting Knopf: "Of the value of carefully conducted solar therapy, I cannot speak too highly. The exposure of the whole body in its nude state to the air and rays of the sun at the same time has a remarkably favorable influence on metabolism, oxygenation, and the general condition of the phthisical patient, aside from the fact that thereby his cutaneous system will be educated to a greatly diminished susceptibility, and intercurrent colds will be much rarer."

I believed at the time I wrote that article that the good results of this treatment came almost entirely from the exposure to the rays of the sun, but now I think that the greatest good comes from the hardening of the patient due to the exposure of his skin to the air. Now if this really is the case then the only logical course of procedure is to expose the skin of our patients to the air as much of the time as possible, and we can best do this by adopting for them the costume of the aboriginal inhabitants of this region: a breech-clout and a pair of moccasins with a blanket for chilly days.

In the North and East this "Indian garb" would hardly be feasible but in the Southwest it is perfectly practicable, if one has a suitably located sanatorium and providing only one sex is admitted. In many sanatoriums, both East and West, it has been the custom to give the patients sun baths, but usually for only a short time each day, or at less frequent intervals. By using the "Indian garb," after the patients have once attained a good coat of tan, they are able to take almost a continuous sun bath throughout the day, and there is not the least doubt but that it is very beneficial.

Great care must be used in accustoming the patients to the direct rays of the sun while they are acquiring their coat of tan. I have seen reactions brought on fever-free patients by what seemed a very slight exposure, also I have seen them blistered. Either expose them for only a few minutes at a time or expose only a leg or forearm at first. It is best to have the patient thoroughly accustomed to the "Indian garb" before venturing into the sun at all.

At first the head must be protected from the direct rays of the sun but after the patient has grown a football head of hair this is not necessary.

If the above treatment is carefully followed, very little medicine will be needed. Perhaps a tonic or a laxative may be of service at times. In some cases tuberculin will do much good, but unless a doctor has had years of experience with tuberculin he should never use it in his private practice for it is a dangerous remedy in inexperienced hands.

One treatment that is of the greatest value is compression. It should be used in every case where a cavity exists, and where the other lung is in reasonably good condition. It should be used also where there is an extensive involvement of one lung and it should be used early, not as a last resort. It will usually lower the fever and reduce the cough and the quantity of expectoration.

A good mixed diet should be given, but the days of stuffing the patients are over. There is no advantage in keeping the stomach and bowels constantly overloaded as it leads to indigestion, diarrhea, and other ailments. Patients can assimilate only so much and if they are constantly stuffed they get a distaste for food. If they are averse to eating fat meat and other forms of fat at the table, it is best to give them the fat in the form of cod liver oil.

While the patients have fever they must be kept on liquid diet: Milk to which lime water should be added, soup, fruit juice, egg nogs, thin boiled custards, and gruels will be all that is needed. When the fever has diminished the diet may be increased, but the patient should not be put on regular diet until the fever is gone.

With this treatment, if followed in the manner I have indicated, the problem of exercise is not such a difficult one. If we keep the patient in bed until the fever is gone and substitute massage and the Swedish movements for the exercise that is ordinarily given, it will be found that when the patient is allowed to get up the heart will be in good condition and the patient will be able to exercise to a considerable extent without danger to this most vital organ. Treated as patients usually are, it takes a doctor with the wisdom of Solomon to regulate properly the amount of exercise that they should take.

The Incubation Period of Syphilis.—Georges Thibièrge finds that this varies between 14 and 42 days, although exceptional instances of from 50 to 90 days have been observed. These wide limits introduce an element of perplexity into the medico-legal aspects of the problem. —*Annales de Dermatologie et de Syphiligraphie.*

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THE VALUE OF THE WASSERMANN REACTION.

IF one follows medical literature at all carefully one inevitably acquires the impression that, as a general rule, a positive Wassermann reaction is considered to be pathognomonic of syphilis. Conversation with these authors will reveal the fact that they all appreciate that it is not a specific reaction and that, when the result of the test is in conflict with the clinical and historical evidence, they insist upon its repetition or even disregard it altogether. Nevertheless, it is apparent that in the minds of most clinicians a four plus Wassermann and a diagnosis of syphilis are very closely associated. It is probable that the less extensive is the man's experience the closer is this association. This condition of affairs is perhaps the natural result of several influences. In the first place, the Wassermann reaction is positive at one time or another in a great majority of the cases of syphilis. This establishes it as a fairly constant symptom toward which one naturally looks in the solution of any diagnostic problem. Secondly, the history is notoriously unreliable in practically all cases of venereal infection. Patients are prone to conceal the knowledge of an initial lesion, they may have honestly forgotten it, or they may never have been conscious of it. In addition there are, no doubt, many instances of extragenital infection in which an initial lesion is never seen and the onset of the disease never apparent. Thirdly, when the reaction was first proposed it was believed to be specific in its nature and in all the publicity which has been accorded to it, its non-specificity has not been sufficiently emphasized. Its apparently close relation to other complement-fixation tests which are specific has aided in this confusion.

Sooner or later, however, a man will run into a case in which the only evidence pointing to a diagnosis of syphilis is a strongly positive Wassermann. The history may be assuredly negative, as in the case of the serologist who found a positive reaction in his own blood. All the evidence obtainable points to the fact that the patient is free from lues, except this one test. What answer shall be made? It has been recognized that there are several conditions in which a positive Wassermann may be obtained. Leprosy, scarlet fever, malaria, lead poisoning, pulmonary tuberculosis, and the acidosis of diabetes have been described as being among them. But it is not very improbable that there are other conditions of which we at present know nothing, which may produce these complement-binding substances in the blood serum. Furthermore, it has been found that sometimes the result of the test changes from time to time or is different when done in different laboratories.

The question of technique is a vexed one. Almost all of the serologists at present have varied more or less from the original Wassermann technique, and it is necessary to consider the influence of these variations upon the results obtained. In an attempt to clear up some of these vexed points Uhle and MacKinney (*Jour. Am. Med. Assn.*, 1915, lxv, 863) submitted 325 specimens of blood collected from 292 individuals to seven serologists and compared the results returned with the clinical pictures of the patients and with each other. Some of these serologists used more than one antigen, so that there were ten sets of reports returned. From the normal and non-syphilitic cases the positive results varied from 2.6 to 18.1 per cent. There were conflicting reports, but what is worse, "conflicting reports from the same serologist on specimens from the same individual withdrawn at the same time under identical conditions." All of the laboratories agreed in 21 per cent. of the specimens, they disagreed materially in 19 per cent., and varied in from one to four of the ten results in 60 per cent. In other words, if a specimen of blood from the same individual be submitted to ten tests by different serologists, there is one chance in five that the tests will agree. This confusion is especially well illustrated in the case of one patient who flatly denied any possibility of luetic infection or having received any antileutic treatment. His blood was examined four times. On the first examination there were four positive and no negative reports; twelve days later three positives and two negatives; the following day five positives and one negative, and six weeks from the first examination two positives and four negatives. One laboratory yielded all positive reports; a second, one positive and three negatives; the third, two positives and one negative, and the fourth, first positive, then negative, again positive, and finally a negative. Since these tests were all done by competent serologists the results are most disquieting. One is tempted to say that the reaction besides being illogical in principle is worthless in its application. And yet the systematic use of this test has given results of inestimable value. It was with its help that paresis was definitely established as syphilitic in nature before the organisms were found in the brain. In numberless instances the reaction has helped to determine the diagnosis and lead to a curative treatment. In addition the clinicians tell us that only by its use can the treatment of the disease be satisfactorily guided.

What then can be said of the value of the Wassermann reaction as a diagnostic procedure? A single negative result certainly does not exclude syphilis, and even a series of them may be overruled in the presence of sufficient clinical evidence. We may, therefore, conclude that a negative result has little or no value except as it may confirm the clinical

diagnosis. A positive test is a frequent symptom of syphilis; and therein lies its chief danger, for the most serious mistake that can be made is to pronounce a man syphilitic and thereby condemn him to a lengthy treatment and lifelong suspicion without adequate reason therefor. But the Wassermann is not pathognomonic of syphilis since it occurs in other conditions, and it cannot be too strongly emphasized that *a diagnosis of syphilis must not be made upon the Wassermann reaction alone.* In the future, as in the past, the chief reliance must be placed upon accurate and complete clinical observation. It seems highly probable that the Wassermann will some time be completely supplanted by a true specific reaction which will be founded upon a rational basis. Until that time the Wassermann will be extensively used, and rightly so, provided that it be not too blindly followed.

THE VISCOSITY OF THE BLOOD.

FUTURE studies of arterial pressure will probably be considered in connection with the viscosity of the blood which phenomenon has an intimate bearing upon the tension of the vital fluid. Alfred Martinet has written an important monograph on this theme, entitled "Pression Arterielle et Viscosité Sanguine," which is reviewed at length in the *Journal de Médecine et de Chirurgie,* July 25, 1915. It is pointed out that the fathers of medicine paid particular attention to the degree of viscosity of the blood while performing venesection, just as they were punctilious in noting the various qualities of the pulse. To-day the scientific measurement of blood pressure finds its counterpart in the invention of an instrument for the accurate estimation of the viscosity of the blood. The viscosimeter consists of a U-shaped capillary tube, one arm of which is immersed in distilled water and the other in the specimen of blood to be examined. The relation between the height of the liquid in the first tube and the height of the liquid in the second represents the degree of viscosity of the blood. Normally this ratio varies between 3.8 and 4.5, which may be regarded as a physiological constant in the same sense as the temperature, pulse, and blood pressure. Under pathological conditions the extreme figures are 1.9 and 7.8. The degree of viscosity of the blood is of diagnostic importance only when considered in connection with other signs or symptoms.

In hydremia, such as that present in nephritis and in certain types of anemia, the viscosity of the blood is low. The lowest figures for this viscosity are observed in the cardiac and nephritic edemas. In anoxemia the increased content of the blood in carbon dioxide raises the viscosity. Venous blood is more viscous than arterial, and the blood of cyanotic or asphyxiated patients has a high degree of viscosity. This is also present in the hyperglobulia of plethora and in the hyperleucocytosis of leucemia. In the diabetic and the gouty the viscocity of the blood is increased.

The above facts are only of secondary interest. The viscosity of the blood is of real diagnostic significance only when considered in association with the blood pressure—a study connoted by the term "sphygmoviscosimetry." This has been applied by Martinet in 157 patients, who are divided into three categories from this viewpoint. The first of these groups comprises the so-called "eusystolics" in whom the arterial tension is somewhat proportionate to the viscosity of the blood. If the tension rises the viscosity rises also, so that the ratio between the two is always represented by the figure 4. None of the patients in this group suffers from circulatory or renal disorders. The second category comprises the so-called "hypersystolics" or the "hypertensive-hypoviscous" individual, in whom the blood pressure is considerably elevated both absolutely and relatively to the viscosity which is feeble. The ratio is 4.5 or more. In the patients belonging to this group there is some disorder of the cardiovascular and renal systems. To the third category belong the "hypotensive-hyperviscous" individuals, in whom the blood pressure is feeble in relation to the viscosity which is increased, the ratio being 3.7 or less. The patients in this group show an increased venous engorgement such as that accompanying initial disease or chronic disease of the lungs.

What are the practical applications of the above facts? In the first place they enable one to differentiate the hypertension caused by arteriosclerosis from that which is not caused by the latter. Cases of hypertension in which there is an increased viscosity are generally instances of simple plethora, of gout, or of diabetes, in all of which the cardiorenal and vascular apparatus is not organically impaired. Hypertension with a low viscosity indicates cardiorenal disease with a more or less pronounced degree of arteriosclerosis. The former group of cases may be said to belong to the presclerotic stage; the disorder is purely functional and may be completely cured. One of the earliest signs of the onset of sclerotic changes is the diminishing viscosity of the blood.

In the second place, the practice of viscosimetry enables one to determine the precise indications for the administration of the iodides. These should not be given in all cases of hypertension. As Huchard has shown, they should be reserved for a strictly limited group. Potassium iodide tends to diminish the viscosity of the blood, and for this reason it is contraindicated in cases of pronounced hypertension with low viscosity in which a further diminution of viscosity would increase the albuminuria and the hemorrhagic manifestations. The iodides are useful in the following two groups of cases: (1) In plethoric, gouty, and diabetic patients, in whom an increased arterial tension is associated with an increased viscosity of the blood. In these cases in which there is no evidence of weakness in the hypertrophied heart or of renal insufficiency, the administration of the iodides in conjunction with an appropriate diet enables one to diminish both the hypertension and the hyperviscosity. (2) In cases of venous stasis, with a normal or diminished arterial tension and with a viscosity increased by virtue of the excess of carbonic acid in the blood, the iodides correctly administered in association with a cardiac tonic tend to stimulate the heart, improve the circulation, and diminish the carbon dioxide

content and viscosity of the blood. In these cases the increase in the tension of the blood is accompanied by an improvement in the circulation and in the general condition of the patient.

THE SUPERINTENDENCY OF THE RANDALL'S ISLAND HOSPITAL.

PHYSICIANS no less than the general public will keenly regret that provision for the feebleminded in the new constitution, now about ready to be submitted to the people, does not create an entirely separate State commission for the feebleminded as set forth in these columns on May 1 of this year. However, we presume that, as in many another of the new constitutional provisions, State-wide compromises had to be made. We must still labor for a more general recognition of the needs of a special State Commission for the care and treatment of the feebleminded. In the meantime the citizens of New York should see that no steps backward are taken in our own city regarding the care and treatment of the feebleminded. The splendid work which Mayor Mitchel and Commissioner Kingsbury have done in planning the reorganization of Randall's Island cannot be too highly commended. The Commissioner of Charities has had the excellent cooperation of a special advisory commission of lay and professional experts to assist him to lay out his constructive program. We regret to learn, however, that the Commissioner has not been guided by one of the very foundation principles laid down by his committee. The committee specifically indicated that the new superintendent should be a physician well trained in the special work of neurology and psychiatry as well as one experienced as an executive officer in the special field of institutional work. Any one familiar with the new educational and industrial training of the feebleminded knows that there can be no half-way measure, no lay control of such an intricate medical and psychological problem as this work entails.

The Civil Service qualifications already published call for no written or oral part of the examination to be based upon the neurological or psychiatric aspect of this great problem. Any lay individual may be an applicant for the position who has had "two years' experience in an executive capacity in an institution for the sick insane or mentally defective tending to qualify him for the position sought." What does an "executive capacity" mean? If it means that such an aspirant for the position must have served as a medical officer, why should it not have been so stated instead of leaving the matter in doubt so that even a trained nurse or a hospital steward can qualify? Again: does the term "sick insane" mean to state that all the insane are not sick? Finally, the compensation for the successful applicant is to be but $3,500 a year, a thousand dollars less than that for the superintendency at the Letchworth Village for mental defectives, a by no means more onerous position to fill. Furthermore, this salary is the minimum for any superintendency in the State Hospitals for the insane of this State. If there has been no intent on the part of the Commissioner to place an untrained neurologist and psychiatrist in this most important position in the thorough reorganization of the Randall's Island institutions, why did the Civil Service Commission not take the requirements of superintendency at the Letchworth Village as a pattern? The above ambiguous requirements for the superintendency of the Randall's Island institutions would then have read: "The applicant must be a physician in good and regular standing, thirty years of age, with five years' practical experience in the care and treatment of the feebleminded; the written examination to cover medical qualifications including his *conception of the proper development of an institution for the feebleminded*, and his *knowledge of feeblemindedness*."

It cannot be that the Commissioner of Charities was unaware that even the severe requirements laid down for the position of superintendent of Letchworth Village could be easily met by at least a score or more physicians within the confines of New York State, or even the city itself.

Finally, it does not seem possible that Mayor Mitchel and Commissioner Kingsbury are unaware that the greater part of their efforts toward a radical reform and upbuilding of the Randall's Island institutions is seriously jeopardized at this most important first step of selecting a properly qualified and efficient executive officer to take up the great task of providing the proper care and treatment of the feebleminded on Randall's Island, an object which the medical profession and the general public have been long waiting for, and which it lies in their hands now to make or mar.

A PERIL OF THE "PICTURES."

THOSE whose practice brings them a good deal among children may have observed during the past few years a notable increase in the number of cases of pavor nocturnus. In a large percentage of these instances the information has probably been volunteered by the parent or guardian that the child had been to the "moving picture show" during the preceding afternoon or evening. In other instances this information has been elicited on questioning by the physician. Of course, the popularity of motion pictures and the so to say normal frequency of night terrors in children would seem to indicate the possibilities of a mere coincidence in such cases; nevertheless the association between the two phenomena—on the one hand, a phantasmagoria with which the adventures of "Deadwood Dick" are tame in comparison, and on the other hand, a terrifying dream in which are represented one or more of the incidents of the pictorial play, is very often palpably one of cause and effect. It may be alleged that the nocturnal attack is primarily the result of an unstable nervous organization. But all children have an unstable nervous organization. Then one may be reminded of the causative rôle of hypertrophied tonsils, adenoid growths, dietetic errors, etc. It must be admitted that these are all well-recognized causes of night terrors. But these do not exonerate the contributory culpability of the abnormal and excessive stimulation of the child's

delicate nervous system by the scene of adventure thrown upon the canvas.

Less than a generation ago the occasional "Punch and Judy" show and the annual visit of the circus were the limit of entertainment with which the infantile mind was regaled. Nowadays it is feasted upon the antics of the clown, the thrills of the Wild West, the delirium of war, the seduction of the love drama, and the hair-raising exploits of the jungle. All these follow one another in kaleidoscopic succession and little wonder if the effect upon the immature mind is more than one of mere bewilderment.

Physicians cannot afford to ignore the numerous hygienic aspects of motion pictures which have become an important institution of modern life. Most of these have already been freely discussed and have been provided for more or less adequately by regulations as to ventilation, lighting, the prevention of eyestrain, etc. The moral and the educational features of motion pictures constitute separate chapters. Their relation to mental hygiene in the case of the growing child is one that demands the close attention of the medical profession.

SEPTICEMIA IN INFANCY.

AN interesting exposition of this subject is contributed by Hutinel to the *Progrès Médical*, August, 1915. He notes that septicemia is relatively uncommon during adult life, occurring usually in association with the puerperium, severe microbic infections, pronounced cachexias, and sometimes from a contaminated wound. The adult is, as a rule, well protected by his phagocytes and blood plasma. Septicemia is relatively more common during infancy than during adult life for the following reasons: In the infant the alkalinity of the blood is less than in the adult, and in the former there is a certain degree of glycemia. These circumstances may account for the fact that the blood of young animals is a better culture medium for bacteria than the blood of older animals. The young infant has 43 per cent. of polynuclear leucocytes corresponding to the 64 per cent. possessed by adults; the phagocytic property of the blood is therefore less in infants than in adults. In addition the former have a smaller amount of alexins or complement than the latter.

During the course of one year Hutinel has had the opportunity of studying at autopsy the bodies of nineteen premature infants. Of these fifteen showed signs of septicemia, the colon bacillus being the most frequent cause, and the streptococcus and staphylococcus coming next in order. The symptoms during life were variable: refusal or inability to nurse, vomiting of food or of bile, diarrhea, hemorrhagic bronchopneumonia, and hemorrhages into the skin and viscera. The most marked sign, however, was the pronounced loss in weight. The temperature assumed a parabolic curve, reaching subnormal just before death. The loss in weight was progressive, excepting when edema was present, and the color of the skin was apricot yellow.

The infant born at term, though less susceptible to septicemia than the premature infant, nevertheless manifests a peculiar liability to this condition. In many instances the infection antedates birth. When fully developed, the symptoms may be, in addition to the loss of weight already mentioned, a brief rise in temperature, a hypothermia (as in colibacillemia), but more frequently a persistent vomiting and diarrhea. The infection may gain access to the body through the skin, lungs, gastrointestinal tract, and genitourinary apparatus. Any of the organs of the body may be involved. Not all of the cases are fatal, the typhoid septicemias particularly being those in which recovery may ensue.

PERFORATING SIGMOID DIVERTICULITIS.

FOR a number of years past attention has been directed to the acquired diverticula of the large intestine, which are found chiefly in the free portion of the sigmoid. In an interesting study of this subject E. Kummer (*Revue Médicale de la Suisse Romande*, August 20, 1915) calls attention to the diversity of statistics as to the frequency of acquired diverticula, Telling reporting twenty-eight instances in 13,800 autopsies, and Graser fifteen in 28 autopsies. Among the many pathological processes that may arise in these diverticula are mentioned pseudo-tumors resembling cancer, inflammatory changes causing intestinal obstruction, circumscribed abscess formation causing sigmoiditis or perisigmoiditis, and perforation of such abscess into neighboring organs with the production of localized or generalized peritonitis. The author refers particularly to a type of perforation *d'emblée* into the peritoneal cavity with a resulting generalized peritonitis. A review of the forty-two cases thus far reported shows that the condition occurs chiefly in males and at an advanced period of life. The cause is an infection of the bowel wall by the colon bacillus and a subsequent necrosis. The widespread character of the peritonitis that immediately arises is explained on the basis of the following facts: (1) the suddenness of the perforation which gives no time for the production of a fibrinous protective barrier; (2) the extensive radius of mobility of the sigmoid, and (3) the intensity of its peristalsis. Favoring circumstances are a preexisting enterocolitis with diarrhea and the use of drastic purgatives. The characteristic though inconstant clinical symptom of diverticular perforation is the "pistol-shot" pain in the left flank occurring in an individual of advanced years during the act of defecation. If the condition is promptly diagnosed and operated upon without delay, a reasonable hope for recovery may be entertained.

CERTAIN UNCLASSIFIED FEVERS.

AN interesting paper on this subject is contributed by Richard Stein to the *American Journal of the Medical Sciences*, August, 1915. He discusses a group of cases which present the general clinical aspect of typhoid fever, but in which the infection is mild, the temperature curve resembling that of the third week of a mild case of typhoid fever. The general prostration, the splenic enlargement, and the form of the temperature curve would seem to indicate that one is dealing with a mild or abortive case of typhoid fever. But blood cultures are negative. So likewise are the agglutination reactions with the typhoid bacillus, the paratyphoid organ-

isms, and other members of the typhoid-colon group. The suggestion is made that these cases represent a mild bacteriemia in which the infective agent is unknown. They may possibly be cases of so-called autointoxication, although there is no increase in the decomposition products in the urine. It has recently been proposed to call the fevers resembling typhoid fever entericoid or paraenteric fevers. One puzzling aspect of these cases is that some of them after a short subsidence merge into severe cases of typhoid fever. The suggestion is made that the initial stages of typhoid fever have not been subjected to the same careful observation and study as the later stages. There is a group of cases which clinically are unmistakably typhoid fever but in which the laboratory confirmation is wanting. Stein believes that typhoid fever, a clinical entity, is produced by a variety of microorganisms, some of which are yet to be isolated.

News of the Week.

Fecundity of Prussian Women.—A Berlin correspondent of *The Sun* writes that according to the census taken in December, 1910, there were at that time in Prussia 7,809,360 married, widowed and divorced women, of whom only 575,519 had no children. Of these 82,921 women had twelve children, 42,629 had thirteen, 27,064 had fourteen, 14,624 had fifteen, and 17,337 sixteen children or more each. As many as 789 women had more than twenty children. Altogether the 7,250,000 Prussian mothers had given birth to 28,312,898 children, or an average of four children each.

American Red Cross Shipments.—On Sept. 11 the steamer *Samland* carried eighty-two cases of hospital supplies consigned to the Red Cross in London, and on the following day the American Red Cross sent sixty cases of hospital supplies on the steamer *Dvinsk* to Russia.

The Needs of the American Red Cross Hospital at Kiev.—A number of Americans resident in Petrograd have sent Captain Hough to this country to urge the claims of the American Red Cross Hospital at Kiev which is in danger of being closed on account of lack of funds. The hospital is said to be one of the most efficient military institutions in all Russia. The head of the surgical staff, Dr. Shiveley of Ohio, has been honored with a general's commission in the Russian service, because of his work. The average number of wounded soldiers that daily come under the care of Dr. Shiveley is more than 700, and among these are some of the most serious cases that are brought from the battle fronts. The hospital is now running on a guarantee subscribed by the American residents of Petrograd, who have raised sufficient funds to keep it in operation until November. Unless sufficient contributions are forthcoming in the interval, the hospital work will have to be discontinued.

Eighty Million Dollars to Belgian War Victims.—The total value of the food and other relief supplies sent into Belgium by the Commission for Relief in Belgium during the past ten months is more than $80,000,000, according to a statement issued from the New York office recently. Up to the first of July there was sent to Belgium for the relief of the noncombatant population of the country 305,737 tons of flour, 15,275 tons of rice, 40,680 tons of corn, 15,546 tons of peas and beans, and other supplies, the total weight of which was 423,583 tons. In addition to the supplies sent to Belgium the commission has since the first of April last been feeding the destitute people of the German-occupied territory of France. These French sufferers number more than 2,500,000. More than 91,000,000 pounds of supplies have been sent to that part of France. Also about 10,000 tons of food have been donated to relief work in the Grand Duchy of Luxemburg, also under German rule.

Reported Sinking of a Belgium Relief Steamer.—A dispatch from Holland last week stated that a Dutch steamer reported the torpedoing of a steamer flying the signals of the Belgian Relief Commission. Ten of the crew of the steamer were rescued by trawlers.

Dr. Joseph A. Blake of this city, who has been in charge of the American Ambulance in Paris since the beginning of the war, has resigned to become surgeon in chief of the new English Hospital at Frisorangis, near Fontainebleau, organized recently by Lady Alan Johnstone, wife of the British Minister at The Hague. Dr. Blake will have full charge of the hospital, which is to supersede that of the Trianon Palace at Versailles as the chief British hospital in France.

Official Praise for the American Ambulance.—A dispatch to *The Sun* states that Section 2 of the American Ambulance, stationed at Pont-a-Mousson and engaged in removing the wounded in the Bois-le-Pretre forest and vicinity, was recently mentioned in the divisional order of the day. The War Cross was awarded to the section and the commanding officer, Edward Salisbury, who received separate mention, was decorated individually. The base hospital occupied by the section is said to be the nearest to the enemy trenches of any in France. The German artillery bombarded the hospital all of one night last August, killing a French orderly and mortally wounding another.

Leprophobia.—A dispatch from Pittsburgh in the *Evening Post* states that a former United States soldier, who contracted leprosy while serving in the Philippines, and who has been under strict guard in a tent at the municipal hospital since his appearance in Pittsburgh several months ago, will be returned to Washington in an automobile. After he has been turned over to the army authorities, the machine will be burned.

New York City Death Rate.—During the week ending September 11 there were 1,355 deaths in this city, giving a rate of 12.17 per thousand, as compared with 1,206 deaths and a rate of 11.27 for the corresponding week of 1914. The rate here given is figured on the population estimated upon the normal increase over the United States census of 1910. The Health Department does not accept the figures of the State census of 1915, but has made another estimate based upon calculations of the registrar, according to which the population of the city is 5,597,000. The rate for the past week, based on this raised estimate, would be 12.63; based upon the official population determined by the State census it would be still greater. The rate for the first thirty-seven weeks of 1915 is 13.54, that for the corresponding period of 1914 was 13.97.

Chicago Death Rate.—The total number of deaths for the week ending September 11 was 1,424, giving a death rate of 30.3 per thousand of population, as compared with 619 deaths and a rate of 13.2 for the preceding week, and 490 deaths and a rate of 10.8 for the corresponding week in 1914.

The large number of deaths and correspondingly high rate is due to the inclusion of 812 deaths in the Eastland tragedy, which were reported during the week after the recovery of the bodies.

Opposed to Twilight Sleep Films.—The commissioner of licenses recently forbade the "Motherhood Education Society" to give public moving picture exhibitions of the twilight sleep technique with Dr. K. E. Schlöningh from Freiburg as the lecturer. His prohibition was strengthened by the opinion of a number of physicians that the pictures were of no educational value. The company has applied for an injunction restraining the commissioner from interfering with the production. At a meeting in Pittsburgh last week of the American Association of Obstetricians and Gynecologists a number of the members expressed themselves as strongly opposed to the routine employment of this method in cases of childbirth.

Insanitary Conditions on Blackwell's Island.—The August Grand Jury has handed up a presentment to Judge Crain in General Sessions in which the statement is made that the housing of prisoners on Blackwell's Island is a disgrace to New York City. A committee of jurors visited the prison and institutions on Blackwell's and Riker's Islands and reported that "the sanitary conditions at Blackwell's Island are substantially the same as they have been for the past sixty-five years, and the buildings there are overcrowded to such an extent as to constitute a real menace to the health of the inmates." Commissioner of Corrections Katharine B. Davis declared that the overcrowding in the prisons is due to lack of funds for the development of Riker's Island, where buildings are now being erected largely by prison labor.

Fifty Patent Medicines Condemned.—The United State Department of Agriculture announces more than half a hundred successful prosecutions under the Sherley amendment to the Food and Drugs Act, which prohibits false and fraudulent claims as to the curative or therapeutic effects of drugs or medicines. Criminal prosecutions against the manufacturers were brought in twenty-five cases, but in thirty-one instances the falsely and fraudulently labeled medicines were seized while in interstate commerce. Claims made by the manufacturers for the curative powers of these preparations ranged from tuberculosis, smallpox and diphtheria to coughs, colds and scalp diseases. A number of other criminal prosecutions and seizures are pending in various Federal courts throughout the United States because of alleged violations of the Sherley amendment similar to those which have already been tried. The officials charged with the enforcement of the Food and Drugs Act are of the opinion that the evils of the patent medicine business can be stopped only by most drastic action of this sort.

An Endorsement of the Health Board Ordinance Regarding Patent Medicines.—The American Public Health Association at its recent meeting in Rochester, N. Y., adopted a resolution opposing the sale of patent medicines and nostrums whose constituents are unknown to the health authorities; heartily endorsing the ordinance of the New York City Department of Health, requiring the manufacturers of proprietary remedies sold without a physician's prescription to file with the department a statement of its active constituents and therapeutic claims, and recommending to other municipalities the adoption of this or similar measures for the proper safeguarding of the public health. The Health Department announces that the new registration ordinance is meeting with encouraging response. A considerable number of manufacturers have already applied for registration, and several of the larger retail druggists in this city have notified the manufacturers of patent medicines that they will refuse to handle after January 1 all patent medicines which fail to comply with the Health Department's new ordinance.

New Hospital for Drug Users.—Commissioner of Corrections Katharine B. Davis has received a check for $18,000 from John D. Rockefeller, Jr., to be applied toward the construction of a new drug hospital on Riker's Island. Mrs. William K. Vanderbilt recently sent Dr. Davis a check for $10,000 to be put to the same use. This means that work on the building, which will accommodate 132 patients, will begin at once. The hospital will be built of hollow tile and stucco in modified Spanish mission style. It will contain four wards, a dining room, kitchen, day room and doctors' quarters. The hospital will be under the charge of Dr. Ernest S. Bishop.

Examination of Candidates for Assistant Surgeon United States Public Health Service.—Boards will be convened at the Bureau of Public Health Service, Washington, and at the marine hospitals of Boston, New York, Chicago, St. Louis, Louisville, New Orleans, and San Francisco on Monday, November 1, 1915, at 10 o'clock A. M. for the purpose of examining candidates for admission to the grade of assistant surgeon in the Public Health Service. Candidates must be between 23 and 32 years of age, graduates of a reputable medical college, and must furnish testimonials from two responsible persons as to their professional and moral character. Credit will be given in the examination for service in hospitals for the insane or experience in the detection of mental diseases. Candidates must have had one year's hospital experience or two years' professional work. Candidates must be not less than 5 feet 4 inches nor more than 6 feet 2 inches in height, with relatively corresponding weights. After four years' service assistant surgeons are entitled to examination for promotion to the grade of passed assistant surgeon. Passed assistant surgeons after twelve years' service are entitled to examination for promotion to the grade of surgeon. Assistant surgeons receive $2,000, passed assistant surgeons $2,400, surgeons $3,000, senior surgeons $3,500, and assistant surgeon-generals $4,000 a year. When quarters are not provided, commutation at the rate of $30, $40, and $50 a month, according to the grade, is allowed. All grades receive longevity pay, 10 per cent in addition to the regular salary for every five years up to 40 per cent after twenty years' service. The tenure of office is permanent. Officers traveling under orders are allowed actual expenses. For invitation to appear before the board of examiners, address "Surgeon-General, Public Health Service, Washington, D. C."

Medical Society Elections.—THE AMERICAN PUBLIC HEALTH ASSOCIATION at its meeting in Rochester, N. Y., elected the following officers: *President*, Dr. John F. Anderson, U.S.P.H.S., director of the Hygienic Laboratory, Washington; *First Vice-President*, Dr. George W. Goler, health officer, Rochester, N. Y.; *Second Vice-President*, Dr. Charles J. Hastings, medical officer of health, Toronto, Ont.; *Third Vice-President*, Dr. Omar Gil-

lette, Colorado Springs, Col.; *Treasurer*, Dr. Lee K. Frankel, Metropolitan Life Insurance Company; *Secretary*, Professor Selskar M. Gunn, Boston; *Honorary Members*, General W. C. Gorgas, surgeon U. S. army, Washington, D. C.; Dr. Stephen Smith, State Board of Charities, New York; Dr. Frederick Montizambert, director general of public health, Dominion of Canada, Ottawa, and Dr. Henry D. Holton, Brattleboro, Vt.

THE NEW MEXICO STATE MEDICAL ASSOCIATION, at its meeting in Las Vegas the second week in September, elected the following officers: *President*, Dr. Evelyn Frisby of Albuquerque; *Vice-Presidents*, Drs. C. S. Lorey of Las Vegas, J. W. Kingsinger of Roswell, and A. H. Delong of Gallup; *Secretary*, Dr. R. E. McBride of Las Cruces; *Treasurer*, Dr. F. E. Tult of Albuquerque. The next annual meeting will be held in Albuquerque.

THE ASSOCIATION OF SURGEONS OF THE CHESAPEAKE & OHIO RAILWAY held its annual meeting at White Sulphur Springs, W. Va., on September 13 and elected the following officers: *President*, Dr. Southgate Leigh, Norfolk; *Vice-Presidents*, Drs. E. H. Griswold, Peru, Ind.; R. S. Griffith, Basic, Va., and A. O. Taylor, Maysville, Ky.; *Secretary-Treasurer*, Dr. L. G. Bentley. The next annual meeting will be held at Old Point Comfort, Va.

Obituary Notes.—Dr. P. VAN BENSCHOTEN FOWLER of Centre Moriches, L. I., died at Brentwood on September 14, following an operation. He was born in Newburgh, N. Y., in 1866 and was graduated from the Medico-Chirurgical College, Philadelphia, in the class of 1897. He was a member and one time secretary of the Suffolk County Medical Society, and a member of the State Society, of the American Medical Association, and of the Associated Physicians of Long Island, and was also on the medical staff of the Babylon Hospital.

Dr. ROBERT GAMALIEL CORNWELL of Riverhead, N. Y., died at his home of cardiac disease on September 16. He was born in Brooklyn in 1852 and was graduated from the Long Island College Hospital in 1875. He was coroner for Suffolk County and had formerly been health officer of Riverhead.

Dr. SUSAN LA FLESCHE PICOTTE of Walthill, Neb., died at her home on September 18 at the age of 49 years. She was a daughter of Pierre La Flesche, or Iron Eye, the last of the great chiefs of the Omaha tribe, and had devoted her life to the interests of her tribe, by whom she was regarded as the leader. She was graduated from the Woman's Medical College of Philadelphia in the class of 1889 and was a member of the Nebraska State Medical Society.

Obituary.

AUSTIN FLINT, M.D., LL.D.

NEW YORK.

DR. AUSTIN FLINT, whose long life of professional activity was brought to an end on September 22 by cerebral hemorrhage, won fame in early life as a physiologist and in later years as an alienist. He was the son of Austin Flint, Sr., one of America's greatest physicians, and was born in Northampton, Mass., on March 28, 1836. On leaving Harvard College he began the study of engineering, but soon abandoned that to prepare for his father's profession. He studied medicine at the University of Louisville in 1854-6, and then went to Philadelphia, securing his degree from the Jefferson Medical College in 1857. He began practice that year in Buffalo, where he was editor of the *Buffalo Medical Journal* and professor of physiology at the University of Buffalo. In 1859 he removed to New York City and was appointed professor of physiology at the New York Medical College. In 1860 he was called to the chair of physiology at the New Orleans School of Medicine but left there in 1861, returning to New York. From 1862 to 1865 he served as acting assistant surgeon in the Union Army, and at the same time filled the chairs of physiology at Bellevue Hospital Medical College, of which institution he was one of the founders, and at the Long Island College Hospital. He resigned the latter in 1868 and left the Bellevue College in 1898 to take the chair of physiology at Cornell University Medical College. From 1874 to 1878 he was surgeon general of the National Guard of the State of New York.

While devoting much of his time to physiological experimentation and teaching, Dr. Flint was also a diligent student and practitioner of psychiatry. He was appointed consulting physician to the Manhattan State Hospital for the Insane in 1896, and was one of the State's alienists at several of the Thaw trials, maintaining to the end that the murderer of Stanford White was a paranoiac. He was the author of a number of books and articles, among which may be mentioned: A treatise on "Physiology" in five volumes, 1866-75; "Physical Effects of Prolonged Muscular Strain," 1871; "Text-book of Human Physiology," 1875-88; "Handbook of Physiology," 1905.

Progress of Medical Science.

Boston Medical and Surgical Journal.

September 9, 1915.

1. Late Results of Operations for Correction of Foot Deformities Resulting from Poliomyelitis. H. W. Marshall and R. B. Osgood.
2. The Carnivorous and Herbivorous Types in Man; the Possibility and Utility of Their Recognition. II. Certain General Considerations. J. Bryant.
3. Pneumococcic Arthritis, with Report of Six Cases. J. W. Sever.
4. A Preliminary Report of the Results of Wassermann Tests as Reported from Different Laboratories, Calling Attention to a Little Knob on the Frenum of the Upper Lip, Which May or May Not Be Characteristic of Syphilis. O. D. Phelps.
5. The Femur of an Idiopathic Epileptic. J. S. Foote.

1. Correction of Foot Deformities from Poliomyelitis.—H. W. Marshall and R. B. Osgood studied the late results of this treatment in twenty-six cases selected from among many patients treated at the Massachusetts General Hospital. All simple tenotomies of the tendo Achillis for equinus deformity, all plantar fasciotomies for slight contractions of the feet, all recent cases of all sorts were discarded and only the more complex ones of longer duration retained. All patients within this restricted class, however, that came back for final observation are included, both good and bad results. The average length of time that has elapsed since operative interference among the twenty-six cases reported is four years and ten months. Twenty-three patients from the total number of twenty-six were distinctly improved after their surgical experiences. Poor as some operations appear to be at first glance, when judged from this standpoint, nevertheless they usually show increased usefulness if compared with previously more deplorable conditions that existed in each instance. There were no overcorrections of deformities following tendon transplantations in this series, the usual result being partial correction accompanied by

some functional improvement and with only occasional perfect success and complete restoration of function. These late conditions indicate in a general way what may be expected from surgical treatments of fairly complicated infantile paralysis cases in a large hospital where there are a number of different operators and division of responsibilities in the after-care of patients. These statistics, however, are far too meager and incomplete to possess weight in comparison between individual control of patients from beginning to end and cooperative direction of treatments by groups of physicians.

3. **Pneumococcic Arthritis.**—J. W. Sever reports a series of six cases representing various methods of infection by the pneumococcus, namely: (1) From the mouth by way of a tooth infection. (2) By trauma without previous known pneumonia. (3) By a previous pneumonia followed by an otitis media. (4) By trauma followed by pneumonia and involvement of the joint in nine days. (5) Following several attacks of bronchopneumonia and immediately after an acute attack of otitis media. (6) Involvement of joint two weeks after an acute attack of lobar pneumonia. This case represents the only typical one. All these cases had the diagnosis confirmed bacteriologically except Case 4, which, however, is included in this series on account of the improbability of its being anything else. The fluid in all these cases was rather thin and greenish yellow when the joint was first opened, but as it continued to drain at the time of the operation the heavier pus escaped. It was during this period that the fibrin flakes were expressed. The mortality was three out of six cases, 50 per cent. The joints, so far as the author has been able to determine, are practically normal in the two cases he has been able to follow.

4. **Wassermann Tests as Reported from Different Laboratories.**—O. D. Phelps has made it a practice to submit specimens of blood for examination to several laboratories. He tabulates the results obtained in the case of 358 specimens as follows: Four laboratories: Of 113 bloods 68 agree; 45 disagree; 60.2 per cent. agree and 39.8 per cent. disagree. Three laboratories: Of 135 bloods, 70 agree; 65 disagree; 51.9 per cent. agree and 48.1 per cent disagree. Two laboratories: Of 110 bloods, 72 agree; 38 disagree; 65.5 per cent agree and 24.5 per cent. disagree. In view of the above facts, one might well question the reliability of the test. The varying results reported in the literature from different laboratories and a chance difference in the report of a Wassermann in the experience of the author are what stimulated this comparison. The above results simply show the delicacy of the test and how susceptible it is to variation in technique, and to differences in the blood as taken at different times.

New York Medical Journal.

September 11, 1915.

1. The Effects of Tobacco and Alcohol upon the Cardiovascular System. R. N. Willson.
2. Our Present Knowledge of Tuberculosis. Mary E. Lapham.
3. Chondrodystrophy. R. D. Moffett.
4. The Intraocular Muscles in Tabes Dorsalis. L. C. Peter.
5. Endameba Buccalis and Alveodental Pyorrhea. G. C. Brunelle and G. Ginsberg.
6. Blepharochalasis. N. Jenison.
7. Scarlet Fever. J. R. Graham.
8. Posture and Arm Movements in Deep Breathing. J. F. Rogers.
9. Treatment of Paresis. C. F. Read.
10. The Treatment of Rigid Scoliosis. S. Kleinberg.
11. Infant Mortality Eighty Years Ago. C. Herrman.
12. Direct Laryngobronchoscopy and Esophagoscopy. C. B. Broder.

1. **The Effects of Tobacco and Alcohol upon the Cardiovascular System.**—By R. N. Willson. (See page 543.)

2. **Present Knowledge of Tuberculosis.**—Mary E. Lapham states that this knowledge has hardly begun. The evolution of the tubercle bacillus needs to be studied; the work done only shows that this or that species of acid-fast bacilli is not pathogenic for this or that animal; the path one needs to follow is the effect of adaptation to the host that has conferred upon the different tubercle bacilli their distinguishing characteristics. There is needed a scientific study of acid-fast bacilli and their activity in butter, milk, cheese, blood, feces, and urine. Where do smegma bacilli stand in the scheme of evolutionary development is another question to be answered. Remembering that life begins under watery conditions, and that marsh gas is the basis of all fatty compounds, one should go out into the marshes to find the origin of this group of bacteria which have learned to synthesize fats and have thus distinguished themselves from all other groups.

5. **Endameba Buccalis and Alveodental Pyorrhea.**—G. C. Brunelle and G. Ginsberg point out that the *Endameba buccalis* has not yet been cultured and in consequence Koch's postulales have not been fulfilled as regards the etiological relationship of the microorganism to alveodental pyorrhea. It is asserted by Bass and Johns that *Endameba buccalis* is primary in its attack, that the countless other organisms present are secondary invaders, and that the endameba is not present in normal mouths. Others take the opposite view, regarding the endameba as a possible secondary infective agent sometimes present in normal mouths. In an investigation of the frequency with which the endameba is present in normal mouths the authors' results follow very closely those reported by Bass and Johns. Thus, of 123 mouths showing no apparent lesions, three (2.5 per cent.) gave positive results, while of 107 cases of frank pyorrhea, 102 (95 per cent.) gave positive findings. In thirty-seven mouths showing a pyorrheal tendency *Endameba buccalis* was found in twenty-nine (79 per cent.) upon first smear, while in a series of thirty-nine cases referred by dentists who went directly into a pus pocket with a dental scraper for material to be examined, 100 per cent. positive results were obtained. These investigations show that *Endameba buccalis* is almost constantly present in pyorrheal conditions and is rarely present in healthy mouths.

8. **Posture and Arm Movements in Deep Breathing.**—J. F. Rogers notes that for the production of a maximum expansion of the lungs many teachers of physical training and physicians have recommended certain postures to be assumed and certain arm movements to be executed during inspiration. The standing position has been most used for the taking of breathing exercises, but the supine position has also been highly recommended. In both of these postures it has been taught that, for the greatest intake of air, the arms should be raised forward to the horizontal position, or sideward to the same level, or forward and upward, or sideward and upward. Still further to deepen or widen the chest it has been suggested that the person stand, or lie on his back, grasp the handles of pulley weights, the pulleys of which are attached to the floor at the feet of the breather, and, while inspiring, draw the handles of the weights forward and upward, as in the movements of the arms without the weights. The author's investigations show that whatever other effects there may be from the postures assumed and exercises carried out for purposes of deep breathing, there can be no advantage from them so far as increasing the intake of air is concerned. Deep breathing exercises are recommended for the tuberculous, and it is not long since these same arm movements as an aid to breathing

were prescribed for patients by a leading authority on the subject of this disease. As the arms are not without weight, their lifting is not done without considerable muscular exertion and the fatigue of these exercises is added, without result so far as the effect on deep breathing is concerned. With very deep inspiration there is a drawing backward of the head and a straightening of the thoracic spine—in other words, the assuming of the very erect posture, and, if any exercises are to be carried out as aids to a deep intake of air, it seems that the drawing backward of the chin and the assumption of the most erect standing or sitting posture would be most useful as an aid or accompaniment of deep breathing.

9. **Neosalvarsan in Treatment of Paresis.** — C. F. Read has treated twenty cases of paresis with 123 subarachnoid injections of neosalvarsan, in doses ranging from 0.003 to 0.006 gram diluted in at least 10 c.c. of the patient's own spinal fluid. During the treatment three patients died, but of these, two were in the final stages and death could not be fairly attributed to the treatment. One case, already slightly spastic when received, became intensely spastic and died with symptoms of motor tract degeneration. Two patients suffered incontinence. A few complained of weakness, headache, and leg pains from time to time after treatment. A number at various times had a slight rise in temperature for a short time after treatment. One case developed a Charcot joint during treatment. One patient had convulsions following a treatment but has had others not connected with the treatment. The Wassermann of the blood serum in nine cases (not tested in the remainder) remained 4+. In two cases it is now negative but in one it was negative before treatment and in the other it was not tested. One negative and one faintly positive Wassermann in the spinal fluid have become strongly positive. The above are the unfavorable results. The favorable results are the following: One case has entered a fair remission but still shows positive fluid findings. Another is improved markedly but is still very evidently paretic. A number show improved conduct or physical health which may possibly be the result of hospital care. In three cases the Wassermann in the spinal fluid has become weaker. From the foregoing results the author concludes that the subarachnoid treatment with neosalvarsan in small quantities is without effect and that when pushed with the object of obtaining results it is extremely apt to prove injurious. Its use in this manner is to be discouraged.

10. **Treatment of Rigid Scoliosis.**—E. Kleinberg finds that the very mild cases of rigid scoliosis can be satisfactorily treated by gymnastic exercises of one type or another and preferably by the Teschner system. The very severe types of scoliosis cannot be corrected or even satisfactorily changed by any known procedure. In the moderate types of rigid scoliosis more frequent and more marked improvement can be obtained by the Abbott than by the older methods. The author has devised a brace which is said to effectively apply the Abbott method and reduce the number and severity of the complications that are met with in plaster jackets. The earlier the treatment is begun the better are the prospects for improvement. The patients must be kept under observation for a long time to insure the permanency of whatever degree of improvement has been obtained.

Journal of the American Medical Association.

September 11, 1915.

1. The Surgical Anatomy of Cleft Palate. J. R. Eastman.
2. Intestinal Adhesions. Bowel Protection. W. B. Brinsmade.
3. Acanthosis Nigricans as an Indication of Internal Malignancy. A. J. Markley.
4. Illustrations of the History of Leprosy. D. W. Montgomery.
5. Symptoms and Diagnosis of Leprosy, with Report of Cases. H. Morrow and A. W. Lee.
6. The Etiology and Treatment of Leprosy. E. D. Chipman.
7. Results of Applying a Quantitative Method to the Abderhalden Serum Test for Cancer. I. Levin and D. D. Van Slyke.
8. Transverse Incision in Operation for Appendicitis. A. E. Rockey.
9. Right-Sided Hypertension with Occasional Cardiac Dilation as Postoperative Complication. F. F. Simpson.
10. Women in Medicine. R. C. Cabot.
11. A Case of Lymphatic Leucemia with Apparent Cure. R. A. Ireland, W. A. Baetjer and J. Ruhräh.
12. Epididymotomy: A New Operation. E. P. Merritt.
13. Tuberculosis of the Uterine Appendages. H. C. Taylor.
14. Leucemia—Report of Two Cases. C. R. Steinke.
15. Report of a Case of Complete Heart Block. W. J. Wilson, Jr.

1. **Surgical Anatomy of Cleft Palate.**—By J. R. Eastman. (See MEDICAL RECORD, June 26, 1915, page 1092.)

2. **Intestinal Adhesions.**—By W. B. Brinsmade. (See MEDICAL RECORD, July 3, 1915, page 40.)

3. **Acanthosis Nigricans as Indication of Internal Malignancy.**—A. J. Markley states that the development of acanthosis nigricans in the adult is an indication of some serious internal disorder, the most frequent of which is cancer. The frequency of this association justifies the assumption of a diagnostic relation between the two conditions. Notwithstanding its rarity, acanthosis nigricans should be promptly recognized, and an effort made to locate and, if possible, to remove the associated malignant growth.

8. **Transverse Incision in Appendicitis.**—A. E. Rockey first advocated this method in an article in the MEDICAL RECORD in November, 1905, entitled "Transverse Incision in Abdominal Operations." In the region of McBurney's point, the fibers of the internal oblique and the transversalis run directly transverse, and the external oblique is only an aponeurosis. The aponeuroses of these muscles are united at their insertion at the border of the sheath of the rectus, the fibers of the broad tendons becoming a part of the sheath. This junction is the key to the situation in this operation. The skin incision at the place of election is made directly transverse with its center on McBurney's point, though it may be lower if conditions require. While the favorite anatomical situation permits easy access through a short incision, which may be desirable in children, or small persons with thin abdominal walls, the incision in ordinary cases should be 2 or 2½ in. in length and may be longer as the case requires. Continuing deeper, it passes through the outer part of the sheath of the rectus, severing the tendinous border and the aponeurosis of the muscles on a directly transverse line. When this is done, the handle of the scalpel may be inserted below, and the finger above, and the wound spread wide open by a single pull. Not a muscle fiber is cut. The fibers of the internal oblique and transversalis separate in a transverse direction. The aponeurosis of the external oblique is broader than that of the other muscles, thus permitting the incision through this to be carried further to the outer side. When the muscular part is reached, the spreading pull separates the fibers obliquely upward. The muscle is, however, as elastic as rubber, and the retractor, which is at once inserted, drawing outward, readily brings it into the transverse line. The rectus is now drawn back into its sheath at the inner side by another retractor. The peritoneum is divided on the transverse line. This incision is said to give a splendid exposure but is not adapted to pelvic operations. If doubt exists as to the differential diagnosis between the appendix and the tube or the appendix and the gall-bladder as the site of trouble the vertical incision is preferable. In the occasional case, when the appendix is adherent in the pelvis, a preoperative diagnosis can usually be made.

9. Right-Sided Postoperative Hypertension.—F. F. Simpson finds that right-sided hypertension occurs as a postoperative complication. It is usually slight and causes no alarming symptoms. It occasionally causes a circulatory disturbance but always with a rapid pulse. In rare instances it goes on to dilatation of the right auricle or even of the whole heart. It is more likely to occur when the myocardium is weakened by disease. It may readily be precipitated or intensified by excessive ether, or a prolonged extreme Trendelenburg position, or by the rapid intravenous injection of large quantities of salt solution while the heart is already embarrassed. It should be promptly recognized and treated by slight elevation of the head of the bed, a little morphine and cardiac stimulants.

British Medical Journal.

August 28, 1915.

1. Treatment of Gunshot Wounds by Excision and Primary Suture. H. M. W. Gray.
2. On the Use of Certain Antiseptic Substances in the Treatment of Infected Wounds. H. D. Dakin.
3. On the Use of a Sleeve of Vein in Nerve Suture. A. Fullerton.
4. The Treatment of Gunshot Fractures of the Leg with Posterior Wounds. C. A. Morton.
5. On the Extraction of Foreign Bodies. J. R. Caldwell.
6. Open-air Treatment for Wounds. A Simple and Inexpensive Form of Open-air Ward, as Used at the V.A.D. Hospital, Henley-in-Arden. W. E. Nelson.
7. The Public Health Work of the British Medical Association. H. Jones.

1. Treatment of Gunshot Wounds by Excision and Primary Suture.—H. M. W. Gray enumerates the following advantages of this method: Healing by first intention is assured in the vast majority of properly selected cases. Much time is thereby saved. Some wounds, which would otherwise require months to heal, are soundly united in the course of ten to fourteen days. The soldier is thus available for duty again at a much earlier date. The amount of attention required to be given by the medical officers and nurses is greatly reduced. Much pain is avoided. The amount of dressings required is reduced to a minimum, and in this way expense is lessened. Complications which may arise from the presence of a septic wound are avoided. A more sightly scar is obtained. Because of the absence of contraction which would accompany the formation of a large cicatrix, there is less impairment of function in the part concerned. In the case of head injuries, excision of the wound, especially in some, apparently trivial injuries, provides a means of ascertaining, with greater certainty than by any other method, whether depressed fracture or injury to the brain coexists.

3. Use of a Sleeve of Vein in Nerve Suture.—A. Fullerton has been using for a number of years portions of vein in nerve suture in the following manner: The most suitable vein for nerves of the upper extremity—as, for instance, the musculo-spiral, the median, and the ulnar—is the basilic vein at a spot between its commencement and the point at which it pierces the deep fascia of the upper arm. A segment of the vein about 1½ or 2 inches in length is excised and threaded on a sinus forceps. One end of the nerve is then caught by the forceps, and the sleeve pulled over. The ends of the nerve are then freshened with a sharp scalpel and sutured with fine catgut. When the suture is complete the sleeve is pulled over the junction and fastened to the nerve sheath by a few points of suture. The vein thus applied is intended to form an aseptic sheath for the nerve to keep the ends in secure apposition, to direct the growth of the new axis cylinders, and to prevent the ingrowth of scar tissue from the outside. Any vein of suitable size will do, and in the lower extremity a portion of the internal or external saphenous will probably be the most convenient. The sleeve must be pulled over the first nerve end before trimming.

Berliner klinische Wochenschrift.

August 2, 1915.

Etiology of Typhus.—The most striking feature of a paper on this subject by Proescher of Pittsburgh is the total absence of any allusion to the work of his fellow countryman, Plotz of New York, although numerous references to the labors of others in the field are interpolated. The paper is brief, a preliminary essay, and, aside from the bibliographical allusions, wholly technical. The parasitic cause of the fever according to the author's researches is a diplococcus appearing also as a diplobacillus which proliferates originally in the endothelia of the blood vessels. It probably reaches these cells through the proboscis of the louse. Blood smears show the presence of detached endothelia in which may be seen numerous parasites, both forms occurring side by side. This find is in full accord with the histological diagnostic discovery of Eugen Fraenkel, who observed peculiar alterations in the small cutaneous arteries of typhus patients. While a peculiar specific lesion it suggests somewhat a periarteritis nodosa, since in both there are nodular proliferations which cause obstruction of the arterioles. The lesions are strictly microscopic. It seems unquestionable that the multiplication of the bacteria takes place in the endothelia alone, not in the blood stream. The infected endothelia are exfoliated into the latter in large numbers. Apparently the author has been unable to cultivate his microorganisms, while Plotz has, we believe, not only been successful in this respect but has elaborated a therapeutic serum. The author regrets that he cannot claim to have discovered the exciting cause of typhus, but hopes to be able to complete his work in due season.

Treatment of Gunshot Fractures.—Pincus states that the enormous war material of these injuries makes the establishment of indications a necessity. Gunshot fractures differ from the complicated fractures of peace times because they do not come to treatment nearly so soon. The former belief that gunshot fractures are not *per se* infected, and become so chiefly as a result of probing, etc., no longer holds good. Two cases are cited of soldiers who reached the reserve hospital simultaneously with the same type of injury and same first-aid dressings. One of these presented a fulminating gas gangrene while the other was virtually sterile. As a rule in the complicated fractures of peace times we see bone fragments driven outward through the soft parts, while in gunshot fractures shell fragments and shreds of tissue are forced into the tissues. The long period of transport—three or four days is the minimum—has effectively robbed the soft tissues of their elasticity and the muscles undergo marked retraction, so that extension of limbs meets with great resistance. The main question in the treatment of gunshot fractures is not "How can we most ideally replace the fragments from the anatomical viewpoint?" but "Is the wound infected, and if so, in what degree?" The latter is by no means easy to answer. High temperatures need not mean great virulence. Many a case received as "septic" because of the temperature proves to be aseptic after reposition of the fragments. Phlegmons may cause no further trouble, even when unopened, when the wound canal is properly drained through fenestrations in the immobilizing dressings. If the temperature does not subside after two days an artificial opening may replace the natural one. If a joint cavity is exposed by the wound it furnishes no necessary contraindication to drainage as above outlined. The author has seen a joint (wrist) thus treated heal with perfect mobility. The old circular plaster-of-Paris bandage applied under strong extension (Bergmann) has regained during the present war all the favor which it may have lost in recent years.

Bardenhauer's extension method is too elaborate for military surgery, and nail extension appears to be contraindicated in all infected or possibly infected fractures.

Münchener medizinische Wochenschrift.

August 3, 1915.

Epidemic Meningitis in Soldiers.—Klinger and Fourman describe an epidemic of cerebrospinal meningitis which lasted from February to April, 1915. It occurred in the barracks of some Swiss troops which naturally had not been exposed to the hardships of actual warfare. The number of soldiers attacked was eleven, while but two civilians in the near-by residence district developed the disease. Forty-two other soldiers who had been exposed were quarantined and six of these who were found to be carriers were isolated. Those classed as suspected carriers were not isolated. A large number of soldiers who had not been exposed were also examined and were found to include a small number of carriers. The authors were in fact able to corroborate the experience of others that mere isolation of carriers has no influence on the course of an epidemic. The so-called suspects were men who had suspicious-looking cocci in their throats, which organisms, however, failed to answer to all the requirements of the meningococcus. On the other hand in certain cases of clinical meningitis of classic type the cocci fulfilled all requirements save that they would not form colonies in fermenting maltose. While believing that isolation furnishes no certain prophylaxis the authors would not abandon it, for the moral effect is good. The public would not understand why those attacked by any dread infectious disease should be spared this precaution. If it is omitted the public would clamor against isolation for the less deadly diseases.

Indicanemia.—Haas refers to the original discovery of indican in the blood of uremic patients by Obermayer and Popper. Their observations were promptly confirmed and soon afterward it was learned that indican could be present in the blood in both acute and chronic nephritis when there were no evidences of impending uremia. It is now acknowledged that indicanemia is rather an unfavorable prognostic in chronic nephritis, or, in other words, is evidence of a certain degree of renal insufficiency. The author decided to study the subject of indicanemia anew on two cases of chronic nephritis. One patient had cirrhotic kidneys with high blood pressure, while the other had ordinary chronic parenchymatous nephritis with blood pressure normal and much albumin in the urine. Both patients had indicanemia and in both the residual nitrogen was still normal. It therefore became evident that the presence of indican in the blood antedates azotemia as evidence of future mischief, and the more delicate and trustworthy the test for indican in the blood the greater the promise for a prognostic resource. Also of great importance is the ratio between residual *N* and indican in the blood. The amount of the aminoacid fraction of residual *N* may also be looked on as representative of the degree of renal insufficiency, and the ratio of aminoacids and indican in the blood should furnish another criterion of that condition. The rest of the paper is devoted to a study of Jolles's indican reaction.

Tangential Shots of the Thoracic Cage.—Burckhardt and Landois go into this subject at great length. While these injuries do not constitute an entity they differ in a number of respects from penetrating wounds. Almost invariably more than one rib is involved in the tangential form. From the course of the wound through fractured ribs and muscles infection also occurs more readily in the latter, as does likewise open pneumothorax with resulting empyema. The respiratory mechanism is badly damaged and bilateral affections of the lungs often result. The projectiles cause contusions of the viscera, not only the lungs but the liver and kidneys; some of these are accompanied by lacerations, and hemorrhage and necrosis occur. Naturally, tangential shots of the lower ribs have more of these complications. These injuries will in time lead to new viewpoints in regard to diagnosis and indications for treatment, notably surgical.

Deutsche medizinische Wochenschrift.

August 5, 1915.

Percussion in the Diagnosis of Apical Tuberculosis with Special Reference to Krönig's Apex Field.—Schneider refers to Krönig's original claim that percussion is of much more value than auscultation in the earliest recognition of tuberculosis of the apex. The former may be so carried out as to reveal the existence of a true focus of disease while auscultation discloses only the presence of a catarrhal process, not necessarily tuberculous. In true apical tuberculosis the apex has become more narrowed and smaller. Percussion shows this both in vivo and on the cadaver. Cadaver control is of course out of the question in routine work, but *x*-ray control is fairly useful. The author now relates his own experience with Krönig's alleged apical field in which narrowing and general diminution are recognized by percussion and comes to the conclusion that auscultation is of more value in early diagnosis while percussion a la Krönig is to be used with great caution with reference to shortened resonance and slight narrowing (both in the right apex). Again, absence of these finds cannot exclude the presence of tuberculosis. Cases of the latter may present moist râles on auscultation and nothing at all on percussion. It may be laid down that as soon as percussion finds are obtainable, *x*-ray finds are simultaneously obtainable.

Veronal-Bromine Synthetics.—Serejski describes a new synthetic which consists of a veronal with a side chain of dibromopropyl. The bromine content is over 40 per cent. As is usually the case no reasons are adduced to show the superiority of the synthetic over a simple combination of veronal and bromides. It is a nerve sedative and mild hypnotic, and has given excellent results in psychoses and psychoneuroses attended with excitement. It appears to be readily taken and without the development of untoward collateral and after effects. Thus far, when administered daily no cumulative effects or habit-forming tendency has been noted. The cost per diem is about one mark or about twenty-five cents in Germany. When the excitation is of the crescendo type the remedy has been powerless to check it. In cases in which failure occurs, opiates may also fail to obtain the desired results. Whether it can rival opium in depressive cases has not yet been decided. Any remedy which is a nerve sedative is incidentally a hypnotic whenever the wakefulness is due to motor unrest. From this viewpoint the new synthetic is not an essential hypnotic. Sedatives of this type often render the use of the latter unnecessary. The drug was sufficiently powerful in one case to quiet a depressive with impulsive ideas.

Hot-Air Therapy in Gynecology.—Professor Walther of Giessen sums up this subject as follows: The diagnosis must be beyond doubt and exact and patients must have been interned—they should never be treated in dispensaries. If the physician cannot give complete supervision to the case he must detail a competent person to represent him by constant attendance. No complications must be present, as fever, suppuration, hemorrhage, etc. The principle involved in this form of treatment is active hyperemia and the indications include all chronic inflammations and congestions.

Insurance Medicine.

Blood-Pressure in Life Insurance Examinations.—Dr. Claude C. Cody, Jr., says that the earlier studies in this field were all on arterial pressure, while venous pressure to this day has been neglected. Several factors of prime importance are not constant, and, therefore, the normal venous pressure has great variations due to changes in the atmospheric temperature or pressure. Consequently the venous pressure is not now, and probably will not be in the immediate future, of any value to us in life insurance examinations. The determination of the arterial or blood-pressure is encumbered with no such difficulties, and the results are of great value from a prognostic standpoint in life insurance work.

In studying the technique of blood-pressure the prime factors of importance and which are under our control are the posture of the patient, his mental attitude, and the instrument. The patient should be seated in a chair with his arm resting upon a table. The mental attitude of anxiety or intense curiosity may be sufficient to cause a rise in blood-pressure of 20 mm. This curiosity may be overcome by telling the patient that three or more readings will be necessary.

Blood-pressure may be obtained by either the auscultatory or the palpatory methods. The former has a double advantage over the latter, due to greater accuracy and the ability to determine the diastolic pressure. The auscultatory readings are uniformly higher than the palpatory. The technique of the auscultatory readings is as follows: After the arterial pulsation has been eliminated the stethoscope is applied over the artery, with a gradually decreasing pressure in the arm cuff, and the reading is noted at the first sound, usually a click or clicking murmur. Following this there is a series of sounds which Ettinger, in 1907, separated into five phases and named in the order of their occurrence. The first phase marks an interval of clear tones which is soon replaced by the second and third. The second phase marks an interval of muffled tones with a series of murmurs. The third phase marks an interval of clear, frequently booming tones which suddenly cease. The fourth phase marks an interval of dull tones. And the fifth phase marks the disappearance of all sounds. The first, second, and third phases are always clearly marked, occasionally some difficulty will be experienced in differentiating between the third and fourth. In this case the point of the disappearance of the third phase can be readily determined by lowering the blood-pressure until the sound disappears, then gradually increasing it when the dull tone of the fourth phase is audible, followed almost instantly sometimes by a clear, loud tone which marks the end of the third phase. It must be plain though that the distinction between the various phases is clear only over normal arteries and those which are but slightly sclerosed; and, also, when the heart beats are regular in force and rhythm. The determination of the precise point of diastolic pressure is the subject at present of more discussion in the technique than any other. Korotkoff, in his original communication on the auscultatory method in 1905, stated that the diastolic pressure was marked by the change from the clear third tone to the dull fourth—in other words, at the end of the third phase. This is the generally accepted fact.

The heart must always lift a certain load equal to the peripheral resistance before the aortic valves will open. From the moment the valves open pressure forcing the blood toward the periphery is represented by the force exerted by the heart from the opening of the valves till the close of the systole. Thus, the diastolic pressure represents the peripheral resistance and the pulse-pressure represents the actual propulsive force in the arteries. The normal diastolic pressure is between 80 and 90 mm. with 70 and 100 as the limits; the normal pulse-pressure is 40 and 30 and 50 mm. as the limits.

In conclusion it can be stated that: (1) Venous pressure is of little value. (2) The posture, mental attitude, and instrument are important. (3) The auscultatory readings are 5 to 8 mm. higher than the palpatory. (4) The auscultatory method is better than the palpatory. (5) The diastolic pressure should be read off the scale at the end of the third phase and not at the disappearance of sound. (6) Since the diastolic pressure measures the peripheral resistance it is a better index of hypertension than systolic pressure. A sustained diastolic pressure of 100 to 110 indicates hypertension. The diastolic is less influenced by physiological factors than the systolic pressure. (7) The pulse-pressure measures the energy of the heart in systole in excess of the diastolic pressure. Clinically it is the load of the heart and is approximately 50 per cent. of the diastolic pressure. (8) Marked variations within short intervals in pulse pressure observations should make one think of a neurotic cardiac element. (9) The blood-pressure determination is worth all the trouble it takes from a prognostic or life insurance standpoint.—*Texas Medical News.*

Group Insurance for a Street Railway Company.—The Brooklyn Rapid Transit Company has made an arrangement with a large insurance company whereby all of its employees who have been two years or more with the company may insure under the so-called "group" plan. Those eligible number about 8,000. Any employee may take insurance up to $5,000, subject to the usual examination, but if as many as 5,000 apply under the plan the examination requirement will be waived. The company agrees to pay one-half the annual premium on insurance up to $1,000 and the entire premium in the case of those who, after taking out insurance, are retired under its pension system and also in the case of those who after ten years' service have had their earning capacity reduced through partial disability.

Scope of Medical Examiner's Authority.—A certificate issued by a fraternal insurer, which was referred to in the application, provided that no local officer or employee was authorized to waive any of the conditions of the certificate or by-laws. In an action on the certificate it was held that a medical examiner, by falsely answering questions in the application, which was signed by the applicant, and which declared that the applicant warranted the truth of all representations therein, could not estop the insurer from relying on the falsity of such representations to avoid the policy; such action being without the scope of the examiner's authority.—Sovereign Camp v. Lillard (Tex.) 174 S. W. 619.

Book Reviews.

GAS POISONING IN MINING AND OTHER INDUSTRIES. By JOHN GLAISTER, M.D., D.P.H., F.R.S.E., Professor of Forensic Medicine and Public Health in the University of Glasgow, and DAVID DALE LOGAN, M.D., D.P.H., Surgeon to the Coltness Ironworks, Newmains. Price, $3.50 net. New York: William Wood & Company, 1914.

GAS poisoning, that is, essentially, poisoning with carbon monoxide, is one of the most important industrial poisonings, not only because of the numerous industries in which it is met, but also because of the insidious onset of the poisoning as it often occurs. This is, as far as we know, the first volume of any size to be devoted wholly to this subject. The literature, though extensive, is scattered and this work is therefore all the more welcome. The authors have handled the subject in an extremely interesting and efficient manner. There is a thorough discussion of the way in which carbon monoxide may arise in the various industries and how it may be dangerous to relatively distant individuals. The chapters on symptomatology and pathology and on methods of detecting carbon monoxide are complete and excellent. It is reassuring to see the importance with which the authors view the chronic form of poisoning. It was not generally recognized in this country until comparatively a short time ago. It is very interesting to read of the prominence which is given to the use of oxygen in the treatment of the poisoning. Its necessity is clearly shown in spite of the adverse criticism that has been offered during the past few years. There are also a complete description of the various forms of rescue apparatus now obtainable and a bibliography of a dozen pages. The only criticism that might be made is that there is more or less confusion in the arrangement of the chapters which do not follow in any logical sequence. The book is an exceedingly valuable, as well as interesting one and should be in the possession of every man who is apt to come into contact with cases of poisoning with carbon monoxide.

PYELOGRAPHY (PYELO-URETEROGRAPHY). A Study of the Normal and Pathologic Anatomy of the Renal Pelvis and Ureter. By WILLIAM F. BRAASCH, M.D., Mayo Clinic, Rochester, Minn. Octavo of 323 pages with 296 pyelograms. Price, cloth, $5.00 net. Philadelphia and London: W. B. Saunders Company, 1915.

WHILE Voelcker and von Lichtenberg of Heidelberg, first succeeded in demonstrating the outline of the human renal pelvis and ureter by pyelography in 1905, but little use was made of this procedure until Braasch recognized its possibilities in the diagnosis of renal and ureteral conditions and, through the publication of his observations, drew the attenton of surgeons throughout the world to its value. To Braasch, then, belongs much of the credit for the rapid development of this most important diagnostic aid; hence a thorough exposition of the subject, such as we have here, has unusual value when coming from him, particularly since the 296 pyelograms, which serve to illustrate points made in the text, are culled from several thousand made at the Mayo Clinic during the past five years, and upon which his experience is based.

The work is divided into ten chapters having the following headings: The History of Pyelography with Bibliography; Technic; The Normal Pelvis; Abnormal Position; Mechanical Dilatation; Inflammatory Dilatation; Renal Stone; Ureteral Stone; Renal Tumor, and Congenital Anomaly.

The first forty-six pyelograms are said to represent the outlines of normal pelves and, in many instances, normal ureters also; yet upon carefully looking these over one cannot fail to be impressed with the great variation in conformation of the forty-six pelves which the author classifies as normal, and there are several which bear a very close resemblance, at least, to pyelograms of supposedly pathological pelves and ureters shown in later sections of the book. Some of these apparent anomalies are explained on the ground of incomplete, and some of overdistention. The reviewer can hardly doubt the correctness of the author's interpretations, hence would emphasize the fact as pointed out by Braasch in his preface that "the interpretation of the great variety of pelvic deformitis outlined in the pyelogram is difficult and is possible only through familiarity with the various types," and would add that a knowledge of the clinical history of the patient and details of the technique employed in the individual case are often a *sine qua non* for correct interpretation of the plate.

Braasch has made many valuable contributions to current literature on this subject, but in presenting this book with its store of pyelograms and explanatory notes, minute details of technique, and other valuable features, he has combined in convenient form an epitome of the subject that will well repay careful study even by the expert; while to the novice the book should be well-nigh indispensable.

NOTES ON DENTAL METALLURGY. For the Use of Dental Students and Practitioners. By BRUCE HEPBURN, L.D.S. (Glasgow). Lecturer on Dental Metallurgy and Visiting Dental Surgeon in the Glasgow Dental Hospital and School. Second edition. Price, $2.25 net. New York: William Wood & Company, 1915.

THIS book of notes on dental metallurgy was compiled by Mr. Bruce Hepburn for the use of dental students preparing for dental qualifications and degrees in English speaking dental schools. This, the second edition, has been carefully revised, much of it rewritten and generally brought up to date. The chapter on alloys has been written by Professor A. Campion of the Royal Technical College, Glasgow. The book should be extremely useful to dental students.

WAR SURGERY. By EDMOND DELORME, Médecin Inspecteur Général de l'armée. Translated by H. de MÉRIC, Surgeon to In-patients French Hospital, London. With illustrations: price, $1.50 net. New York: Paul B. Hoeber, 1915.

As a surgeon Edmond Delorme has a world-wide reputation, and his present position has afforded him exceptional opportunities for seeing under the most advantageous circumstances the surgery of modern warfare. He has taken full advantage of the opportunities and has produced a book which, although small in size, is replete with useful information. An interesting feature of the book, is the testimony of the author to the value of hydrogen peroxide in the treatment of wounds and especially in the treatment of gas gangrens and tetanus. The translator Mr. de Méric is to be commended for his excellent work. The book should prove instructive to army surgeons.

THE MEDICAL CLINICS OF CHICAGO. Published bimonthly. Price, $8.00 per year. Philadelphia and London: W. B. Saunders Company.

THIS is a new publication which is to be devoted entirely to Internal Medicine. The subjects are to be presented in a clinical way and are to represent the leading hospitals of Chicago. In the first number, cases are presented by Drs. Charles L. Mix, Charles S. Williamson, Isaac A. Abt, Robert B. Preble, Maurice L. Goodkind, Frederick Tice, Walter Hamburger, and Ralph C. Hamill. Many of the cases are interesting and it may be that there is a place in medical literature for such a publication. It seems to us, however, that the attempt has been made to present too many cases, a fault too frequently found in all clinics. There are some twenty cases presented in about 200 pages, and the inevitable result is that in some instances the consideration seems to be rather superficial. What there is, is well done and there are many excellent illustrations. These latter probably account for the rather high price that is asked. It is probable, however, that the publication will be popular and we may say that this first number is interesting enough to deserve popularity.

SWANZY'S HANDBOOK OF THE DISEASES OF THE EYE AND THEIR TREATMENT. Edited by LOUIS WERNER, M.B., F.R.C.S.I., Sen. Mod. Univ. Dub., Surgeon to the Royal Victoria Eye and Ear Hospital, Onhthalmic Surgeon to the Mater Hospital, Professor of Onhthalmology, University College, Dublin, and Examiner in Onhthalmology, Dublin University. Eleventh Edition. With Illustrations. Price, $4.00 net. Philadelphia: P. Blakiston's Son & Co., 1915.

AN eleventh edition of a work requires little laudation. This, however, is the first edition which has appeared since the death of Sir Henry Swanzy. Dr. Werner, than whom no more fitting or capable editor could have been found, has made no change in the general plan or character of the book. The text has been revised and brought up to date and a considerable amount of new matter has been incorporated. The result is that in its present form Swanzy's Diseases of the Eye is one of the best books of reference extant. It is adequately illustrated.

Society Reports.

AMERICAN PEDIATRIC SOCIETY.

Twenty-seventh Annual Meeting, Held at Lakewood, N. J., May 24, 25 and 26, 1915.

THE PRESIDENT, DR. GEORGE N. ACKER OF WASHINGTON, D. C., IN THE CHAIR.

(*Concluded from page* 505)

The Reducing Substance in Spinal Fluid.—Dr. OSCAR M. SCHLOSS and LOUIS C. SCHROEDER of New York presented this communication which was read by Dr. Schroeder. They stated that in order to obtain additional evidence concerning the nature of the reducing agent in spinal fluid they had made a series of quantitative determinations in three specimens of cerebrospinal fluid, from 400 c.c. to 600 c.c. each. The specimens were precipitated with alcohol and evaporated to small bulk in slightly acid solution. This concentrated solution was dextrorotatory and a comparison of the quantity of dextrose calculated on this basis with a determination by Benedict's quantitative copper solution were in close accord. The solution fermented readily with yeast and gave a typical osazone, insoluble in hot water, soluble in pyridine and melting at 200° to 210° C. A repetition of this procedure of Halliburton gave no precipitate of pyrocatechin. A further proof, a number of other observations were made which the authors described. The results of their examinations in twenty-six cases were tabulated and summarized as follows: The reducing substance in spinal fluid was a fermentable, dextrorotatory sugar, probably dextrose. In infants free from meningeal disease the spinal fluid sugar ranged from 0.05 to 0.134 per cent. approximately, the same figures which were obtained for blood sugar. In cases of meningism the spinal fluid sugar was normal while in epidemic cerebrospinal meningitis and suppurative forms of meningitis the sugar was greatly reduced or absent. A large proportion of the cases of tuberculous meningitis showed a decrease in the sugar of the spinal fluid. The decrease of sugar was only of diagnostic value in this disease. The reduction substance was not decreased in cases of idiocy, cerebrospinal syphilis, or anterior poliomyelitis.

Dr. ALFRED HAND, JR., of Philadelphia said he had carried out a number of examinations of spinal fluid and felt convinced that the reducing substance in the spinal fluid was a sugar, though his work had not been done as scientifically as that of Dr. Schloss. He was struck by the fact that something was absent in suppurative meningitis which was present in tuberculosis, so much so that he depended on it in making a diagnosis. In examining a spinal fluid the presence of sugar always stimulated him to a more thorough search for the tubercle bacilli.

Dr. HOOBLER asked Dr. Schloss' opinion with reference to the prognostic value of these findings and whether the injection of a serum that contained sugar caused an increase in the amount of sugar in the spinal fluid.

Dr. SCHLOSS said that with reference to the prognostic value of these observations, if sugar reappeared in the spinal fluid in a case of cerebrospinal meningitis, it was the best indication of improvement. They had observed a clnical improvement in a number of cases with the reappearance of the sugar in the spinal fluid together with a change in the amount of globulin and the number of cells. The sugar in the serum was so infinitesimal in quantity that it could not have much influence.

Acute Cerebellar Ataxia in Children.—Dr. J. P. CROZER GRIFFITH of Philadelphia presented this paper. He related the history of a female child, five years of age, in which the notable features were the rapid development of symptoms without discoverable cause unless possibly the child had suffered from influenza, the very uncommon degree of nystagmus, the taxia of the extremities, the disturbance of the sensorium, affection of speech, slight increase of reflexes, and the rapid recovery, completed within one month from the onset of the illness. These symptoms pointed chiefly to some disorder of the cerebellum, but that that was the only portion of the brain affected would seem questionable. The essayist reviewed the classification of Fickler with reference to cerebellar and cerebral affections and also discussed the seventeen cases of encephalitis which he had collected from the literature. He concluded from an analysis of these cases that as an apparent cause of the attacks infectious diseases were very evident, that a belief in the cerebellar origin of the disease was warranted and that there were other symptoms, as disturbance of the sensorium, unconsciousness, convulsions and delirium, all of which might be classed among symptoms common to intracranial lesion. There was a distinct tendency to increase of the reflexes in this series pointing toward the cerebellar involvement. The series also showed how frequently there might be a cerebellar ataxia without nystagmus. There was every reason to believe that in some instances very few, if any, evidences of the disease would remain; however, that severe symptoms might exist for a long time or always was shown by at least eight of the cases.

Foreign Body Pneumonias.—Dr. AUGUSTUS CAILLE of New York reported these cases, which he had observed at the Post Graduate Hospital during 1914. Two of the cases were seen in the wards, an outside diagnosis of unresolved pneumonia having been made without any suspicion of a foreign body in the lungs. The third case with a foreign body history. In the first case the spasmodic character of the cough, the expectoration of pus in an acute condition, and amphoric breathing aroused suspicion of the presence of a foreign body. The *x*-ray showed a large tack in the right lung, which their bronchoscopist succeeded in removing at a second attempt. Rapid recovery followed. The second case gave a history of unresolved pneumonia and spasmodic cough lasting a year. No pus was found on puncture but the *x*-ray showed a large nail in the left bronchus and partly in the trachea. Following the removal of the nail by a lower tracheotomy, an extensive pneumonia developed and the child died. In the third case a history of having swallowed a large brass shawl pin was given. The pin had been in the child's lungs forty-three days without causing inflammation. These cases served to teach that all cases of unresolved pneumonia and cases of pneumonia of atypical behavior should be *x*-rayed. Such cases should be reported in the lay press so that they would serve as a warning to those having the care of young children not to teach by example the bad practice of putting things in the mouth.

Dr. E. E. GRAHAM of Philadelphia said he had had three cases that came under the same category as those reported by Dr. Caille in that the possibility of the presence of a foreign body had not been suspected. The attention of the profession, too, should be called to the possibility of the presence of a foreign body in cases giving indefinite histories similar to those which Dr. Caille had reported.

Dr. D. J. MILTON MILLER of Atlantic City related the history of a boy who was admitted to the hospital with all the symptoms of lobar pneumonia in the right side. After three or four days the boy coughed up a tack and then made a speedy recovery.

Dr. KOPLIK cited two instances of foreign body in the lung somewhat similar to those already reported and said that if the *x*-ray did not reveal the presence of a foreign body in a case in which such a possibility was suspected it was advisable to make an examination with the bronchoscope.

Meningitis in the New-Born, with Report of a Case.—Dr. CHARLES HERRMAN of New York presented this report. He stated that meningitis in the new-born was rare. An incomplete search of the literature had brought to light only eight cases with post-mortem and bacteriological examinations. After reviewing these cases the writer said that his own case occurred in a child delivered normally at the Lebanon Hospital and who during his stay there presented no unusual symptoms. The day after leaving the hospital the baby was brought to Dr. Herrman's service in a cyanotic and apathetic condition. There were no symptoms suggesting the possibility of meningitis. The child's temperature became subnormal, cyanosis increased, breathing became irregular and the child died on the following day. Post-mortem examination by the coroner's physician, Dr. Riegalman, showed the presence of meningitis and cultures from the meningeal exudate showed the presence of the pneumococcus. This case was of particular interest because it was the only case of pneumococcus meningitis in the new-born that had been reported, and on account of the absence of fever and the entire absence of meningeal symptoms. Infection in these cases might take place through the placental circulation, by premature respiration, or at birth through an injury to the skull, or after birth, through the usual avenues, eyes, ears, throat, gastrointestinal tract, umbilicus, or genitals.

Dr. JULIUS P. SEDGWICK of Minneapolis expressed the opinion that meningitis was more common in the new-born than had been indicated. It was probably not recognized oftener because in a maternity hospital the baby was a secondary consideration. The ideal arrangement would be to have a pediatric department in connection with maternity hospitals. If the pediatrist had this opportunity to study the new-born he felt sure that many interesting things could be learned. Schauter had a pediatric department in connection with his clinic, but this was the only instance of this kind of which he knew.

Dr. KOKLIK said he had seen a number of cases of meningitis in the new-born. The infection was usually a streptococcus one in so far as he could remember, but in one case he had found a bacillus somewhat similar to that of typhoid. Many of these cases were diagnosed as sepsis.

Dr. L. E. LA FETRA agreed with the other speakers that meningitis in the new-born was more common than they had been led to believe. He had read a paper in which he had reported a number of such cases, and had recently seen another which he had not reported. The symptoms of meningitis might be taken for those of general sepsis in these cases. Sometimes the colon bacillus was the infecting agent, but he had also found a bacillus resembling the typhoid bacillus. In cases with a marked cyanosis a lumbar puncture might be advisable, not on account of the meningitis but on account of the possibility of hemorrhage which might be amenable to treatment.

Dr. HERRMAN in closing, also agreed that meningitis in the new-born might be more common than he had stated in his paper. Pediatrists should have the care and control of the new-born. All the cases which he had reported were under three weeks of age; if he had included those up to three months the number would have been greater.

A Case of Amaurotic Family Idiocy in One of Twins.—Dr. CHARLES HERRMAN of New York reported this case. He stated that the patient was twenty months old when first seen and presented the typical symptoms of amaurotic family idiocy. Some years ago Hirsch held that the changes in the central nervous system in these cases were caused by toxic substances which were present in the mother's milk. These infants received the mother's milk only two weeks and it was difficult to see why it was toxic for one child and not for the other. It was now recognized that amaurotic family idiocy was a typical example of a family disease. About 100 cases had thus far been reported; many more had not been recognized or reported. The writer had had eleven cases under observation during the past sixteen years. The essayist discussed the etiology of the condition and stated his reasons for believing that the disease was not any more common in the children of Russian emigrants than among others. The large number of patients among the children of Hebrew parentage could best be explained by the rôle played by consanguinity, and the mode of transmission could be explained on the basis of the Mendelian principles of heredity. The unit characters in the ancestry which were involved in amaurotic family idiocy were evidently of the recessive type.

Dr. HENRY KOPLIK of New York said that in a case in which amaurotic family idiocy was suspected, examination of the fundus of the eye with the ophthalmoscope would clear up the diagnosis.

Dr. HERRMAN said that in early infancy it was not so easy to make a diagnosis based on the condition of the eye as the eye changes were not so distinct at that time. Hirsch, he believed, had given up the idea that the mother's milk had anything to do with the condition. It was difficult to explain this case on a toxic theory since the two children had the same nourishment and the same environment. The disease was congenital but in some instances the child appeared to be normal until five months of age and then began to show symptoms.

General Tuberculosis, Including the Skin, in a Child.—Dr. WILLIAM P. NORTHRUP of New York reported this case, which he stated was similar to three previously reported by him. At the age of four months the child was taken with diarrhea and wasting. It had a cough but no vomiting and no crying. The skin eruption and the *x*-ray had enabled him to make the diagnosis of miliary tuberculosis. In a case of miliary tuberculosis a good *x*-ray, gave, next to an autopsy, the most intimate knowledge of the lesion in the child's lungs. The skin eruption in miliary tuberculosis furnished a pathognomonic sign for diagnosis, and such a lesion was almost always an indication that one was dealing with a fatal form of tuberculosis in young children. The characteristics of the lesions were that they were about the size of the rose spot in typhoid fever, were tipped by a tiny vesicle, surrounded sooner or later by a congested hemorrhagic zone with the form of a crust, which when removed, left a pit. In cases of acute tuberculosis these vesicles were the first revealed lesion.

Macewen's Sign.—Dr. HERBERT B. WILCOX of New York presented this paper which was based on observations made in Dr. LaFetra's service at Bellevue Hospital. Macewen's sign was best determined by placing the stethoscope on the forehead just above the base of the nose. The skull was then tapped with the percussing finger or the hammer, over the parietal region, beginning just over the parietal boss from which the percussing finger should approach to the point at which the stethoscope was applied. This should be carried out on both sides of the head. A typical sign observed in this way consisted in a high pitched, sharp, short, cracked-pot note. It was most distinct when percussion was being done over, behind, or below the parietal boss on either side, was unchanged as the point percussed passed downward, and diminished in intensity and character as the point percussed approached the stethoscope. The latter point was important in differentiating between a false and a true Macewen's sign as the reverse obtained in percussing a normal skull. The author emphasized the fact that increased clearness of sound when percussion was done over the posterior portion of the skull rather than near the stethoscope was diagnostic. The sign uniformly accompanied conditions of increased cranial tension and was not found unless this causative factor existed. It was equally applicable to infants and older children. It was presented in fifty of fifty-three cases of tuberculous meningitis; in seventeen of eighteen cases of meningitis of other types, and was found to vary directly with the development and recession of cerebral symptoms as complications of disease not directly affecting the central nervous system. It was present in eleven of thirteen cases of pneumonia in five of which lumbar puncture showed increased cerebrospinal fluid under pressure. The sign was uniformly lacking in children normal as to the brain and its coverings.

Dr. L. E. LA FETRA said that Dr. Wilcox should be congratulated on the persistence with which he had worked on this sign. He also reiterated the points to which it was necessary to give special attention in order to distinguish between the true and false Macewen's sign. This sign was important as indicating when one should draw off spinal fluid in cases other than meningitis.

Dr. KOPLIK said he had used Macewen's sign and found it useful in indicating the presence of fluid in beginning tuberculous meningitis and in serous meningitis due to otitis. Much depended upon the individual's ability to apply the method. The older the child the more valuable was the sign.

A Preliminary Report on Pneumonia in Children, with Special Reference to Its Epidemiology.—Dr. GODFREY R. PISEK of New York discussed the findings in 1,000 cases of pneumonia in children studied in the wards of the Post Graduate Hospital. A series of charts were presented showing the mortality and the results of plate culture of the sputum. After reviewing the work of Dr. Cole and that of Dr. Gillespie on the varieties of pneumococci and discussing the epidemiology Dr. Pisek summarized as follows: From a study of 1,000 cases a mortality of 43.3 per cent. was established. This was probably higher than was obtained in private practice among well-to-do people, but was the average for the mass of city dwellers. Bronchopneumonia was preeminently a disease of the first two years of life, and after the third year was relatively uncommon. Lobar pneumonia was the type of the disease which was present after the third year in practically all cases of pneumonia if those cases which were frequently secondary to some other condition or those in which the pneumonia occurred as a terminal condition were omitted. Lobar pneumonia *per se* was a common condition in the first and second years of life, being much more frequent than was commonly supposed. The infection which was the etiological factor in lobar pneumonia was always the pneumococci, while a bronchopneumonia might be due to a number of organisms such as the streptococcus or the influenza bacilli, occurring alone or as a mixed infection. If pneumococci were present in bronchopneu-

monia they were usually one of a group of organisms commonly found in the mouth. The pneumococci might be divided into four general groups, each being made up of many races which were closely related. By the method outlined a pure culture of pneumococcus might be obtained and the group determination completed within twenty-four hours from any given case of pneumonia. The division of the pneumococci into groups was of great importance from the standpoint of treatment, since a serum or vaccine prepared from organisms of one group could not be applied in the treatment of a pneumonia due to organisms of another group. It was hoped that the division of pneumonia into groups would eventually bring about the treatment by means of specific sera or vaccines, thus replacing the symptomatic treatment of to-day. A careful scrutiny of this series of cases failed to reveal any evidence of an epidemic, or even of a house infection.

Dr. E. E. GRAHAM of Philadelphia said that Dr. Pisek had stated that forty-one cases of lobar pneumonia out of the 1,000 developed empyema. His experience was that the percentage of empyemas varied from year to year. The mortality of 63 per cent. for empyema in lobar pneumonia which Dr. Pisek had found was certainly different from his experience, but it made a great difference whether the pneumonia occurred in hospital or private patients.

Dr. JULIUS P. SEDGWICK of Minneapolis brought out the point that the mortality from pneumonia was quite different in different parts of the country. In Minneapolis Dr. Barret reported a series of 125 cases of lobar pneumonia without a death. He had had thirty-six cases with only one death and that occurred in an old man who had complications. In Minneapolis, the mortality of pneumonia in infants and young children was almost nil.

Dr. BLACKADER said that a high mortality in pneumonia was not their experience in Montreal.

Dr. PISEK, in closing, said the empyema cases that succumbed were usually under eighteen months of age and much depended upon the activity of the surgeon. Conservative surgery gave a young child a better chance of recovery.

An Unusual Case of Congenital Heart Disease, with Demonstration of Specimen.—Dr. JOHN LOVETT MORSE of Boston demonstrated this specimen which was taken from a child who died at the age of eight years, and who gave a definite history of cyanosis since the age of four months, but in whom no heart murmur could be detected. This child became ill in November, 1914, with fever, vomiting, change in the blood picture, but with no heart thrill or definite murmur. Dr. Howland saw the case at that time and thought he heard a slight murmur. Later the child developed a diastolic and then a systolic murmur and died suddenly of embolism. The case was diagnosed as "endocarditis implanted on congenital heart disease." The heart showed an opening in the ventricular septum, three patent valves, and a transposition of the great vessels, together with atresia and some malformation. It was said there were only five cases like this on record.

Dr. WILLIAM P. NORTHRUP of New York said that some years ago he had reported a similar case before the New York Pathological Society. He had seen the child during life and the murmur was very mild. It was unusual to find a diastolic murmur in a congenital heart condition, though he had seen one or two children with diastolic murmurs.

Report of a Case of Myelogenous Leucemia in an Infant Nine Months Old.—Dr. JOHN MASON KNOX of Baltimore reported this case in which the symptoms pointed to gastrointestinal intoxication with unusual gastric irritability. The differential count of the leucocytes showed the presence of a large number of myelocytes from the bone marrow and established the diagnosis of acute myelogenous leucemia. The report of the blood examination showed 200,000 leucocytes, a moderate secondary anemia, no marked reduction in the red blood cells and very few nucleated red cells. The platelets were about normal and there was no fragility of the cells. The polymorphonuclears were young, often with scanty granulations and showing all transitions to myelocytes. In his case the atypical granulations seen in the neutrophile myelocytes as well as the presence of eosinophiles and basophilic varieties was good evidence of primary disease of the blood forming agents.

Dr. A. D. BLACKADER of Montreal related the history of a case somewhat similar to that of Dr. Knox.

Dr. KNOX said the lesson to be drawn from these cases was that in a case of persistent nausea and vomiting the blood should be examined early.

The Hydrogen Ion Concentration of the Gastric and Duodenal Contents in Childhood.—Dr. JULIUS PARKER SEGEWICK of Minneapolis presented this paper in which he described the methods usually employed for the estimation of the hydrogen ion concentration and stated that the results presented in this study were obtained by the "gas chain method." The duodenal contents were obtained by the Hess catheterization method. A summary of their work warranted the following conclusions: (1) The results of other observers which showed a low acidity of the gastric contents of infants during the height of digestion were confirmed. (2) The sharp rise of acidity of the gastric contents toward the close of digestion was shown. (3) The gastric contents of a new-born infant before food was taken were very acid. (4) The duodenal contents of infants obtained by the Hess method were not alkaline, but showed a hydrogen ion concentration of 79.5 to 0.9 times 10 minus.

Wednesday, May 26—Third Day.

Report of Committee on Child Labor Problem.—Dr. PHILIP VAN INGEN of New York presented this report in which he related the difficulties that beset the investigator along this line. Little statistical data of value was available. In studying the effects of various occupations on children medical questions had come up for which no satisfactory answers were found, so they had begun an investigation on the subject of fatigue and its results, mental and physical, upon the development of the child and upon the mature organisms. They were studying occupations with reference to mortality, susceptibility to certain diseases and the effects of such occupations in connection with race and heredity. They had collected a great deal of material but still had far to go to get at the facts.

Report of Committee to Cooperate with the Federal Bureau.—Dr. HAMILL of Philadelphia reported for this committee stating that the committee had been consulted in a number of instances by the Federal Bureau on certain subjects upon which they wished to have medical opinion.

Some Interesting Facts Plainly Brought Out by a Chart Method of Studying and Managing Cases of Diabetes Mellitus in Children.—Dr. T. DEWITT H. SHERMAN of Buffalo made this presentation in which he emphasized the importance of charts in furnishing an easy and quick way of giving information concerning a case. The upper half of the charts presented showed in unbroken lines the number of grammes of the three food elements ingested and their total caloric value. The lower half showed in broken lines the urine analyses and hence the condition of the patient on the selected diet. The use of colored chalks brought out other information, as for instance, the number of grammes of carbohydrate ingested and its relation to the amount of sugar in the urine. By the use of this method of charting a case the writer had been led in one case, which was given as an illustration, to the conclusion that sugar in the urine was caused first, by feeding high fats, and second, by mental anxiety. In another case it was shown that fish caused sugar, while all the other proteids were fairly well tolerated. In still another case it was shown that high fats caused cyclic vomiting. Sugar might appear before cyclic vomiting more often than they suspected.

Differential Diagnosis of Stenosis and Spasm of the Pylorus.—Dr. ALFRED HAND of Philadelphia read this paper, in which he stated that there were no more difficult problems in diagnosis than those pertaining to the abdomen in infancy and early childhood. The greater activity of the digestive functions at this age was likely to cause disturbances which closely resembled some one or more of the organic affections. There was a tendency to use the term spasm of the pylorus for gastric indigestion due generally to improper feeding. Still one did meet with cases in which it seems that the vomiting did not depend entirely on gastric indigestion, but that the tonic condition of the pylorus was also present, allowing little if any of the stomach contents to pass into the duodenum. The first case of this kind which came under his care after he had witnessed a pyloroplasty after which the infant succumbed within twenty-four hours, in whom the history was very suggestive of pyloric stenosis, but in whom he was unable to demonstrate a lump anywhere in the abdomen, he followed a conservative course. While the patient pro-

gressed very slowly, nevertheless in the second year the nutrition finally became satisfactory. Following this five other cases came under his attention in which no tumor could be felt though visible peristalsis was present, and these had proven amenable to dietetic treatment. So that he inclined to the belief that the genuine condition itself was amenable to dietetic treatment. Even if one could only keep the weight stationary, the patient was growing older steadily with a possible increase in the chances of surviving an operation, if this should be necessary.

The Differential Diagnosis of Stenosis and Spasm of the Pylorus.—Dr. HARRY DEAVER of Philadelphia discussed this subject from the standpoint of the surgeon. He stated that the symptoms of pyloric stenosis were projectile vomiting, constipation, visible peristalsis and steady loss in weight. The urinary output was diminished. There was no bile in the vomitus. When all these symptoms were present and one could follow the tumor and the *x*-ray confirmed the diagnosis an early operation was indicated. It had been his experience that children stood the operation well and when operated upon early all recovered. A palpable mass was never present in a case of pylorospasm. The operation in an infant was a very delicate one since the walls of the jejunum were very thin. The jejunum should be joined to the stomach with a very short loop or without any loop, as close as possible.

Dr. CHARLES HERRMAN of New York said that it had been stated that the presence of a palpable mass was an indication for operation and yet many cases in which a mass was palpable recovered without operation. Pylorospasm and stenosis were not two distinct conditions but were different degrees of the same condition. The prognosis depended upon the degree of stenosis. Dr. Herrman cited two cases in which he had advised operation, but it was refused and the patients recovered.

Dr. HENRY COIT of Newark related the history of a case in which a diagnosis of pyloric stenosis had been made and confirmed by *x*-ray examination which under careful medical treatment recovered.

Dr. E. E. GRAHAM of Philadelphia said there was a great deal of confusion as to the indications for operation. It seemed best to be guided by the severity of the symptoms.

THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Student Meeting, May 5, 1915.

THE PRESIDENT, DR. JAMES C. WILLSON, IN THE CHAIR.

Cardiovascular Poisons; Their Methods and Results.—Dr. ROBERT N. WILLSON in this paper said that to those who knew the heart simply as a muscular pump, the function of which was to supply the various parts of the body with blood, the term cardiovascular poison would mean little more than a drug which caused the heart to misbehave or to functionate badly. It was no very recent discovery that if any human organ was overrich in its nervous supply, the heart was that one. An exceedingly important item of knowledge was that one of the main nervous distributions in the heart was subendocardial. Highly important was also an appreciation of the probability that the cardiac nervous structures entered in greater or less degree into the inception and the discharge of each and all of the main functions of the heart. Three groups of cardiovascular poisons briefly discussed were (1) decomposition of food products. These Dr. Willson believed constituted the causal factor in arterial changes and the hypertension contributing so actively to the cardiac disease of later years; (2) microorganismal influences which make their attack from without, such as syphilis, tuberculosis, rheumatism, so-called, and diphtheria. Frequently children of luetic or tuberculous parentage were found to be the subjects of myocardial or valvular defects. The tubercle bacillus and its toxin also furnished an invariably diseased heart. Much uncertainty attached to the acute rheumatic infection even with respect to its etiology. In diphtheria was experienced nearly 100 per cent. of instances of myocardial involvement. The third class of cardiovascular poisons was that of tobacco and alcohol. Histories of two patients were cited illustrative of tobacco poisoning. It was the author's confident belief that between tobacco and the various forms of food toxemia could be divided the responsibility of the vast amount of arteriosclerosis not attributable to syphilis and old age. Alcohol was said to be almost the twin of tobacco in its anesthetic and narcotic effect. Its lack of value as a food had been demonstrated beyond all peradventure and this lack had been accepted as a working principle in all of the foremost laboratories. It was known that in small doses and in large alcohol in continued use soon depressed and then paralyzed the vasomotor nerves. While it was not known that alcohol produced arteriosclerosis it was known that tobacco did, and that the use of alcohol practically implied the craving for tobacco. Other excesses in food and venery the author said were closely associated with alcoholism and the tobacco habit that tended equally toward sclerotic vessels and myocardial disease. It was impossible, therefore, either to indict alcohol upon the score of directly producing arteriosclerosis, or to relieve it completely of either a direct contributory or an indirect responsibility for much of the rapidly increasing cardiovascular disease. Dr. Willson regarded it as only fair to exonerate the drug alcohol from contribution to the sclerotic total when used by the physician in therapeutic dosage—if there were any such thing. There was abundance of reliable evidence to show that the administration of alcohol lowered the vital resistance to bacterial infections by diminishing the power of the human economy to marshall its phagocytes at will and to manufacture the antitoxins requisite to combat the infections working mainly as toxemias. The only conceivable occasion upon which the drug could assist in a grave toxemia was said to be in such an infection as typhoid fever occurring in a strong, robust individual of high antitoxic resisting power in whom there was a too wholesale destruction of bacteria in the tissues with danger that the patient might poison himself to death through the very process that usually worked the cure. In the vast majority of typhoid patients, however, this danger was not present. There were few physicians, he believed, approximating forty years of age or over who felt that a place remained for alcohol in the pharmacopeia of the well read and conscientious physician, except as an emergency stimulant, and then only in minimal dosage which did not mean a half ounce or an ounce at intervals of a few hours. The physiological effect of alcohol was said to be better comprehended by the lay public than by the average medical man, judging by the tide sweeping over the country. With the recent action of 700 physicians of Pennsylvania standing for the right of a community to determine by vote whether its citizens should exchange health for avoidable cardiovascular disease, he felt the next advance to be the ranging of the national medical body on the side of the disuse of a drug now recognized, in any dosage, to be a cardiovascular nerve and muscle poison, a tissue destroyer and an economic harm. Mention was made of the several forms of clinical and laboratory evidence for and against the use of alcohol in medicine. Three series of experiments were mentioned confirming Dixon's conclusion that the first action of alcohol was a stimulation of the heart. For every statement made ample clinical and laboratory evidence was given of investigators known and trusted as such by the entire medical world. While a study of the cardiovascular poisons was incomplete without the consideration of an excessive production of the internal secretions the author limited himself to a discussion of the three groups nearest to the citizen and the general practitioner.

Dr. H. A. HARE had sometimes regretted that in meetings of American associations the custom of English medical societies of attacking each other vigorously was not carried out. While not his intention in anything he might say to give offence he observed that under the title of a paper on heart disease Dr. Willson had really read an attack upon alcohol as a drug. The first mistake in the paper, if he might be pardoned for saying so, he said, was that of making sweeping statements without the slightest justification for many of them, and some of which were in direct controversion to known laws of physiology and pathology. To state, for example, that in the early stage of the influence of alcohol the drug stimulated the circulation by stimulating the vagus showed an entire ignorance of what every second year student in medicine knew—that the function of the vagus was inhibitory and that in its action it decreased functional activity of the heart rather than increased it. Further, when the statement was made that alcohol produced arteriosclerosis and arterial spasm, and in the same breath the assertion was made absolutely that alcohol depressed the entire vasomotor apparatus, it was difficult to agree with the

author, for it was not easy to see how a drug could produce a rise of blood pressure at the same time that it was producing a lowering of blood pressure by depressing the vascular system in general. It would seem that the reader of the paper was not familiar with that which physiologists and pharmacologists recognized as the true physiological action of alcohol. So far as the circulatory action of alcohol was concerned, Dr. Hare stated that in moderate amounts it did not act as a stimulant or as a depressant, but equalized the circulation. He believed there was no drug possessing physiological power which, if wrongly used, would not also have power to do harm. Reference was made to a recent meeting of the Philadelphia County Medical Society in which the author of one of the papers said that alcohol was always contraindicated in tuberculosis. While Dr. Hare regarded such a statement too sweeping to bear weight, published under certain circumstances he felt it might do harm. While the harmfulness of alcohol in miliary tuberculosis was well known, in fibroid phthisis with cough interfering with digestion, it was claimed that the administration of alcohol was the administration of a food which was burnt up in the body, which loaned energy to that body, stimulated digestion, and which if given in the proper form might even help the patient to expectorate the material in the cavities. What was needed, he thought, was the presentation before the College of Physicians of a paper recognizing that when alcohol was abused it did harm; when used rightly, possessed a definite, specific, and often a very valuable place in medicine. This was true in diabetes mellitus, in which disease in certain cases alcohol burnt up in the body, possessed a distinct food value. Contrary to his understanding of Dr. Willson's dogmatic statement that all researches showed that alcohol decreased the ability of the body to protect itself in certain instances, some time ago Dr. Hare had presented a paper before the Association of American Physicians giving the results of a research showing that in typhoid fever and tuberculosis alcohol in proper doses increased very materially the bacteriolytic action of the blood. The technique by which the studies had been made was according to directions given by Dr. Simon Flexner. Upon one point Dr. Willson and Dr. Hare were agreed—that the crusade which had been made in the profession against alcohol had diminished the size of the dose now given by many physicians.

Dr. H. C. Wood, referring to Dr. Willson's mention of cardiovascular action of drugs, said it was known that a drug might have one action upon the heart and an opposite action upon the blood pressure. Because a drug lowered blood pressure no proof was present that it depressed the heart, and vice versa. Pharmacologists, he said, always separated these two actions and studied the effect of the drug upon the heart as distinct from its effect upon the blood vessels. Had this distinction been made by Dr. Willson he would probably not have compared alcohol to nicotine in its physiological action. Dr. Wood thought it difficult to imagine two drugs more widely different in physiological effect than alcohol and nicotine. Further, he thought Dr. Willson in drawing his conclusions from the experiments quoted, failed to make sharp the distinction between the therapeutic and the toxic dose of alcohol; he had spoken of the secondary results of alcohol as if the depressant effect followed when therapeutic quantities were given; whereas, his understanding was that the depressant results were the effect of toxic doses. While Dr. Willson had quoted Dr. Dixon he had neglected to state Dixon's conclusion that alcohol acted as a foodstuff for the heart. Dr. Wood did not think there was any reliable scientific evidence that the secondary effect of small doses of alcohol was a depressant action upon the heart muscle.

Dr. Willson, in closing, said he was by no means sorry to have his paper combated. He was thus afforded opportunity to reply to one or two misleading statements far more "sweeping" and "irresponsible" than anything he had written. For instance, Dr. Hare had ventured the assertion that he was ignorant of the first principles of cardiac physiology upon the basis of his having made a statement (as claimed by Dr. Hare) that alcohol or any other drug stimulated the heart by stimulating the vagus nerve. What he actually had said was that alcohol caused a stimulation of the cardiac action through its depressant action upon the vagus nerve. The inhibitory action of the vagus upon the heart he thought was known to all. He felt that Dr. Hare by his remark seemed to lay himself open to the suspicion of possible ignorance with respect to the action of the sympathetic nerve when the controlling influence of the vagus was set aside. Again, he had made no such statement as that alcohol produced arteriosclerosis; indeed, absolutely the opposite statement, namely: that there was no final evidence that alcohol produced arteriosclerosis. He had shown that the combination of tobacco with alcohol often resulted in the production of this condition. He had also referred to the fact that the combined action of the two drugs gave a different result from that of alcohol alone. He agreed that Dr. Hare was correct in his belief that the dominant action of alcohol was vasodilator after its first temporary splanchnic-constrictor influence, but he forgot the important fact that vasodilatation also characterized tobacco after its early vasoconstrictor action and became its permanent influence. Evidence obtained from the action of both of these drugs was to the effect that vasoconstriction and the elevation of blood pressure were not indispensable to the production of arterial disease. He regretted Dr. Hare's reversion to the fallacy that alcohol was a food in any true sense of the word. In a recent meeting of the County Medical Society Dr. A. E. Taylor had shown in a most conclusive manner that alcohol was never a food in the true sense; and, that to call it such showed an entire ignorance of the readily available laboratory findings. Dr. Taylor's statement had represented the consensus of intelligent medical opinion on the subject.

Serum Studied in Pregnancy.—Drs. John A. Kolmer and Philip F. Williams presented this communication, which was a study of the specificity of ferments in pregnancy and the mechanism of the Abderhalden reaction (1) by means of local skin reactions; (2) by proteotoxin production *in vitro*. The authors said that aside from the probable clinical value of the methods devised by Abderhalden in the serum diagnosis of pregnancy and various pathological conditions, such as malignancy, tuberculosis, lesions of the nervous system and ductless glands, most interest concerned the question of the specificity of the ferments or antibodies involved and the mechanism of their action. While Abderhalden and many of his pupils had claimed a high degree of specificity for the "protective ferments" and his pregnancy reaction, claiming from the beginning that errors of technique were largely responsible for the failure of others to obtain satisfactory results, the authors said that the dialysis test as now conducted was not especially difficult and that sufficient work had not been done by other investigators who had carefully followed Abderhalden's technique to warrant the claim that other factors than those purely technical might be responsible for the divergent and non-specific results obtained. In giving a summary of Part I, it was stated that a placentin, No. 1, prepared by concentration of expressed placental juice preserved with 1 per cent. glycerin and 0.5 per cent. tricresol and injected intracutaneously yielded skin reactions characterized by erythema, infiltration, and pain in 87 per cent. of pregnant or recently delivered women, and in 66 per cent. of women who had borne children, but who were not pregnant at the time these tests were made. This extract also caused 20 per cent. of the men tested to react slightly. When diluted 1 to 10 with physiological salt solution this extract yielded 80 per cent. positive reactions among pregnant or recently delivered women, and 50 per cent. positive among women who had borne children. A placentin, No. 4, prepared in the same manner as the first extract, except that glycerin was not used in its preparation or preservation, yielded 40 per cent. positive reactions among pregnant or recently delivered women, and 14 per cent. positive reactions among women who had borne children. It is probable that glycerin itself acts as an irritant, especially in the hypersensitive skin of pregnant women. A placentin, No. 2, prepared from the residue resulting from the concentration of expressed placental juice yielded 55 per cent. positive reactions among women who were pregnant or recently delivered. This placentin produced slightly positive results in 20 per cent. of the men tested. A glycerin extract, placentin No. 5, upon cutaneous inoculation yielded 50 per cent. positive reactions among pregnant and recently delivered women. Of several multiparous and nulliparous women tested, all reacted negatively. Extracts of human male and female kidney (nephrins) prepared in the same manner as the placentins produced a number of positive reactions among pregnant, puerperal, multiparous and nulliparous women. The most marked reactions were observed with the extract of human female kidney. A summary of Part II showed that proteotoxins were produced during the Abderhalden

pregnancy reaction, which when injected intracutaneously and intravenously into normal animals produced local and general changes analogous to anaphylactic reactions. Proteotoxins produced in a mixture of human pregnancy serum and human placenta were toxic for normal guinea-pigs. The ninhydrin test with dialysates and intracutaneous and intravenous injections of the sera in the Abderhalden reactions yielded fairly parallel indices of the degree of protein digestion and proteotoxin production. The addition of various tissue substrates other than placenta to human pregnancy serum was followed occassionally by proteotoxin production as shown by intracutaneous and intravenous tests with the serum, but except when a substrate of human kidney was used, the amount of proteotoxin produced was usually much less than that produced in mixtures of pregnancy serum and human placenta. Similar results were observed with inorganic absorbents as kaolin, starch, quartz, etc. It was found that the proteolytic ferments in healthy normal serum might produce small amounts of proteotoxins when tissue substrates were added, and occasionally, and to less degree, with inorganic absorbents as kaolin and starch. Complement in itself, it was found, had no direct relation to the ferments in pregnancy serum. Inactivation of serum probably reduced its digestive power through destruction of normal proteolytic ferment and reactivation of a serum by means of the addition of serum complement increased its digestive power to a slight degree probably by reason of the addition of these normal ferments. In pregnancy serum there were two sets of proteolytic ferments, normal and non-specific, and specific ferments. The former might be released through absorption of the antiferment by means of various non-specific organic and inorganic substances, whereas the latter were released through the absorption of the antiferments by means of the specific protein antigen alone. The authors' experiments suggested also that the protein matrix in the Abderhalden reaction was not only the protein of the serum, but also to some extent that of the tissue substratum itself. While hesitating to report upon the local skin reactions in pregnant and puerperal women until a relatively large number were studied, in view of the contradictory results obtained by others, the authors felt justified in concluding that the reactions were anaphylactic in nature and due to an anaphylatoxin produced by the action of general ferments upon a protein substrate. They did not believe at present that the reaction in the skin test for pregnancy possessed a practical value in diagnosis, certainly not among women who had borne children. According to experiments described in Part II, pregnancy serum contained proteolytic ferments which when rendered active produced toxin substances capable of inducing local and general reactions analogous to those observed by Vaughan, Friedberger, and others and regarded as anaphylatic in nature. The authors' experiments suggested also that in pregnancy serum there were two sets of proteolytic ferments, one composed of normal non-specific ferments and the second of more or less specific ferment. Their experiments were in accord with those of Jobling and Petersen, Plaut, Peifer, Bronfenbrenner, and others to the extent that inorganic substances as kaolin were capable of releasing the normal tryptic activity of a serum probably through the absorption of antiferment followed by the digestion of serum protein. Their work indicated that this action was non-specific and the result of the release of normal proteolytic ferments, whereas the activity of the specific ferments in pregnancy serum were best in evidence in the presence of placental tissue.

X-Ray Treatment of Frostbite.—G. Fujinami, recalling the action of the *x*-rays in relieving the itching associated with many diseases of the skin, and noting that itching is a prominent symptom in frostbite, essayed the use of the *x*-rays in the treatment of the latter condition. His experience comprised twelve cases. He found that in frostbite of the first degree in which there was not much swelling one application of the *x*-rays was sufficient. The itching disappeared within three or four days and later the swelling gradually disappeared. In frostbite of the second degree, in which the swelling was present for a comparatively long time several applications of the *x*-rays were required. Hemorrhagic blisters became dry and fissures and ulcers healed after three or four applications of the *x*-rays.—*Sei-i-Kwai Medical Journal.*

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

Washington State Board of Medical Examiners.

July, 1914.

(*Concluded from page* 466.)

[Answer ten (10) questions only in each paper.]

OBSTETRICS.

1. (*a*) What is placenta prævia? (*b*) What is its frequency? (*c*) Symptoms? (*d*) Diagnosis? (*e*) What would you do if you had a case?
2. (*a*) What is prolapse of the funis? (*b*) What is its cause? (*c*) Diagnosis? (*d*) Danger? (*e*) How would you manage a case?
3. (*a*) What is the placenta? (*b*) At what time does it assume its functions? (*c*) From what is it formed? (*d*) What are its functions? (*e*) What is the channel of communication between placenta and fœtus?
4. How would you deliver a brow presentation?
5. (*a*) What is ophthalmia neonatorum? (*b*) What is its cause? (*c*) Symptoms? (*d*) What are the means of prevention?
6. (*a*) What is the vitellus? (*b*) Allantois? (*c*) Amnion? (*d*) Chorion?
7. (*a*) What is eclampsia? (*b*) What per cent of cases occur in primiparæ? (*c*) What is the prognosis to mother and child? (*d*) What is the condition of the urine? (*e*) What is its frequency? (*f*) If it occurs at eighth month of pregnancy, how should it be managed?
8. (*a*) What is eutocia? (*b*) What is dystocia? (*c*) Name varieties of dystocia?
9. (*a*) What is hydatid pregnancy? (*b*) What is its frequency? (*c*) What are its symptoms?
10. (*a*) What is ectopic pregnancy? (*b*) Give the varieties? (*c*) What is the cause? (*d*) Between what ages does it usually occur? (*e*) What are the symptoms? (*f*) What are its terminations?
11. Differentiate an ovarian cyst, a uterine fibroid and pregnancy at the fifth month.
12. Tell what you know about pelvimetry.

TOXICOLOGY

1. Mention five (5) emetic poisons.
2. Method of conducting autopsy in death from arsenic poisoning.
3. Give one test for discovery of a mineral poison.
4. Differentiate tissue change in poisoning from hydrochloric, sulphuric, nitric and carbolic acid.
5. Give symptoms of acute arsenical poisoning.
6. Give symptoms of mercurial poisoning.
7. Method of examining dead caused by gunshot wounds.
8. Infanticide—(*a*) How determine if child born alive? (*b*) How long did it live after birth? (*c*) How determine criminal violence?
9. What signs manifest on pelvic organs in case of criminal abortion?
10. Post-mortem appearances in death from hanging. (*a*) External; (*b*) Internal.
11. What are the signs of recent delivery (parturition)?
12. Source of meat and fish poisoning.

HYGIENE

1. What are ptomaines. Give usual symptoms of ptomaine poisoning and the most common source.
2. In treating a case of scarlet fever what precautions should be taken to prevent spread of the contagion—by attendants? by yourself?
3. What is sewer gas and how is it objectionable.
4. State period of incubation, date of eruption and limit of quarantine in the following diseases: measles, variola, scarlet fever?
5. Give sanitary methods for the production and marketing of pure milk. Name five diseases that may be caused by impure milk.
6. What is Pasteurized milk? Give some advantages and disadvantages.
7. What do you understand by natural immunity? What is acquired immunity? Give examples.
8. Describe fully the precautions necessary in the care of a typhoid fever patient.
9. Describe two methods of disinfecting a room 20 x 15 x 10 feet, giving the amount of materials necessary

10. Name the requisites of a successful house water filter.

11. Name six diseases to which the habitual alcohol drinker is predisposed.

12. How is malaria communicated? How may malarial districts be made healthy?

ANSWERS.

OBSTETRICS

1. *Placenta prævia* is the condition in which the placenta is attached in the lower uterine segment, and may be near or over (partially or completely) the internal os. *Frequency:* About once in 1200 to 1300 pregnancies. *Symtoms:* Sudden hemorrhage, accompanied by syncope, vertigo, restlessness, and feeble pulse. *Treatment:* Stop the hemorrhage by vaginal tampon; this must be tight and thorough. *Accouchement forcé* is indicated; this consists of dilatation of cervix, version, and immediate extraction of the child.

Treatment before term: Rest in bed, with or without a *tampon*, will arrest hemorrhage for the time; the sinuses are closed by thrombi, and the case may go on to term or another hemorrhage. The patient should be allowed cold drinks; opium may be used where pain is present. If the hemorrhage is great, it is safer to induce labor at once than to wait. Occasionally no hemorrhage occurs during pregnancy, not even in labor. *Treatment at term:* (1) Introduce one or two fingers within the os (the hand being in the vagina) and dissect the placenta from the uterine wall for about three inches from the os uteri in all directions, pushing it to one side if necessary. (2) Rupture the membranes, and if there is an unfavorable presentation, turn the child and make the breech engage in the os; or, if the head presents, the forceps may be used, if speedy delivery is necessary. The strength of the woman is then the main point to be cared for, and if in a reasonable time the uterus seems to be incompetent, the child may be delivered by art. In some cases of central placenta prævia, where rapid delivery is required, cesarean section may give good results for mother and child.—(Landis' *Obstetrics.*)

2. *Prolapse of the funis* is the condition in which the umbilical cord hangs down alongside of or in front of the presenting part of the fetus. *Causes:* Malpositions and malpresentations, multiple pregnancy, sudden escape of liquor amnii, too small fetal head, too large pelvis or abdomen of mother. *Diagnosis* is made by feeling the cord through the membranes; it feels like a soft, compressible body with pulsations which are synchronous with the fetal heart. *Danger:* Compression causes death of the fetus. *Treatment of prolapsed funis* consists in: (1) Not rupturing the membranes prematurely unless there is some positive indication; (2) postural treatment, in which the woman is placed on her back or on the opposite side to that on which the cord lies, with hips and pelvis elevated, or the knee-chest position may be adopted; (3) reposition of the cord, either manually or with some form of repositor; (4) speedy delivery, by forceps or podalic version.

3. *The Placenta.*—"The placenta is formed by the fusion and intergrowth of the decidua basalis, which forms the maternal portion of the placenta, and the chorion frondosum, which forms the fetal part of the placenta. As a separate organ, the placenta dates from the third month of pregnancy, and from that time gradually increases in size until the termination of pregnancy. The chorionic villi lose Langhans' layer of cells, and embed themselves into the interglandular stroma of the decidua basalis, and sometimes penetrate the mouths of the small veins. The syncytium also penetrates the endothelium of the decidual arterioles, and large blood sinuses are thus formed. By this arrangement, the fetal and maternal blood, while kept separate, are brought into such close contact that osmosis may readily occur between them, thus permitting the absorption of nutritive material from the maternal into the fetal circulation, the excretion of urea and other waste products of fetal metabolism, the passage of oxygen to the fetus, and the excretion of carbon dioxide from it.

"The *functions of the placenta* may be summed up as follows: (1) It is nutritive, allowing of the passage of nutritive material to the fetus. (2) It is respiratory. Oxygen passes to, and carbon dioxide from, the fetus. (3) It is excretory, allowing the escape of urea and other products of fetal metabolism. (4) It has a glycogenic function. Glycogen is stored in its cells for the future use of the fetus. (5) It is iron storing, by which iron in organic combination is passed from the maternal circulation into the fetal circulation to be stored in the liver cells of the fetus, in order to aid in the formation of new colored blood corpuscles.

"At full term the placenta is a discoidal mass about 7 inches in diameter, two-thirds of an inch in thickness, and weighs about 16 oz. Its fetal surface is smooth and covered by the amnion, and its maternal surface is divided by sulci into a number of irregular areas termed cotyledons. The fetus is attached to it by the umbilical cord or funis, which averages 20 inches in length and half an inch in thickness. It consists of a stroma of Wharton's jelly, embedding the two umbilical arteries and a single umbilical vein. It is covered by the amnion."—(Lyle's *Physiology.*)

4. *Management of brow presentation:* If recognized before the onset of labor, postural treatment may be tried. This consists in placing the woman on that side toward which the fetal face is directed, so as to secure flexion of the fetal head. Failing in this, or if only recognized too late for the above to be tried, cephalic or podalic version may be attempted; or forceps may be applied, chiefly to act as a rotator. If the above do not succeed, symphyseotomy may be performed, and the child delivered by forceps. When all other methods fail, if the child is dead craniotomy is indicated.

5. OPHTHALMIA NEONATORUM. *Causes:* The gonococcus or some other pyogenic microorganism; the secretions of the mother contain the infecting agent, and transmission may occur directly during parturition, or indirectly by the fingers of physician or nurse, cloths, instruments, etc. *Symptoms:* Swollen eyelids, with copious purulent discharge; ulceration of the cornea may ensue. *Prophylaxis:* Whenever there is the possibility of infection, or in every case, wash the eyelids of the newborn child with clean warm water, and drop on the cornea of each eye one drop of a 1 per cent solution of nitrate of silver, immediately after birth.

6. *Vitellus* is the germinal portion of the ovum with the substance which nourishes the embryo.

Allantois is a fetal membrane; it enters into the formation of the bladder, placenta, and umbilical cord.

Amnion is the inner of the fetal membranes.

Chorion is the outer of the fetal membranes.

7. *Eclampsia* is an acute morbid condition, occurring during pregnancy, labor, or the puerperal state, and is characterized by tonic and clonic convulsions, which affect first the voluntary and then the involuntary muscles; there is total loss of consciousness, which tends either to coma or to sleep, and the condition may terminate in recovery or death. About 75 per cent of the cases occur in primiparæ. *Prognosis* is bad, the maternal mortality being about 30 per cent and the fetal mortality from 50 to 75 per cent. The *urine* contains albumin, is reduced in quantity, and is more toxic than normal. *Frequency,* about once in from 350 to 500 pregnancies. "*The treatment of the attack* consists of the administration of chloroform by inhalation, chloral hydrate (gr. 60) by enema, and the fluidextract of veratrum viride hypodermically (gtt. 15 followed by gtt. 5, repeated frequently enough to keep the pulse at about 60 beats a minute), to control the convulsions, and free purgation by croton oil (gtt. 2, or 3, in sweet oil or glycerine), free sweating by the hot pack, and sometimes depletion by venesection to eliminate the poison. The after treatment consists of free purgation by the salines, restriction of diet, and later the administration of tonics and stimulants. The obstetric treatment is usually noninterference." (*Pocket Cyclopedia.*) Sometimes *accouchment forcé* is indicated.

8. *Eutocia* is normal labor, or one in which there is a vertex presentation and no complications.

Dystocia is difficult or abnormal labor, and includes all cases not carried in the term eutocia.

Varieties of dystocia: These may be classified, according to causation, as follows:

(1) *Anomalies of the expellent forces:* (*a*) Excess—precipitate labor; (*b*) deficiency—delayed or protracted labor and inertia uteri; (*c*) spasm and irregularity—rigid os and cervix, and tetanus uteri.

(2) *Anomalies of the passages:* Pelvic deformities; uterus, developmental anomalies of, atresia of cervix, rigidity of cervix, impaction of cervix, malposition, sacculation, and new growths; stenosis and rigidity of vulva and vagina; hematoma or edema of the vulva; latral abscesses and cysts; conditions of intestines or bladder; tumors and swellings of various tissues.

(3) *Anomalies of the fetus:* Malposition of the head; occipito-posterior cases; malpresentations—face, brow,

pelvic, and transverse; prolapse of limbs; anomalies of fetal development—shortness of cord, unduly ossified skull, large size of fetus, death of fetus, and enlargement of head or body by disease; plural births, and monstrosities (modified from Jewett's *Practice of Obstetrics*).

9. *Hydatid pregnancy* is a pregnancy in which the chorionic villi undergo a proliferating degeneration with the production of a mass of cysts attached to the placenta. These cysts look like bunches of grapes. It occurs once in about 2,000 cases of pregnancy.

The pregnancy begins as in normal cases, but about the third month the uterus becomes suddenly and rapidly enlarged; irregular uterine hemorrhages occur; and there is a discharge of fluid containing the vesicular growths; labor occurs and the mass of cysts is expelled.

10. *Ectopic pregnancy* is a pregnancy where the fetus is being developed outside of the uterine cavity. *Varieties:* It may be interstitial, tubal, ovarian, or abdominal. *Probable cause:* Some pathological condition in the Fallopian tube which obstructs the passage of the fecundated ovum. The most common condition is salpingitis, especially of the gonorrheal variety. The age at which it commonly occurs is not known. King says, "It is more apt to occur after than before thirty years of age"; Dorland says, "It is generally encountered in women who are between twenty and thirty years of age." *Symptoms of tubal pregnancy* will be signs of early pregnancy, hypogastric or inguinal pains, probable history of a previous sterility, probable expulsion of decidual membrane or shreds, softening of the cervix, enlargement of the uterus, presence of a distended tube, contractions of the wall of the gestation sac; if rupture occurs, there will be sudden, excruciating pains over the lower abdomen and on the affected side, shock, collapse, and symptoms of internal hemorrhage.

The *possible terminations* are: Rupture of the tube, followed by hemorrhage, shock, peritonitis, and perhaps death; tubal abortion, and continuance of the pregnancy to term.

11. *Pregnancy:* The tumor is hard and does not fluctuate, is situated in the median line, and may give fetal heart sounds and movements; the cervix is soft, and the other signs of pregnancy are present. The rate of growth of the tumor, and the general condition of the patient's health may also help in arriving at a diagnosis.

Uterine fibroid: Menstruation is irregular and sometimes very profuse; absence of the signs of pregnancy; the tumor is nodular, firm, irregular in outline, and while generally placed somewhat centrally is not in the median line, and is not symmetrical; the rate of growth is irregular, being, as a rule, slow, and sometimes extending over years.

Ovarian cyst: Absence of the chief signs of pregnancy; there may be the characteristic facies, the tumor is soft, fluctuating, is more to one side, and does not show fetal signs.

12. *External pelvimetry:* "The measurements are made with a pair of calipers. *Interspinous diameter* The points of the calipers are held in the two hands so that the point of the forefinger rests alongside the point of the instrument. The two anterior superior spines are located, and the points placed on them. The calipers are then screwed tight by an assistant or nurse, and the measurement read off. Normally it is 9½ to 10 inches. *Intercristal diameter:* The instrument is held as before and the points passed slowly round the iliac crests until the points of greatest separation are found, when the measurement is made. Normally it is 10½ to 11 inches. The *external conjugate diameter* is measured by placing the one point of the calipers over the tip of the last lumbar spine, and the other over the front of the symphysis pubis. This is most easily done with the patient standing, and the tip of the last lumbar spine can be found by counting downward from above. It is, however, usually marked by a slight dimple due to fascial attachments. In fat persons it suffices to make a point in the mid line 2½ inches above the line joining the posterior superior iliac spines. The external conjugate usually measures about 7½ to 8 inches; 3½ inches at the very least must be allowed for the thickness of the bony and soft tissues. Therefore, while a large reading may not necessarily mean a large conjugate, a reading under 7½ inches, and more especially under 7 inches, indicates that the conjugate is diminished proportionately.

"*Internal pelvimetry:* The *diagonal conjugate* from the promontory of the sacrum to the under margin of the symphysis may be measured by the fingers. The diagonal conjugate measures 4½ to 4¾ inches, and ½ to ¾ of an inch must be subtracted to give the length of the conjugate vera. The actual amount to be subtracted varies with the depth of the pubic bone and its inclination toward the sacrum, so that at the best this method of estimation is but approximately correct. In practice, however, these methods are found to be sufficiently accurate in the vast majority of cases. It should be remembered that in a normal pelvis it is impossible to touch the promontory of the sacrum by vaginal examination without forcing the fingers so far in as to hurt the patient. Therefore if the promontory can be felt readily it indicates a small pelvis and the desirability of more careful investigation. The *outlet of the pelvis* can be directly measured in both its anteroposterior and transverse diameters by means of the fingers and a measuring tape, or more conveniently by means of a pair of calipers with the points crossed."—(Johnstone's *Textbook of Midwifery.*)

TOXICOLOGY.

1. *Five emetic poisons:* Arsenic, antimony, croton oil, mercuric salts, and ptomaines.

2. The following portions of the cadaver should be preserved for analysis in cases of suspected homicide by poison: "The alimentary canal from the cardia to the middle of the rectum, unopened, and the contents enclosed by ligatures at the esophagus, duodenum, and lower end of gut; the liver, including the gall bladder; one kidney; the spleen; a piece of muscular tissue from the leg; the brain, and any urine which may remain in the bladder. Any suspected food articles, and any obtainable vomited matter, are to be also preserved. They are to be placed in clean and new glass jars, closed with glass or cork covers or stoppers. Jars with metallic caps should never be used. Tapes or cords should be tied about the jar and cap, to which they should be attached by sealing wax bearing impressions of a seal, in such a manner that access can be had to the interior only after breaking the seals or cutting the tapes or cords. Great care must be exercised that no sealing wax can get into the jars. Each portion should be placed in a jar by itself.

"The post-mortem appearance in acute arsenical poisoning are confined to the stomach and intestines. The stomach is inflamed, whether arsenic has been taken by the mouth or by other channels of absorption. The mucous surface is coated with a layer of mucus, tinged with blood or bile, and sometimes containing white crystals of As_2O_3 or green particles of Paris green. The color of the mucous membrane is brownish red, interspersed wtih darker streaks or patches between the rugæ. The small intestines are sometimes inflamed throughout their length, but more usually the inflammation is limited to the duodenum."—(Witthaus' *Essentials of Chemistry and Toxicology.*"

3. *A reliable test for arsenic:* Reinsch's test is as follows: To the suspected fluid add a little pure HCl; suspend in the fluid a small strip of bright copper foil, and boil. If a deposit forms on the copper, remove the copper, wash it with pure water, dry on filter paper, but be careful not to rub off the deposit. Coil up the copper, and put it into a clean dry glass tube, open at both ends, and apply heat at the part where the copper is. If arsenic is present there will appear in the cold part of the tube a mirror, which will be found on microscopical examination to consist of octahedral crystals of arsenic trioxide.

4. *The tissue changes in poisoning* by the acids mentioned are as follows:

"In *poisoning by sulphuric acid*, the postmortem appearances correspond with the amount of local injury, and this depends upon the size of the dose, state of concentration and length of time after the poison has been swallowed. Spots on the skin are white at first, but soon become brown. The mucous membrane is white and leathery and friable. The heart is generally empty and the venous system engorged with cherry red, thick, ropy, acid blood. The stomach is generally corroded, but may only show indications of severe irritation."

"In *poisoning by nitric acid* the mucous membrane of the mouth and throat is yellow. The stomach is distended with gas, if not perforated, and patches of yellow, brown or green are seen on its internal surface. Perforation is not common."

"In *poisoning by hydrochloric acid* the appearances are much the same as from the preceding acids, but there is not so much disorganization of tissue."

"In *poisoning by carbolic acid* the mouth and throat show corrosive effects. The mucous membrane is gen-

erally white or gray and pultaceous, or it may be hardened and corrugated. The stomach usually shows relatively little corrosion. The blood is dark and fluid."—(*Riley's Toxicology.*)

5. *The symptoms of acute arsenical poisoning:* "In acute cases the symptoms usually begin in from twenty to forty-five minutes. Nausea and faintness. Violent, burning pain in the stomach, which becomes more and more intense, and increases on pressure. Persisting and distressing vomiting of matters, sometimes brown or gray, or streaked with blood, or green (Paris green). Purging. More or less severe cramps in the lower extremities." (Witthaus' *Essentials of Chemistry.*)

6. *Symptoms of acute mercurial (corrosive sublimate) poisoning:* "The nauseous, metallic taste is experienced during the act of swallowing. Within a few moments this is followed by an intense, burning pain in the mouth, throat and stomach, the mouth and tongue are whitened and shriveled. There are vomitings of a white material, containing shreds of mucous membrane and tinged with blood, and bloody stools. Salivation occurs if life be sufficiently prolonged. Death sometimes occurs early from collapse, accompanied by convulsions, or in the deep coma; but in most fatal cases life is prolonged for from three to six days." (Witthaus' *Essentials of Chemistry.*)

7. *Points to be considered in the investigation of gunshot wounds*, are: "(1) the position of the weapon, whether within the hand of the deceased, or whether it has been so placed by another; (2) the presence or absence of blood upon it; (3) the indication or not of the recent discharge of the weapon; (4) the number of cartridges or bullets discharged; (5) the caliber of the weapon; (6) the weight and dimensions of the ball discharged; (7) the number, size, and direction of the wounds; (8) the presence or not of marks of violence and of blood-stains; (9) the amount of blood lost, whether clotted or not; (10) the presence or not of stains upon the clothing; (11) the direction of the effused blood; (12) the course of the wounds in the body; the presence or not of foreign substances (splinters of bone, fibers of tendon or aponeurosis) in the course of the missile; (13) the condition of the lips of the wound, whether there be inversion of the wound of entrance and eversion of the corresponding one of exit, or not; (14) the condition of the weapon, of its barrel; or if a revolver, of its different chambers; note whether they are clean or not, etc.; (15) the peculiarities, if any, of the cartridges; whether the primer is marked by the hammer, and the name of the maker, etc.; (16) the size and weight of the bullets used; (17) the weight and number, if shot were employed; (18) the condition of the sights of the weapon, whether displaced or loosened, etc.; also note the "trigger-pull," and (19) the places of impact of the various bullets, as upon the wall, etc." (Herold's *Legal Medicine.*)

8. "In addition to the hydrostatic test, *live birth* may be deduced from the following conditions: The stomach may contain milk or food, recognized by the microscope and by Trommer's test for sugar; the large intestines in still-born children are filled with meconium; in those born alive they are usually empty; the bladder is generally emptied soon after birth; the skin is in a condition of exfoliation soon after birth. The organs of circulation undergo the following changes after birth, and the extent to which these changes have advanced will give an idea of how long the child has lived: The ductus arteriosus begins to contract within a few seconds of birth; at the end of a week it is about the size of a crowquill, and about the tenth day is obliterated. The umbilical arteries and vein: The arteries are remarkably diminished in caliber at the end of twenty-four hours, and obliterated almost up to the iliacs in three days; the umbilical vein and the ductus venosus are generally completely contracted by the fifth day. The foramen ovale becomes obliterated at extremely variable periods, and may continue open even in the adult." (Murrell's *Aids to Forensic Medicine.*)

"The criminal modes for the purpose of destroying the life of the newborn child are suffocation, drowning, cold and exposure, starvation, wounds, fractures, and other injuries, luxation and fracture of the neck, poisoning, intentional neglect to ligate the umbilical cord, causing the infant to inhale noxious gases, the introduction of instruments into various parts of the body, etc."

9. There may be marks of violence or injury on the uterus or vagina, such as perforation or tears; but there may be very few signs after the lapse of a very few days. There may be the signs of a recent delivery.

10. *Postmortem appearances in death by hanging:* "In the main they resemble those attending death from strangulation. Externally, swelling and lividity of the face, congestion of the eyelids, dilated pupils, eyes red and protruding, tongue swollen, livid, often protruded, or compressed between the teeth, lower jaw retracted; often a bloody froth escaping from the mouth and nostrils. There are frequently petechial effusions on the neck, shoulders, arms, and hands. In many cases, however, especially in suicides, the countenance is calm, the face pale, the eyes and tongue natural. Sometimes there is turgescence of the genital organs, and an involuntary escape of the urine, feces, and semen, but these signs are by no means peculiar to death by hanging. The position of the head varies according to the part of the neck where the knot was placed. As the latter is usually behind the neck, the head is generally flexed forward. If the knot were in front, the head would be found extended backward (Tardieu). The hands are generally closed, often tightly; the legs extended, and often livid. The neck is nearly always stretched, owing to the weight of the body, and it presents very decided marks of the cord, varying, however, somewhat according to the nature of the latter and its mode of application. Thus, the mark may be deep or superficial, single or double, according to the strain made upon it, and the thickness, roughness, or duplication of the cord. The skin under this mark becomes very dense and tough, and of a yellowish-brown color, and has been aptly compared to old parchment. This appearance is more marked if the body has remained suspended for some hours or days; and the cellular tissue underneath is also condensed, and has a silvery appearance. Besides the above, there is often a livid mark (ecchymosis), where great violence has been used, as in executions; but the latter is quite distinct from the true mark of the cord, with which it has been confounded. The livid line is much less frequently met with than was formerly supposed. The groove or furrow in the neck is oblique (which distinguishes it from strangulation); it may also be double (arising from a double fold of the cord), and irregular or interrupted. It is more marked in front, less so at the sides and below the ears, and ceases behind. In general, the narrower the ligature, and the longer the suspension, the deeper the furrow. A broad leather thong, pressing only by its borders, might produce a double mark.

"Internally the appearances usually accompanying asphyxia are met with, such as engorgement of the lungs, right side of the heart, and venous system, with dark fluid blood. Both ventricles of the heart contain blood, if the death has been caused by apoplexy; if by asphyxia, the left cavities are found empty, while the right side of the heart and the large vessels are engorged with blood. The lining membrane of the larynx and trachea is deeply congested, as in strangulation, and is sometimes coated with a bloody froth, though less so than in strangulation and suffocation. The vessels of the brain are generally congested, but extravasation of blood into the brain or upon its membranes is extremely rare. The brain itself when cut into presents numerous bloody points. The kidneys are usually congested; the stomach frequently presents evidences of such deep congestion as to suggest the idea of an irritant poison. The same is true also of the intestines." (Reese's *Medical Jurisprudence.*)

11. *The signs of recent delivery:* "If the woman is examined within three days of her delivery, the followings signs will be shown: pallor of the face and general weakness will be apparent; the skin will be moist, relaxed, and soft; the eyes somewhat sunken, with a darkening beneath or surrounding them; the pulse will be soft and slightly quickened, and the breasts are knotty to the feel, and full and enlarged; the nipples are enlarged, and often exude a watery-like milk. In addition to these signs the abdomen feels soft and relaxed to the touch, and is thrown into folds; it shows on its surface numerous transverse lines, the lineæ albicantes. The uterus is readily appreciated, between the abdominal walls, being situated low down within the pelvis; it appears like a large ball. The external genitals are swollen, moist and relaxed. The vagina is rather capacious, and there is a mucopurulent discharge from the uterus. The os uteri is patulous and low, the lips thereof being somewhat soft and relaxed, and perhaps lacerated. These signs singly afford no proof of delivery, but when taken together they form conclusive evidence of the recent delivery of the woman." (Herold's *Legal Medicine.*)

12. "The kinds of food which most frequently produce symptoms of poisoning are pork, veal, beef, meat-pies, potted and tinned meats, sausages and brawn. It is not necessary that the food should be "high" to give rise to poisoning. It may arise from the use of the flesh of an animal suffering from some disease, from inoculation with microorganisms, or from the presence of toxalbumoses or ptomaines. Many diseases such as diarrhea, enteric fever, and cholera, and perhaps tuberculosis, may be caused by eating infected foods. Trichiniasis may also be mentioned. Tinned fish often gives rise to symptoms of poisoning, and shell fish are not uncommonly contaminated with pathogenic microorganisms. Mussel poisoning was formerly supposed to be due to the copper in them derived from ships' bottoms, but it is more probably the result of the formation of a toxin during life, and not after decomposition has set in." (Murrell's *Aids to Forensic Medicine.*)

HYGIENE.

1. *Ptomaines* are basic, nitrogenous, organic compounds produced from protein material by the bacteria which cause putrefaction.

Symptoms of ptomaine poisoning: Nausea, pain in abdomen, vomiting, purging, chilliness, headache, thirst, weak and rapid pulse, anorexia, impairment of vision, muscular weakness, collapse.

The *most common source* is decomposed or infected food (meat, sausage, fish).

2. The patient must be isolated; no one but the physician and nurse must enter the room; the physician should put on a large washable gown when he goes in, and remove it on leaving, at the same time washing his hands in a disinfectant; the nurse, when she leaves the sick room should also remove her clothes and put on others, at the same time disinfecting herself. Special care must be taken during the period of desquamation. At the termination of the disease everything should be disinfected; toys, and books, etc., are better burned. And see answer to question 8.

3. The air of sewers (*"sewer gas"*) has no constant composition, and if the sewer be properly constructed, well ventilated, and sufficiently flushed, may differ but little from outside air. Much depends upon the sewage being removed quickly, or, on the other hand, being allowed to stagnate and undergo decomposition. In the latter case the air of the sewer becomes foul; oxygen is lessened, carbonic acid increased, and there is much organic matter, together with variable quantities of marsh gas, sulphuretted hydrogen, and ammonium sulphide. The exact composition of the organic matter varies, but its properties are similar to those of the organic matter in respired air. Micro-organisms adhere to moist surfaces, and hence the air of well-constructed sewers is, on the whole, remarkably free from them, except near fresh air inlets and at junctions, where splashing occurs. Neither bacteria nor other solid particulate matters are, under ordinary circumstances, given off from quiescent liquid surfaces; but if putrefaction be allowed to occur the bursting of bubbles may recharge the air with them. . . . It is probable that pathogenic organisms are but rarely conveyed by sewer gas. Air contaminted by sewage emanations may, however, be a cause of diarrhea and other gastrointestinal disturbances, and of certain forms of sore throat. Anemia, depression, and general ill-health may result from protracted exposure to such an atmosphere. Cholera, enteric fever, pneumonia, erysipelas, puerperal fever, and diphtheria. Cholera, enteric fever, pneumonia, erysipelas, puerperal fever, and diphtheria have a much heavier incidence, both in numbers and severity, upon persons exposed to these conditions. It is not necessary to assume an origin *de novo* in such cases, or even in the case of diarrhea and sore throat, the evidence being consistent with the supposition either that the specific poison is sometimes carried by such emanations, or that their effect is merely to predispose to the disease. There is no evidence of any specific relation between sewer gas and small-pox, measles, or whooping-cough." (Whitelegge and Newman's *Hygiene and Public Health.*)

4. MEASLES. *Period of incubation:* From 7 to 18 days, oftenest 14. *Date of eruption*, third or fourth day. *Quarantine.* In contacts, 18 days; for the sick, at least that length of time, and as much longer as for the entire completion of desquamation and the subsidence of the catarrhal conditions. After release from quarantine the child should not be allowed to re-enter school for at least 5 days longer.

VARIOLA. *Period of incubation*, 9 to 15 days; most often 12 days. *Date of eruption*, usually on the fourth day. *Quarantine.* For the sick, until desquamation is complete and the skin thoroughly healed, not less than 21 days. For contacts, 14 days.

SCARLET FEVER. *Period of incubation*, usually from 2 to 4 days; occasionally 24 hours and sometimes as long as 12 days. *Date of eruption*, first or second day. *Quarantine.* For contacts, 12 days, if possible non-immunes should be isolated in another house. For convalescents, until desquamation is absolutely complete, a minimum of 21 days and a maximum of 8 weeks; with a running ear, the child should be excluded from school much longer than 8 weeks and should under no circumstances return to school under 5 weeks. (From Gardner and Simonds' *Practical Sanitation.*)

5. *Essentials for the production and preservation of pure dairy milk:* Vaughan's rules are as follows: "(1) The cows should be healthy, and the milk of any animal which seems indisposed should not be mixed with that from the healthy animals. (2) Cows must not be fed upon swill or the refuse from breweries or glucose factories, or upon any other fermented food. (3) Milch cows must not be allowed to drink from stagnant pools, but must have access to fresh, pure water. (4) The pasture must be freed from noxious weeds, and the barn and yard must be kept clean. (5) The udders should be washed and then wiped dry before each milking. (6) The milk must be at once thoroughly cooled. This is best done in the summer by placing the milk can in a tank of cold water or ice water, the water being of the same depth as the milk in the can. It would be well if the water in the tank could be kept flowing, and this will be necessary unless ice water is used. The tank should be thoroughly cleaned each day to prevent bad odors. The can should remain uncovered during the cooling, and the milk should be gently stirred. The temperature should be reduced to 60 deg. Fahr., or lower, within an hour. The can should remain in cold water till ready for delivery. (7) Milk should be delivered, during the summer, in refrigerated cans or in bottles about which ice is packed during transportation. (8) When received by the consumer it must be kept in a clean place, and at a temperature some degrees below 60 deg. Fahr."

Diseases specially liable to be conveyed by the ingestion of milk: Tuberculosis, typhoid fever, scarlet fever, diphtheria, tonsilitis, cholera, and gastrointestinal disorders.

6. *Pasteurization of milk* consists in heating the milk for twenty minutes at a temperature of 140 deg. Fahr.

"Advantages of pasteurization milk (1) That most, if not all, of the common bacteria and their toxins are killed. (2) That the ordinary ferments and germicidal properties of the milk are not destroyed. (3) That the process may be accomplished on a large scale, and furnish a commercially safe milk. (4) That the taste, appearance, odor, and cream separation quality of the milk are not altered. (5) That pasteurized milk, if kept cold, furnishes a clean, healthy milk, safe for infant food and other uses.

"Disadvantages of the pasteurization of milk: The following are some of the objections which are urged by the opponents of pasteurization upon a large and commercial basis: (1) That the spore-bearing bacteria and bacterial toxins are not destroyed, and the milk is therefore not wholly safe. (2) That pasteurization stops lactic-acid fermentation, and thus destroys the only 'nature's danger signal,' and the first symptom by which aged milk is known. (3) That unless pasteurized milk is rapidly cooled and kept under 50 deg. Fahr., certain fermentative changes which are ordinarily stopped by lactic-acid fermentation increase in activity, owing to the destruction of lactic-acid bacilli by the pasteurization. (4) That pasteurization, by preserving unclean milk for some time, may induce the producers to furnish dirty milk, discourage rigid cleanliness, and promote carelessness on the part of the producer who relies entirely on the pasteurization to preserve the milk. (5) That the pasteurization furnishes a 'purified' milk instead of a 'pure milk.'"—(Price's *Hygiene and Sanitation.*)

7. *Immunity* is the power of resistance of cells and tissues to the action of pathogenic microorganisms. Immunity may be either natural or acquired.

Natural immunity is that power of resistance, natural and inherited, and peculiar to certain groups of animals, but common to every individual of these groups.

Acquired immunity is this resistance acquired (1) by

a previous attack of the disease, or (2) by the person being made artificially insusceptible. The conditions which give immunity are: (1) a previous attack of the disease; (2) inoculation with the specific microorganisms in small numbers or of diminished virulence, so as to produce a mild attack of the disease; (3) vaccination; (4) the introduction of antitoxins; (5) the introduction of the toxins of the bacteria.

Examples. The rat is *naturally immune* to anthrax; the white mouse is *naturally immune* to infection with *Bacillus mallei*. *Acquired immunity* is seen in the immunity from smallpox after vaccination, or after having suffered from an attack of the disease.

8. To prevent the spread of typhoid fever: Flies should be kept out of the house as far as possible, by means of screens or otherwise; all discharges from the sick person must be disinfected; all utensils, dishes, etc., used by the patient must be thoroughly cleansed and boiled every day; soiled linen must be soaked in a disinfectant solution before being washed; after each attendance on a patient, physicians, nurses, and others should wash their hands in a disinfectant; thorough sterilization of all bedding, etc., must be performed after the disease is over. Further, each household should boil all water that is to be used for drinking or for washing dishes, etc.; milk should be boiled also; and no ice should be put *in* water or other drink or food.

"When the patient has recovered from an infectious disease, he should be given a general bath with soap and water. In addition to this, he may be bathed with chlorinated soda solution, and in the exanthemata it may be advisable to anoint his body again unless all desquamation has ceased. After a general bath has been given the patient may be allowed to mingle with the well. In most localities the convalescent from certain diseases, especially smallpox, is washed with 1:2000 bichloride of mercury solution, clothed with clean clothing, and then transferred to a disinfected room.

"The clothing and bedding which are to be disinfected by means of steam should be carefully wrapped in cloths saturated with 1 per cent carbolic solution, placed in a wagon, and taken to the disinfecting station. After the bed has been stripped, all refuse matter, paper, and articles of little value are wrapped in cloths saturated with carbolic acid and burned in a stove or furnace. The floor, doors, windows, furniture, and the walls for a distance of 1½ meters from the floor should be washed with 5 per cent carbolic acid solution. The walls and ceiling of the room should subsequently be sprayed with 1:1000 bichloride of mercury solution. If the walls are papered, it is advisable to remove carefully the paper before beginning the disinfection. The room is then closed as tightly as possible and disinfected by means of formaldehyde." (Bergey's *Hygiene.*)

9. To *fumigate by chlorine:* For 1000 cu. ft. of space pour two ounces of H_2SO_4, and three ounces of water, previously mixed and cooled, upon eight ounces of NaCl and two ounces of MnO_2. The fluids must be mixed slowly and with care, and the salts should be in an earthen vessel upon a bed of sand. The generating apparatus should be as high in the room as possible, because chlorine gas is very heavy.

To *fumigate by sulphur dioxide:* For each 1000 cu. ft. of space, five pounds of sulphur are burned, care being taken to prevent accidents. In all cases, all apertures and crevices of the room should be closed, all closets, drawers, or other receptacles opened; and after the fumigation the room should be well ventilated and thoroughly cleansed with a solution of corrosive sublimate.

The room in question contains 3000 cu. ft.

10. *The requisites of a good filter* are (according to Parkes): (1) That every part shall be accessible for cleansing or renewing the medium. (2) That the filtering medium shall have a sufficient purifying power and be present in sufficient quantity. (3) That the medium gives nothing to the water favoring the growth of low forms of life. (4) That the purifying power be reasonably lasting. (5) That there be nothing in the construction of the filter itself capable of undergoing putrefaction or of yielding metallic or other impurities to the water. (6) That the filtering material shall not clog, and that the flow of water be reasonably rapid; to which may be added: 7. That the filtering medium be such that it can be readily cleansed and sterilized, or else so cheap that the removal and replenishing may not be neglected when necessary on account of the expense.

11. *The habitual use of alcohol predisposes to:* Arteriosclerosis, chronic nephritis, cirrhosis of liver and kidneys; it lowers the resisting power against bacterial invasion, hence pneumonia, tuberculosis, etc., may be included in this list. The excessive use of alcohol shortens life; the moderate use probably has no effect on longevity, but much depends on the constitution and habits of the individual.

12. *Malaria* is transmitted through the bite of an infected mosquito (*anopheles*). Individuals should use mosquito netting round their beds and wire gauze in doors and windows, so as to keep out the mosquitos as much as possible. All pools, stagnant water, etc., where mosquitos may breed, should be removed. All mosquitos, larvæ, etc., should be destroyed as far as possible. By staying indoors during dusk and darkness, opportunities for infection may be avoided. Occasional fumagation with formaldehyde or sulphur is also efficacious.

Therapeutic Hints.

For Callosities.—The following is said to be efficient:

℞ Resorcin.
Salicylic acid, āā 1 gram.
Lactic acid.
Flexible collodion, āā 10 grams.

S.: Apply daily for five or six days; then after a foot bath employ friction over the callous part and pick off the collodion with the loosened callous skin. —*Riforma Medica.*

Ether, Camphor, and Guaiacol in the Treatment of Bronchopneumonia in Infants.—Marfan recommends hypodermic injections of the following solution:

℞ Sterilized olive oil, 8 c.c.
Sulphuric ether, 2 c.c.
Camphor, 0.5 gram.
Crystallized guaiacol, 1 gram.

One cubic centimeter of the above contains 5 centigrams of camphor and 10 centigrams of guaiacol. Up to six months of age the dose is one-quarter or one-third of a cubic centimeter; from six months to two years, one-half of a cubic centimeter; after two years, 1 cubic centimeter. Two injections may be given daily.—*Le Nourrisson.*

Treatment of Paroxysmal Vagotonia.—M. D. Danielopolu proposes this name for a syndrome, characterized by violent vertigo, expulsive vomiting, and attacks of bradycardia occurring in an individual who otherwise shows no sign of any cardiac lesion. The etiology is unknown; the pathogenesis is supposed to be a paroxysmal excitation of the vagus nerve. The treatment advised is the administration of atropine sulphate in doses of 0.0005 to 0.001 gram one-half hour before meals.—*Presse Médicale.*

The Vaccine Treatment of Typhoid Fever.—Francesco Boselli treated twenty patients suffering from typhoid fever by means of intravenous injections of Löffler's vaccine, or subcutaneous injections of the Pfeiffe-Kolle vaccine or the sensitized vaccine of Besredka. The mortality was 15 per cent. in comparison with the mortality of 20 per cent. in the cases not treated with vaccines.—*Il Policlinico.*

For Habitual Vomiting in Nurslings.—Marfan is credited with the following:

℞ Tincture of belladonna, 10 drops.
Sodium bromide, 1 gram.
Sodium bicarbonate, 1.5 grams.
Distilled water, 60 grams.
Simple syrup, 30 grams.

M. et Sig.: Four teaspoonfuls a day from birth up to three months; six teaspoonfuls a day from three to six months.—*La Pediatria.*

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SCHOOL-SPREAD OF CONTAGIOUS DISEASES AND HOW TO CONTROL IT.*

BY MYER SOLIS-COHEN, A.B., M.D.,

PHILADELPHIA.

THE complacency with which physicians and public health officials regard the prevalence of the minor contagious diseases, and even sometimes of scarlet fever and diphtheria, is a matter for wonder if not for shame in this enlightened day of preventive medicine. So great is the helplessness and pessimism of most sanitarians as to our ability to limit the spread of the minor contagious diseases, that they make no serious attempt to study how to control it. At the same time they very properly regard as a disgrace the occurrence of a single case of typhoid fever, because they recognize that it can and should be prevented. If some of our statisticians would only show us the monetary loss caused by measles alone, as they have shown us in the case of tuberculosis, perhaps we might realize that it also is a disease whose prevention is worthy of consideration. The number of deaths from measles, or from its complication—pneumonia—is fairly well known. Some have even estimated the frequency of another of its complications—otitis media, which often goes on to mastoid disease, operation, and death. The cost in loss of services through death and disability and the actual expense of physician, surgeon, nurse, hospital, undertaker, etc., can be calculated without difficulty. Another economic loss, which no one seems to realize, is the frequent failure of promotion owing to a five weeks' absence from school when a secondary case occurs in a house, especially should a second absence from a minor contagious disease occur during the same term. This loss of a year's schooling means that one begins one's life's work either a year later or with less education than would otherwise have been the case. The resultant loss in efficiency expressed in dollars would reach a very high figure.

It is, of course, true that by various restrictive public health measures and by medical inspection of public schools an attempt is made to limit the spread of the minor communicable diseases. But when all this fails to prevent widespread epidemics, no one seems very much disturbed or makes any serious effort to study why our present measures fail.

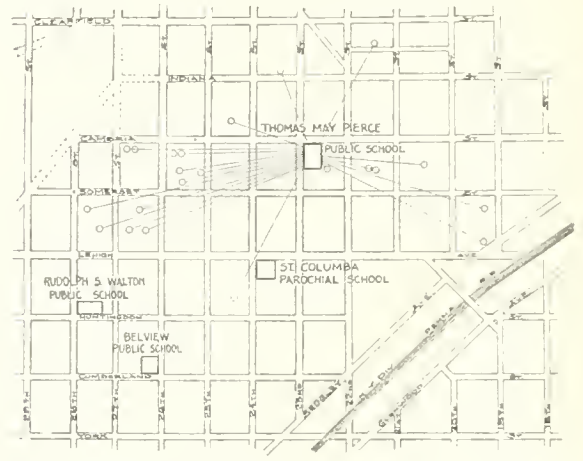
The school has always held an important place among the recognized sources of contagion, but I doubt if many realize how great a factor it really is in the spread of contagious disease. There can be little question that the vast majority of minor contagious diseases are contracted in school. A study of an epidemic in a classroom or in a school or in a city will show that the disease spreads from child to child in a room, from room to room in a school, from school to school in a city. And I am firmly convinced that an epidemic can be checked in a room, checked in a school, and checked in a city. In my papers on "Latent Diphtheria, a Public Health Problem,"[1] and "Diphtheria Carriers; Their Isolation and Control,"[2] I showed how diphtheria spreads in schools, institutions, and dwellings, and how it can be checked. In a more recent paper, "Reporting of Suspicious Cases by the Laity a Prerequisite to the Efficient Control of Communicable Diseases," read before this section two years ago, I described several epidemics of scarlet fever, showing how they originated in unrecognized cases. Dr. Walter N. Roach of Philadelphia, in a paper on "The Rôle of the School in the Spread of Scarlet Fever," presented a diagram map (which I have reproduced) tracing twenty-two cases of scarlet fever to one school of eighteen hundred pupils, although many of the infected children lived at some distance from this school and nearer four other schools with forty-five hundred pupils, not one of whom developed scarlet fever.[3]

Study of a Measles Epidemic.—To show how the minor diseases spread, I have made a study of the epidemic of measles that occurred in Philadelphia during the fall of 1910, the winter of 1910-1911 and the spring of 1911. I have prepared a series of shaded maps showing the location of the cases at monthly intervals during this period. The records on which these maps are based show that the epidemic began—not throughout the city with the opening of schools—but in the week ending October 15, 1910, in one ward, spreading two weeks later to a contiguous ward, and three weeks later to another contiguous ward. During that week twenty-four cases were reported from three contiguous wards and only fifteen cases from the rest of the city. The next week this area extended, four contiguous wards having thirty-seven cases and the rest of the city having twenty-seven. The following week ninety-seven cases were reported from six contiguous wards; sixty-two from the ward where the epidemic started, while throughout the rest of the city there were forty-eight cases. Of the one hundred and fifty-six cases reported the next week, eighty-eight were from these same six wards, thirty from the original one and twenty-nine from one next to it. The epidemic was also beginning to spread to other parts of the city, two wards some distance away having eight and nine cases respectively, and one a little nearer having eight cases. The next week the six original wards and four other contiguous wards had a total of ninety-five cases. Included in the latter was one of the three wards to which the epidemic had spread the previous week. Another had a total of forty-nine cases, while from

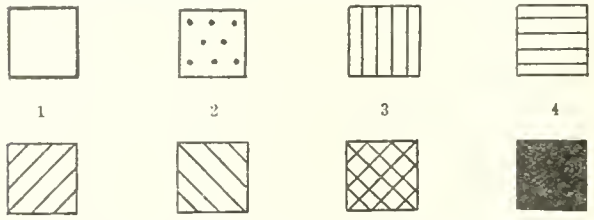
*Read before the Section on Public Health of the American Medical Association, June 10, 1914.

the third and from four wards adjacent to it thirty-two cases were reported. From the other thirty-one wards only forty-seven cases were reported. The

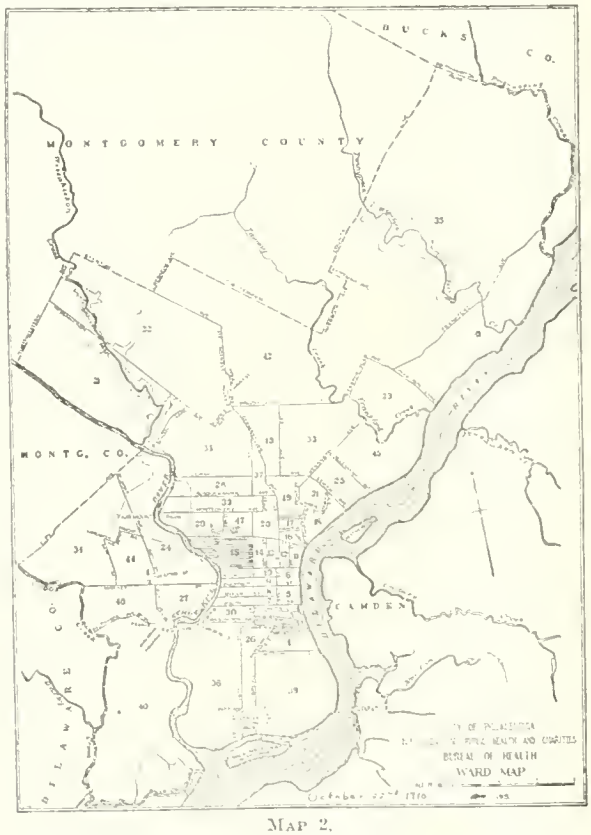
DIAGRAM MAP SHOWING SPREAD OF SCARLET FEVER



MAP 1.—The small circles locate houses of scarlet fever patients. The lines of contact leading direct to the Pierce School as a focus; no other cases occurred in any families or in pupils attending other public or private schools in this territory. (W. N. Roach[4].)

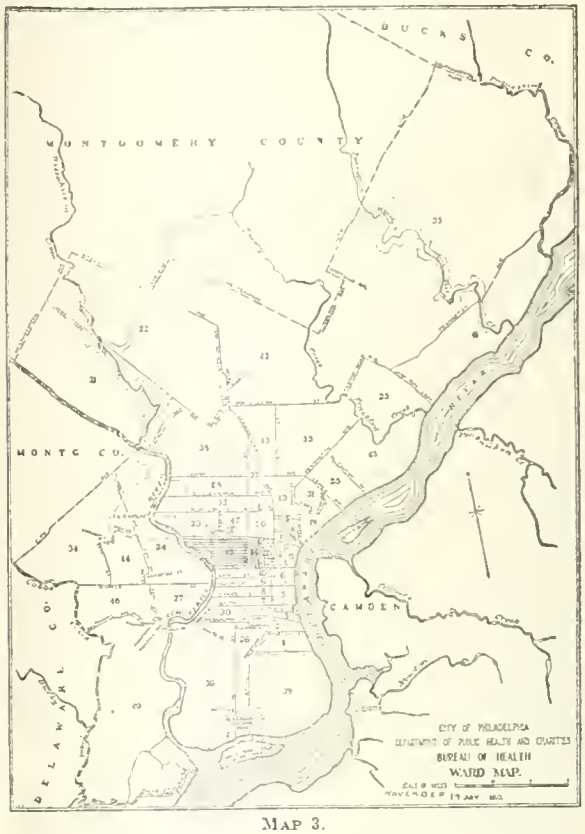


KEY TO MAPS.—1, less than 3 cases in a ward; 2, between 3 and 5; 3, between 5 and 10; 4, between 10 and 20; 5, between 20 and 30; 6, between 30 and 40; 7, between 40 and 50; 8, over 50.



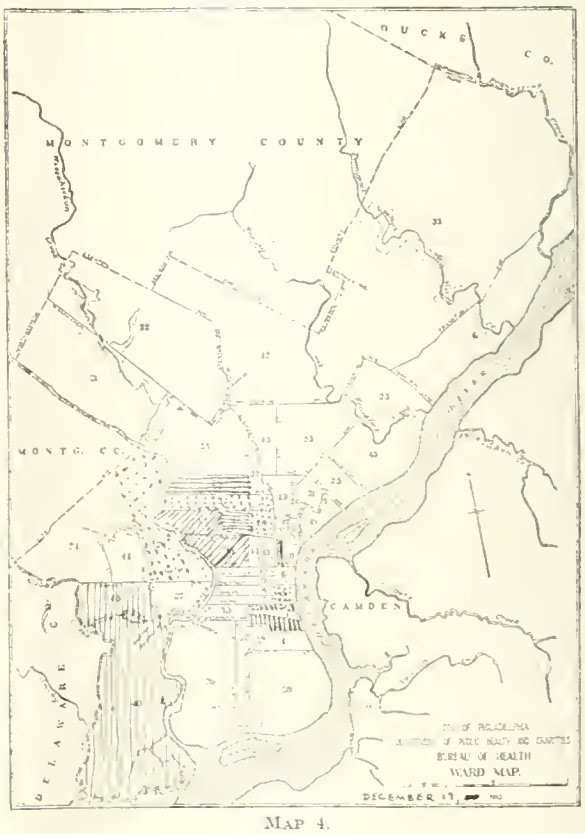
MAP 2.

original ward and six adjacent wards had one hundred and six cases the following week, and three wards in the second focus of infection had seventeen cases. There were seven cases this week, however, in a West Philadelphia ward, separated by the Schuylkill River from the original ward, and seven



MAP 3.

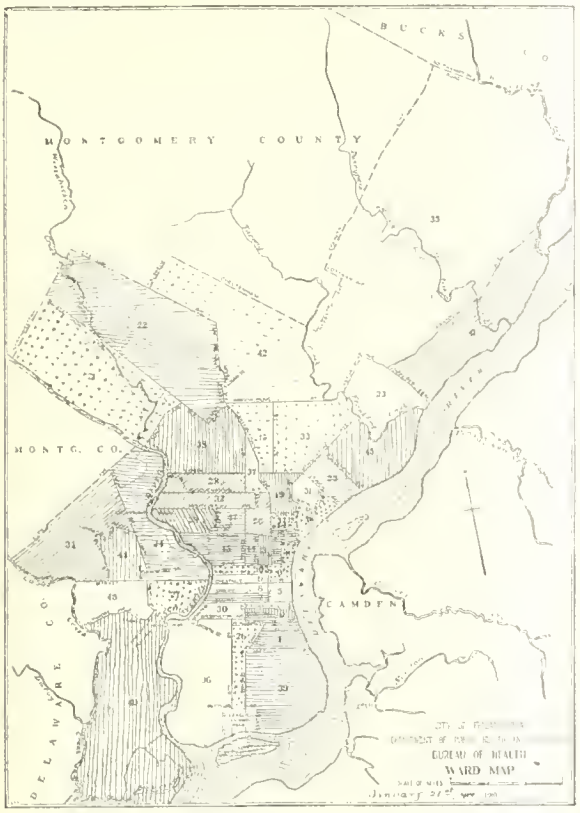
and nine cases, respectively, in two wards adjacent to it. The rest of the city had only forty-one cases.



MAP 4.

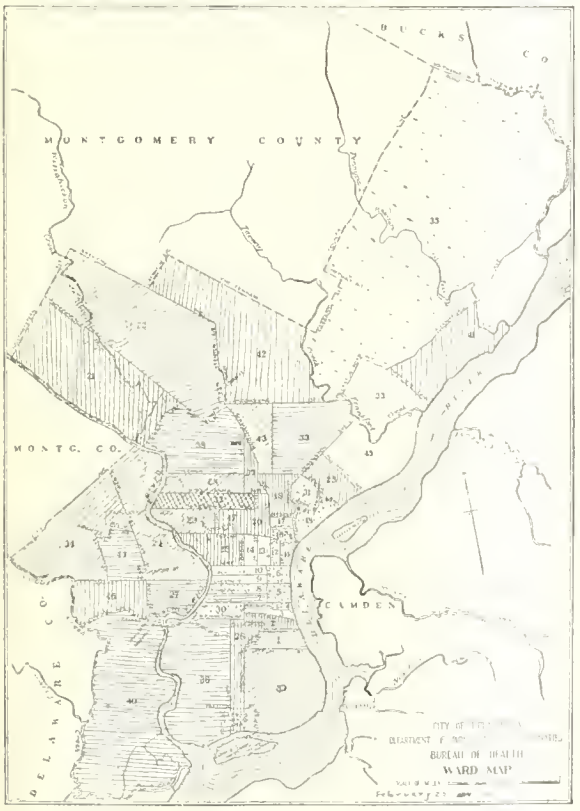
Two weeks later the original focus, now comprising nine wards, had one hundred and thirty-eight cases, the second focus of six wards had fifty-two cases,

and the West Philadelphia focus of three wards directly west of the original ward had a total of fifty-three cases. A spread to the territory east of



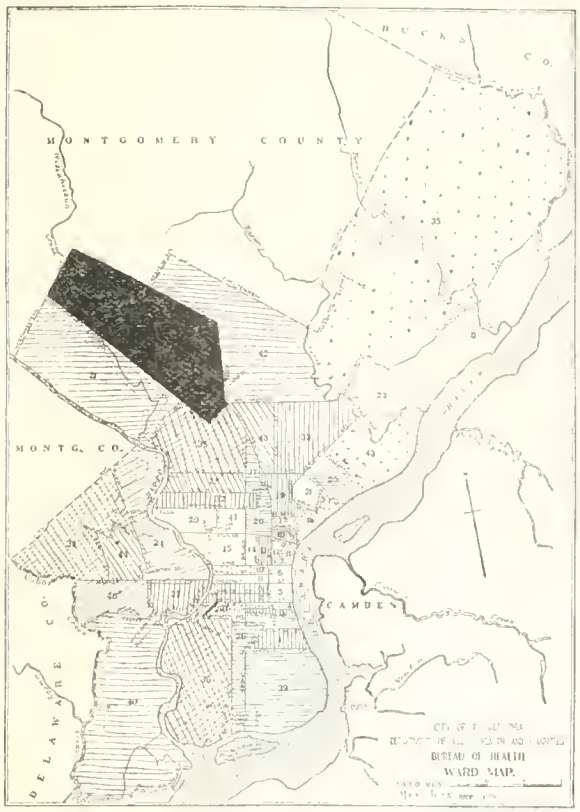
MAP 5.

the original focus and north of the second focus was now beginning, thirty-two cases being reported from



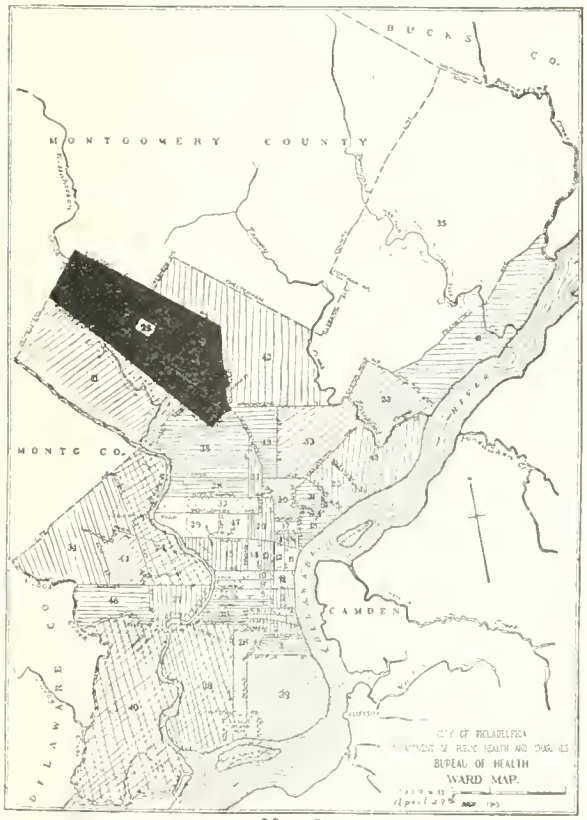
MAP 6.

three wards in this section. There was a general increase also throughout the city, seventy-nine cases being reported from the remaining twenty-six wards. The spread then increased in the second focus of infection and in West Philadelphia and in the northeast section. At the end of four weeks



MAP 7.

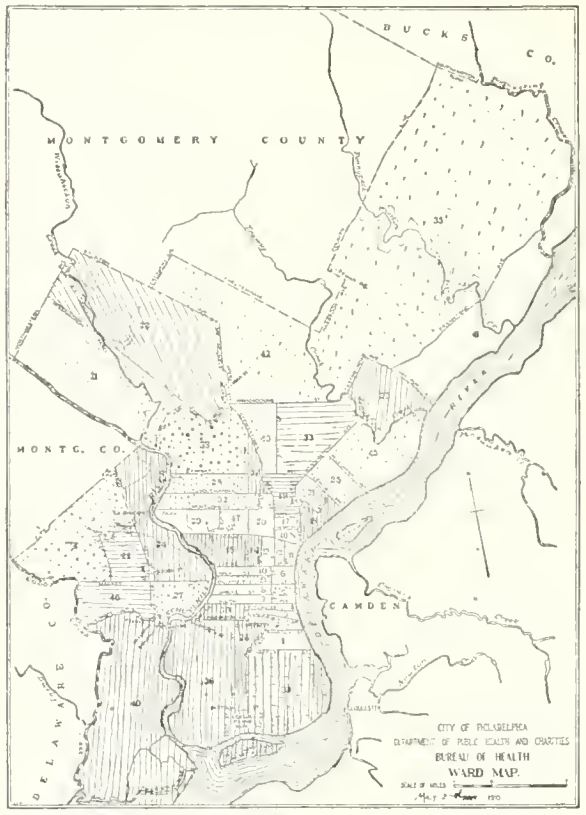
there were one hundred and fifty-six new cases in the original area, now comprising ten contiguous



MAP 8.

wards, sixty-two cases in four contiguous wards at the second focus, which had spread to half the southern section of the city, seventy-two in the three

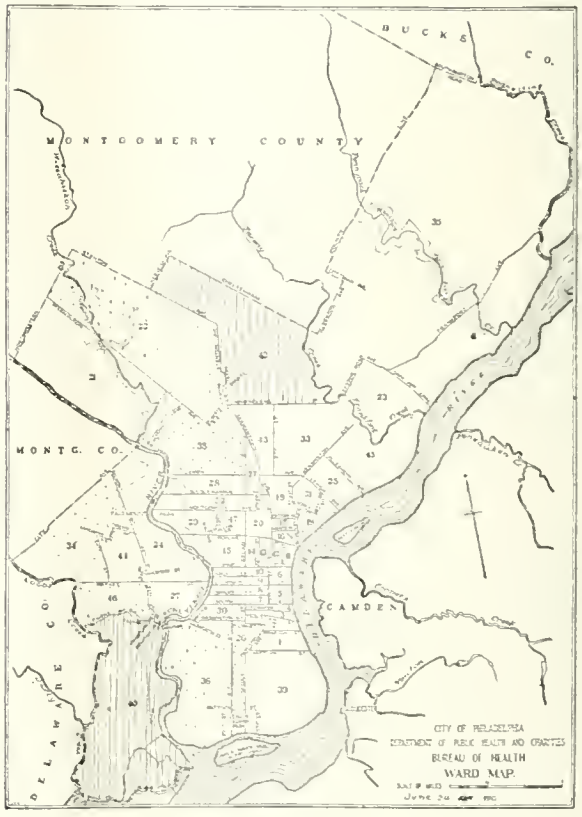
West Philadelphia wards, and seventeen in two wards below them, and one hundred and nineteen new cases in eight wards east and northeast of the



MAP 9.

original focus. The epidemic had also spread to the northern section of the city, forty-four cases being reported from two wards. The other eighteen wards had a total of forty-two new cases. At the end of another four weeks only one case was reported from the original ward, although eighty-nine cases were reported from five contiguous wards above it. The second focus included nearly the whole southern section of the city, ninety-five cases being reported from nine wards. One hundred and sixteen cases were reported from six contiguous wards on the eastern boundary of the original area, eighty-five cases from the five West Philadelphia wards, and seventy from the two wards bounding the original area on the north. Sixty-two cases were reported from the other nineteen wards. Four weeks later the epidemic was diminishing in the original area, except at the northern end, where three wards had a total of ninety-three new cases. The second focus had spread in its southern section, five wards having a total of one hundred and three new cases. One hundred and forty-seven cases were reported this week from West Philadelphia, one hundred and fifty-two cases from seven northeastern wards, and one hundred and forty-four cases from four northern wards. One hundred and two cases were reported from the other twenty-three wards. At the end of another month the epidemic had partially left the section where it had begun. Four contiguous wards to the north and northeast of it had a total of one hundred and eighteen new cases. There was a decline in the wards on the eastern boundary of the primary district, but nine contiguous wards to the east and north of these had one hundred and fifty cases. The second focus now included nine contiguous wards in South Philadelphia, which had a total of one hundred and sixty cases. One hundred and sixty-nine cases were reported from West Philadelphia this week. The other twenty wards had a combined total of seventy cases. The epidemic then began to diminish, there being a drop of about a hundred and fifty cases during each of the next two weeks, of about a hundred cases the following week, and of about ninety the week after. During this week ending May 27, 1911, four contiguous wards in South Philadelphia had a total of thirty cases, four of the West Philadelphia wards had sixty-nine cases, four contiguous wards in the northeast had a total of fifty-nine cases, one ward in the northwest had thirty-one cases, and the ward where the epidemic began had ten cases. The remaining thirty-three wards had in all but eighty-nine cases. Two weeks later only two wards had more than eight cases, one in the northwest with twenty-one and one in West Philadelphia with eleven. After another fourteen days but sixty-nine cases were reported from the entire city, and a week later, that ending July 1, this had dropped to twenty-eight.

The Role of the School in an Epidemic.—The course of an epidemic in being confined at its inception to a small district and then spreading by contiguity is explained by the infection of a school and the transmission of the disease by infected scholars of this school to other members of their families or to playmates, who attend neighboring schools. But just as not all wards become infected in a city epidemic, all schools in a ward do not necessarily become infected. I have prepared a chart of a small epidemic of measles occurring last year in a West Philadelphia ward showing the incidence in the different schools attended by the children of this



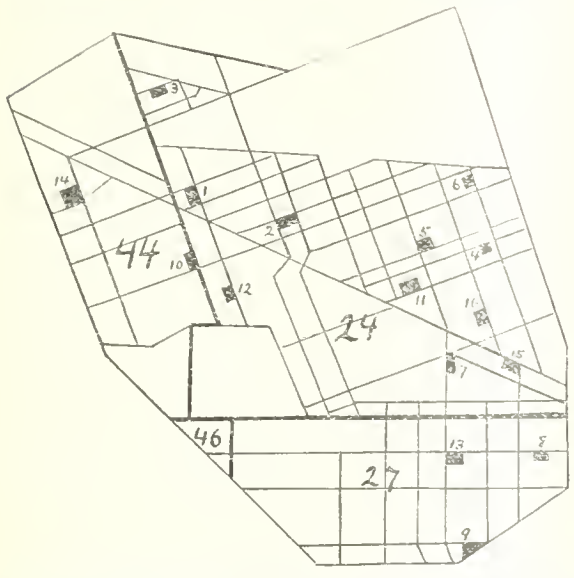
MAP 10.

ward. I have also made a map showing the location of those schools. The epidemic began the week of January 14 and ended the week of April 29. Of

the sixteen schools there were no cases in four, one case each in two, three cases in one, seventeen cases in each of two, twenty cases in one, forty-five cases in one, and fifty-nine cases in one. This refers only to the reported cases, which represent possibly one-fourth or less of all the cases that occur. The figures which I have arranged by weeks, consequently do not show so well the way I have found disease to spread in a school, especially as they refer to the weeks in which the disease was reported and not

Chart Showing Number of Cases of Measles and German Measles in the Schools Attended by Children from a West Philadelphia Ward.

	Week Ending																
	January				February				March					April			
	7	14	21	28	4	11	18	25	4	11	18	25	1	8	15	22	29
Public Schools																	
E. S. Miller		1			1				1		4	5	1	10	9	13	14
Belmont														2	2	1	2
G. Leidy						2		1	1	2		1	1	1	1	1	9
C. Rodney											1		2	4	6		4
C. Rodney Annex																	
M. McMichael										3	1	5		2		3	3
M. M. Kendrick														1			
Newton Boys'																	
Newton Girls'			1			1					2	1	1	2			
M. Washington																	
Parochial Schools																	
St. Agatha		1				1			5	3	6	11	7	8	2	1	
St. Ignatius											1					1	2
St. James																1	2
Our Mother of Sorrows														1			
Private Schools																	
Friends'					1									1	4	2	2
Miss Magee's																	



Map. 11.—A portion of West Philadelphia comprising parts of the 24th, 27th, and 44th Wards, containing the schools attended by the children of the 24th Ward. 1, E. S. Miller; 2, Belmont; 3, J. Leidy; 4, C. Rodney; 5, C. Rodney Annex; 6, M. McMichael; 7, M. M. Kendrick; 8, Newton Boys; 9, Newton Girls; 10, M. Washington; 11, St. Agatha; 12, St. Ignatius; 13, St. James; 14, Our Mother of Sorrows; 15, Friends'; 16, Miss Magee's.

in which the onset occurred. What I have found practically is that one case appears in a class and at the end of the period of incubation several secondary cases occur, and at the end of another period of incubation another group of cases occur. To show this and also the interval between the date of onset and the date of report, as well as the relation between the date of onset and the last day in school, I have tabulated the nine cases of measles reported from a small private school in which many more cases occurred. Although these occurred in children of the better class, one was in school the second day of the disease, six were in school on the date of onset, and two on the day before. One case oc-

Chart Showing Date of Onset, Last Day in School and Date of Report of Nine Cases of Measles in a Private School (Friends' School)

Pupil	Week Ending													
	March		April											
	24	25	3	9	10	11	12	14	15	16	17	18	23	25	27
G. A.	O.	I.S.	R.												
P. S.				O. I.S.					R.						
L. B.					O. I.S.				R.						
J. E.						O. I.S.									
M. N.						O. I.S.	...			R.	R.				
M. H.						I.S.	O.		R.						
A. H.						I.S.	O.		R.						
B. P.												I.S. O.		R.	
A. H.													I.S. O.		R.

O.—Onset. I.S.—In school. R.—Reported.

curred fifteen days after the first case was in school, one sixteen days later, and two eighteen days later, one nine days after the second case was in school and one fourteen days later. Of course the child may have been in the prodromal stage before the date of onset given by the parents.

When one studies the incidence of contagious disease in a school, one notices that epidemics are usually confined to certain rooms. In order to illustrate this I have charted all the cases of minor contagious diseases that occurred during this school year in two public schools. One school had twenty-one classrooms—seven on a floor. Four cases were reported from the third floor, three from the second, and thirty-seven from the first. There was one case of measles in each of four rooms, two cases in each of two rooms, and four cases in one room. One case of German measles appeared in each of three rooms and two cases in one room. One room had three cases of mumps and one had one case. One case of chicken-pox occurred in each of two rooms, two cases in each of two rooms, and three cases in one room. Three rooms had one case of whooping-cough apiece, one had two cases, one three, and one six cases.

The second school had three floors of four rooms each, but the first floor children were on half time, there being different classes in the morning and afternoon. No cases of measles were reported from the third floor. There were three cases in one room on the second floor and one case in another room. On the first floor there were no cases in two classes, one case in one class, two cases in each of two classes, three cases in each of two classes, and fifteen cases in one class. German measles did not occur on the third floor; one case appeared in one room and two cases in another room on the second floor. Of the eight classes on the first floor there were no cases in three, one case in four, and two cases in one. One room on the third floor had one case of chicken-pox, one room on the second floor had one case and another had three cases. Three classes on the first floor had no cases, four had one case each, and one had six cases. There was only one case of mumps on the first floor, one in one room and three in one room on the second floor, and two cases in one room and four cases in another room on the third floor. One case of whooping-cough occurred in one room on the third floor and two cases

Cases of Contagious Diseases Occurring in the E. S. Miller Public School During 1913-1914

	Week Ending																							
	October		November			December				January		Feb.	March			April					May	June		
	18	31	22	29	6	13	20	27	10	17	24	28	7	28	4	11	18	25	2	9	23	13
First Floor																						
Room 7											V.	P.										
Room 1			3P.	2P.	P.		Mp.	V. Mp.	2V.		Mp.					M.						
Room 2			M. P.					P.					G.M.		M.	M.			M.			
Room 3												P.					M.					
Room 4									2V.							M.		M.				
Room 5														M.							G. M.	
Room 6	P.	P.					2V.			V.			P.						M.			M.
Second Floor																						
Room 15						V.																
Room 9																						
Room 10																						
Room 11																						
Room 12																					M.	
Room 13																						
Room 14															G. M.							
Third Floor																						
Room 22														Mp.								
Room 21																						
Room 20																						
Room 19																						
Room 18																						
Room 23	P.													G. M.	G. M.							
Room 17																						

M—Measles. Mp—Mumps G. M.—German Measles. V.—Varicella. P.—Pertussis

occurred in one room on the second floor. On the first floor there were no cases in three classes, two cases in each of two classes, two cases in one class, three cases in one and five cases in another.

Intensive Study of an Epidemic in a School.—I have made a still more thorough study of an epidemic of chickenpox in a parochial school, where every child who had been absent for any cause was examined by the medical inspector before re-entering the class room, and where all unexplained absences of over two days were investigated at the end of the week by the medical inspector. It is of course much easier to detect convalescent cases of chickenpox than those of measles or of German measles. This analysis gives some idea as to the number of unrecognized and unreported cases occurring in a class room during an epidemic. It also shows how the different groups of cases in a class are separated by the period of incubation. This school has over two thousand pupils in thirty classes, occupying three separate buildings. There were no cases in one building of four rooms and in another building of eleven rooms. The third building has three floors of five rooms each. On the third floor there were no cases in four rooms and one case in one room. On the second floor there were no cases in four rooms and one case in one room. Two rooms on the first floor had two cases each, one had four cases, one had six, and one had twenty-two. The table shows in most instances the date each child was last in school, and whether the school was notified of the illness or whether the child was discovered sick in school or at home. I shall here merely refer to the class that had twenty-three cases. Seven of these were discovered in the class room, seven were discovered on their return to school after being absent, six were found by the medical inspector at their homes, and only three were reported by the physician or family. Indeed, in many instances the parents were unaware that their children had chickenpox, believing the eruption a manifestation of disordered blood, etc. The great majority had no physician. The sequence of absence from school of these twenty-three cases is as follows: One each on the third, fourth and fifth of December, respectively, nine on the eighth, three

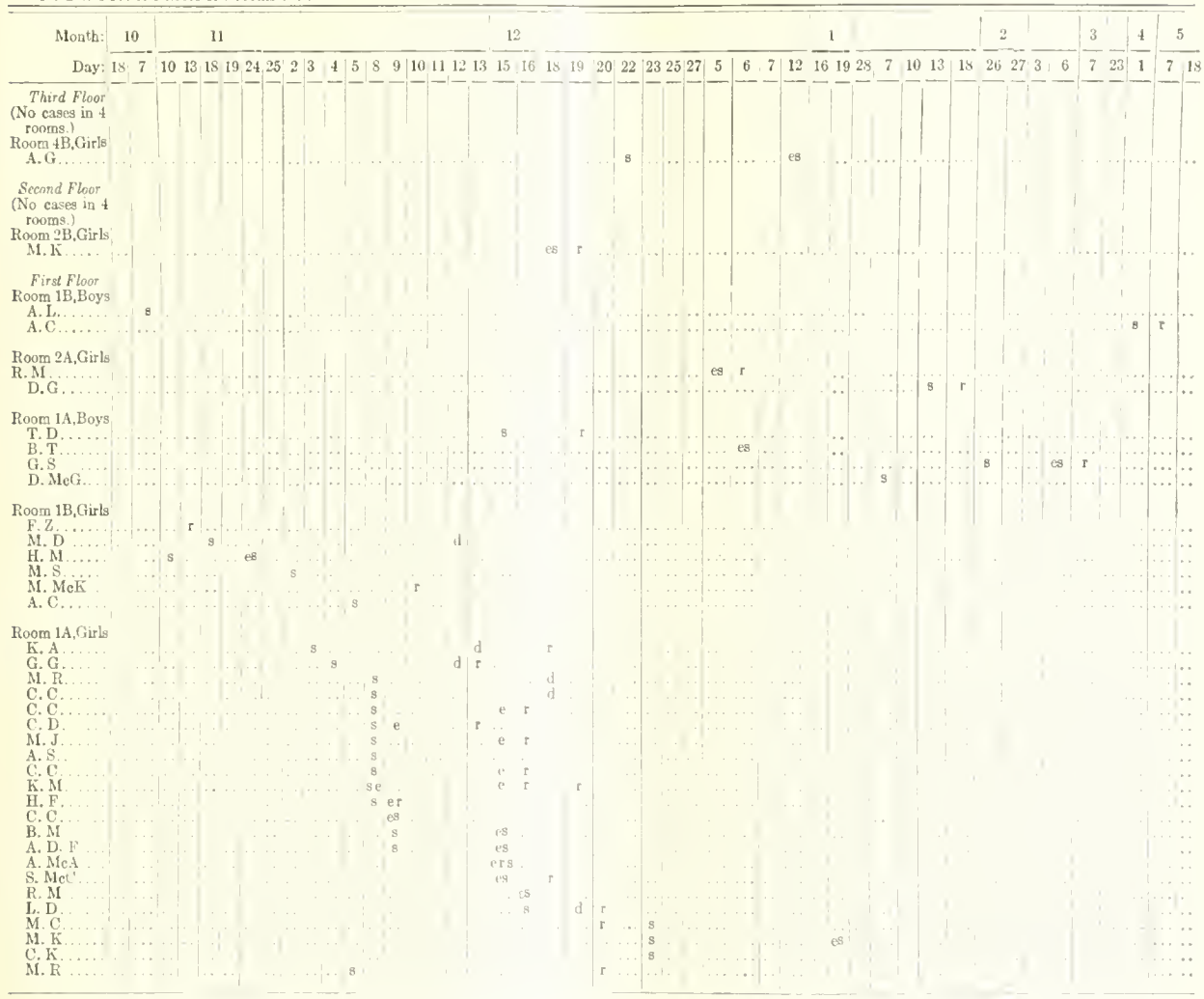
Cases of Contagious Diseases Occurring in the J. Leidy Public School During 1913-1914

Month	9	10	11			12				1					2		2			3						4						5		6	
Day:	9	22	3	8	8	22	23	30	31	1	2	3	5	6	7	9	20	28	29	9	10	23	1	6	9	10	11	16	22	25	26	27	31	2	7	9	14	18	23	2	16	23	30	13	20
First Floor																																													
J. M. L. Room											m		m				m							v		2p	v		v	2v	v														
M. J. P. Room																										m				p			p		p					2p	gm				
E. B. S. Room																													gm					p										
L. W. S. Room									m				m													v														p				gm		
																																							gm					
L. M. H. Room																								p		p		p																
M. R. D. Room					m	m									v																									p			p		
F. B. H. Room													m				m		v		m					m			gm															
E. C. O. Room										2m	3m	4m		2m	2m	2m																						v	p		gm	mp			
Second Floor																																													
M. E. F. Room	m	m																m																											
E. M. F. Room																p			v										v					v			mp		mp	mp				m
S. E. G. Room																					m																				mp			
E. M. R. Room						gm																										gm			v									
Third Floor																								v						mp		mp												
C. M. S. Room																																													
M. A. D. Room																		p																											
K. A. M. Room																																													
M. I. E. Room																														mp	2	mp												
																														mp														

m—Measles. mp—Mumps. gm—German Measles. v—Varicella. p—Pertussis

Cases of Chickenpox Occurring in Our Mother of Sorrows Parochial School During 1913-14

Building I of 4 rooms: No cases.
Building II of 11 rooms: No cases.
Building III of 3 floors of 5 rooms each.



e—Discovered in school and excluded. er—Reported and excluded by health authorities. s—Last day in school. d—Discovered sick at home by medical inspector.

on the ninth, two on the fifteenth and on the sixteenth, respectively, and three on the twenty-third.

Sufficient evidence has been presented, I believe, to bear out my contention that the unit in the spread of children's diseases is the class room; that an epidemic begins in one room of one school and thence spreads to neighboring class rooms and then to neighboring schools. Proper control will usually limit the epidemic to the original class room and will check the spread even here. The method of control is simple when one understands how the disease spreads in a class room.

The Prevention of School-Spread of Disease.—Infection occurs from a pupil in the classroom who is in the prodromal or incipient stage of the disease, or who has had the disease some days, or who is convalescent from the disease. Nearly all of these can and should be discovered before they have had much or any opportunity to infect the other pupils in the class.

Of primary importance in the detection of such children in the classroom is the teacher. It is she who sees every child at the beginning of and throughout the school session. If she is observant, she will know when a pupil seems sick or has an eruption, and if she is familiar with the outward symptoms of the common children's diseases she will be able often to recognize them in their incipiency, particularly during an epidemic and especially if at such times she is reminded to be on the watch and has recalled to her the symptoms she is to look out for. Medical inspection has failed to check the spread of disease partly because chief reliance has been placed on the medical inspector, who sees the children usually only at more or less infrequent intervals, and not on the teacher, who sees them every minute of every school day. There is no question but that the teacher is perfectly competent to recognize when a pupil is sick and she should be required to send to the medical inspector all pupils who seem ill. Should the medical inspector have gone for the day, the sick child should be seen by the nurse, when there is one, or be sent home by the principal. School laws which prohibit a principal from sending home a sick child are responsible for a considerable amount of the school-spread of disease. Another school rule that tends to keep sick children in a class where they infect others, is that requiring the dropping of a class that does not maintain a certain average attendance, irrespective of illness or epidemics. Many teachers refrain from sending sick children to the medical inspector for fear he may exclude them and thus lower the attendance, with the possible consequent dropping of their class. And for similar reasons principals sometimes discourage their teachers from sending sick children to the medical inspector. If disease is to be checked in a school there must be a rule,

which is enforced, that every teacher must send to the medical inspector, or to the principal, every pupil who appears ill, and that in the absence of the medical inspector the principal must send the child home. But the teacher and principal must be protected by a rule that absences on account of such exclusion shall not be the cause of dropping a class.

Medical inspection, properly conducted, is the second great bulwark against the spread of disease in a school. The medical inspector, if given the opportunity, can find the beginning cases and exclude them before they do much damage. He can also find the convalescent cases and prevent their reentering the class room. But for the latter he must have the cooperation of the school authorities. Many of those who have been out of school two days to two weeks with measles, rubella, mumps, or chicken pox, bring notes from their parents stating that they have had a cold, or indigestion, or a stomach rash, or hives, or a tooth abscess, or have been sick, or had no shoes, or had to help at home, etc. In most schools such children immediately reenter the class room and naturally transmit the disease to others, who wonder how they contracted it. A few schools send all absentees on their return to the medical inspector, but he seldom finds sufficient evidence to warrant excluding them. Besides, in many cities he is forbidden to undress or touch the child, and is thereby frequently prevented from detecting chicken pox, rubella, measles, and mumps. In order that the child convalescing from a contagious disease be kept out of school, there must be a rule, which is enforced, that all children who have been absent two days of more must wait in the doctor's office until permitted by the medical inspector to re-enter their class rooms. And the medical inspector must question the child closely as to the occurrence of eruption, sore throat, vomiting, etc., the presence of similar disease at home, etc. He often will have to frame his questions skilfully, as the child is sometimes instructed at home not to admit that she had a rash, etc. In addition to examining the tongue, throat, face, and hands, the medical inspector should be permitted to palpate for enlarged glands and when his suspicions warrant it, to examine the arms, chest, back, legs, and feet, of course in the presence of the teacher or principal. Any child who gives a history of having had a sore throat, should be cultured, as many mild cases of sore throat or tonsillitis are, as I have shown, in reality but cases of latent or mild diphtheria.

The beginning cases may be found as easily. All children sent to the medical inspector by the teacher should be examined carefully and their necks palpated when indicated. In the presence of an epidemic of measles all pupils in the infected room with coryza should be excluded; and in the presence of an epidemic of whooping cough, all children who cough should be excluded. Should the suspected disease not develop, the only harm done is the loss of a few days' schooling to one child. While waiting in the former instance for the eruption and in the latter for the whoop to develop, further subjects the class to contact with an infectious and hence dangerous person. When the medical inspector discovers a child with a contagious disease or has been notified of the recent presence of one in the class room, he should make a routine examination of the other pupils in the room for at least three days after the child has been in the room, to detect the first symptom of the disease in those who may have caught it from the same source that gave it to the absent pupil. He should examine more closely any pupil who had been absent recently, in order to discover the source of the contagion. In addition he should find out the last date the absent child was in school or the first day the child felt sick in school and from seven days later until fifteen days later examine the class every day, so as to discover at once any child who may have caught the disease from the one who is absent.

The school medical inspector of course should be competent and his action should stand unless questioned by the family physician, when a higher public health official should be called in. Some cities make a practice of having the contagious medical inspector pass upon all cases excluded by the school medical inspector. This sometimes prevents cases of adenitis being excluded for mumps, scabies, and pediculosis corporis for chickenpox, and urticaria and ivy poisoning for measles and rubella. But frequently the contagious medical inspector orders back to school a child convalescing from measles or rubella, in whom the eruption has disappeared, or one convalescing from mumps in whom the parotid swelling has subsided, leaving only enlarged cervical glands. The school should always be given the benefit of any doubt. It is impossible to keep disease out of a school if the health authorities insist upon returning to school infectious children who have been excluded on sufficient evidence by a competent school physician, merely because this evidence was insufficient or lacking by the time the contagious medical inspector arrived.

There is still left the pupil convalescent from a contagious disease who returns to school while still infectious, but in whom no evidence of disease can be seen and from whom no history of having had a contagious disease can be elicited. But even this case can be discovered if all concerned are willing to aid. The health authorities in the first place should insist on every physician reporting all cases of contagious disease he sees and should prosecute those who disobey the law. It will not be difficult to find them if the recommendations that follow are carried out. The parent or householder should likewise be compelled to report cases of contagious disease. There should be a rule, which should be strictly enforced, requiring teacher and principal to report to their medical inspector and to the health authorities all cases of known or suspected contagious disease among their pupils, of which they have knowledge. Parents frequently notify the teacher of the cause of the child's absence and other pupils are frequently cognizant of the cause. The attendance officer should report all cases of illness and all cases of suspicion to the medical inspector and should endeavor to learn the nature of the illness. All cases of illness that are not definitely known not to be contagious should then be investigated by the school physician or school nurse or by the health authorities. Some official should also similarly investigate the absences over two days among those who are under the compulsory school age. In addition the laity should be urged to report all cases of contagious or suspicious disease that come to their knowledge.

A practical point for the consideration of school and public health officials is that they must not attempt more than they have the means for carrying out. They must not demand of their subordinates more than they can properly do. Some heads, who realize the importance of all that should be done and yet are given insufficient men at insufficient

salaries, try to make their few underpaid men do more than they are physically capable of or than can reasonably be demanded of them. The result usually is that the whole work is poorly and improperly done by discouraged, spiritless, uninterested men. Municipalities must supply sufficient men and pay them adequately if contagious diseases are to be stamped out. And public health officials should be alive to the situation and should let the public know and understand their responsibility in the matter. Meanwhile they should do all that can properly be done with the assistance that has been afforded them. With teacher, attendance officer, and medical inspector, as we have them in most progressive towns, a great deal can be done to control the school spread of contagious disease, certainly much more than we are doing at the present day.

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INTRASPINAL TREATMENT IN SYPHILIS, WITH ESPECIAL REFERENCE TO THE SPINAL FLUID FINDINGS.

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It is not to be questioned that great numbers of patients with syphilis who have been treated with as much efficiency and persistency as is possible with the older methods have gone on and developed tabes or other disease of the central nervous system. This clinical fact has given rise to the belief that the ordinary means of treating syphilis do not prevent or cure syphilitic involvement of the central nervous system. This is the reason why efforts have been made to discover some method of direct application of the therapeutic remedies at our command. These efforts have a rational basis since the demonstration by Noguchi and Moore that the organisms of syphilis are actually present in the tissues in paresis, tabes, and other luetic affections of the central nervous system. Analogous conditions have been demonstrated in non-syphilitic diseases of the central nervous system. Treatment in this latter type of case has to be by the intraspinal route to give satisfactory results. Flexner showed this in epidemic cerebrospinal meningitis, Lamar in pneumococcic meningitis, Wollstein, Flexner, and Amoss in poliomyelitis, and it is likewise being demonstrated in the treatment of tetanus. Inasmuch as the treatment of syphilis by salvarsan alone does not have many advocates, it can be said that the future does not offer immunity from syphilitic affections of the nervous system. The nervous system is involved, as shown by the examination of the spinal fluid, very early in the course of the infection. Fully 80 per cent of patients with primary and secondary syphilis show involvement of the spinal fluid. It is on account of this fact that it has been said that every patient with syphilis is a candidate for disease of the nervous system from the date of his first infection.

Our most reliable methods of determination of the condition of the central nervous system have to do with direct examination of the spinal fluid. This holds true not only for the preliminary examination, but also to follow the course of any therapeutic measure which may be instituted. The meninges are ectodermic and show pathological changes as early as the skin, which accounts for the early involvement of the spinal fluid. It is not the purpose of this paper to consider spinal fluid changes in detail, but certain points must be mentioned. It is very important to understand that there is no constant pathological picture of the spinal fluid in syphilis at any stage. The various tests which are made show the greatest variation in individual cases. The cell count is particularly variable. It may be high or low at any time, or may vary in the same patient within a comparatively short time. A low or falling count may take place in syphilis, along with other positive tests. A high count may fall prior to death in some cases. A spontaneous drop to normal or nearly so may take place in untreated cases, so that it is fallacious to consider a low count a criterion of cure or improvement. O. Fischer has shown that if spinal fluid is removed in portions and each is examined individually, the various portions will show different counts. It is advisable for this reason that clinicians should make counts on the first clear drops obtained after puncture. This would insure uniformity of results and comparable records. It is advisable also that the counts recorded in the case history should be made promptly after the fluid withdrawal. This would exclude the error which ensues if many cells go to pieces on standing. The number of cells counted should be stated in actual figures, and not by plus marks. Cases of tabes, with or without treatment, showing a low or normal cell count are very common, especially in the later stages of the disease. This is true, likewise, of the other biological phenomena and indicates the final, degenerative stage of the disease. The cell count in the spinal fluid is of far less value in diagnosis and prognosis than the Wassermann test.

It has long been recognized that disease of the central nervous system is more liable to follow mild systemic infections, often infections without apparent primary or secondary manifestations. The reason why certain cases of syphilis should lead on to tabes, paresis, or other disease of the central nervous system is not known. The specific organisms are in situ from the earliest infection, so there must be other factors involved than the mere presence of the spirochetes. If the activity of the organism of syphilis is confined to the vascular structures and meninges, the resulting condition will be less severe and more tractable to treatment than where the involvement is of the parenchyma of the brain or cord. This is the reason why cerebrospinal syphilis is amenable to treatment, and paresis is not. It has been pointed out that initial infections of the head or face are more liable relatively to be followed by involvement of the central nervous system than primary infections elsewhere. The syphilitic toxin may act on the central nervous system by means of a general dissemination through the blood stream. The perineural lymph space which surrounds every peripheral nerve extends along the posterior root to the spinal pia and is in direct communication with the adventitial lymph spaces of the perforating vessels. This affords a possible way for the toxin to be taken directly to the nerve structures.

Much work has been done recently on the permeability of the spinal and cerebral meninges. It has long been accepted by physiologists that few substances can freely pass from the blood into the spinal fluid. This is possible with such simple substances as sodium chloride, but not with the usual therapeutic remedies. The spinal fluid is in large part the product of the choroid plexus. Dandy and Blackfan have shown that the ventricles of the brain also play a part in the secretion of the fluid. The perineural and perivascular lymph spaces are in direct communication with and a part of the subarachnoid space. These spaces are not, however, part of the general lymphatic spaces of the body, although there is passage from the subarachnoid space into the general lymph stream. The reverse of this, however, is not true. Tilney and Woolsey have introduced solutions of trypan blue into the subcutaneous tissues, arteries, and veins in order to determine if the stain would reach the central nervous system. It was shown that the subcutaneous or intraarterial injections would readily stain the skin, thoracic and abdominal viscera, but not the central nervous system. The injections given intravenously reached the dura and pia, but did not penetrate the nerve tissue. Even using twice the amount and increasing the strength three times over the solution used for the intraarterial injection did not suffice to make the stain penetrate the nerve tissue. On the other hand, an intraspinal injection of one-tenth the amount of stain used in the first two experiments stained the meninges very deeply, went through the walls of the veins and capillaries, and travelled along the trabeculæ of the pia.

Sicard injected ink by lumbar puncture. He found particles of the ink in the ventricles of the brain in from two to four hours, and still later in the region of the peduncles and cerebellum. After twelve to twenty-four hours, particles were found in the substance of the cerebrum. He observed that these ink particles were removed by leucocytic phagocytosis, while substances in solution in the spinal fluid were removed by osmosis. Sicard states that the choroid plexus may be rendered more permeable to foreign substances by injury or inflammation. He argues from this that some of the beneficial effects of intraspinal injections may come from its damaging effect on the meninges, thus making it more permeable.

The question of the permeability of the meninges and choroid plexus to salvarsan has received much attention. Reasoning from the impermeability of these bodies to other foreign substances, it is the general belief that salvarsan given intravenously does not reach the spinal fluid or at least, if it does so, it is in amounts too small to be of any value in a therapeutic way. Numerous investigators have examined the spinal fluid for arsenic after salvarsan injections and have arrived at very contradictory results. It is the consensus of opinion, however, that the amount of salvarsan which reaches the spinal fluid is very small, and this amount is not to be relied on to influence favorably disease of the central nervous system. It is understood that if the involvement is of the vessels (endarteritis) or in the form of meningitis or gumma, a favorable result can be predicted from intravenous or intramuscular injections, either of salvarsan or mercury. It should be stated that very reliable workers, such as Benedict, have reported arsenic in the spinal fluid after salvarsan injection. Benedict examined four specimens of spinal fluid withdrawn twenty-four hours after an intravenous injection of salvarsan and found free arsenic in amounts running from one-sixth to one-tenth of the amounts found in the whole blood. The greater number of investigators have not been able to confirm this high percentage.

The inability to bring the therapeutic agent, when administered by the ordinary methods, in contact with the infecting organism deeply buried in the tissue of the central nervous system lead Swift and Ellis to intraspinal therapy. Numerous modifications of their original technique have been instituted, in addition to the method of direct injection of small amounts of neosalvarsan. A large literature has sprung up in connection with this subject with variable opinions and results. It is the belief of the writer that the bad results which were reported so frequently in the earlier period of this work are lessening in the hands of experienced and expert men. The Swift-Ellis method particularly is liable to be followed by an infection of the meningeal sac unless the greatest care and precaution are taken. The Ravaut method of direct injection of neosalvarsan is much more simple in its technique and less liable to lead to bacterial contamination. There seems to be a well-defined tendency in the literature to look upon this method as unsafe and dangerous. If this is finally the judgment of experienced men, the method should be discarded, but its great simplicity of technique and apparently good results should lead to a very careful weighing of the evidence before final opinion is passed. Many of the criticisms of intraspinal therapy have been upon theoretical grounds. It is stated that the relatively small amounts of arsenic present in twenty or thirty c.c. of salvarsanized serum could not lead to beneficial results. Approximate calculations of the amount of salvarsan or arsenic actually present in the dose injected have been made by a number of men. The blood is usually considered as one-nineteenth of the body weight and the blood serum as approximately one-third of the whole blood. There is a great possibility of error in calculations without actual analyses, because it is not possible to state how much of the salvarsan is fixed by the body cells and erythrocytes. The actual analyses published, such as those by Benedict and others, show but infinitesimal amounts of arsenic present, and it is difficult to reconcile these small amounts of chemicals present with some of the results attained. It is the firm conviction of the writer that actual improvement and benefit has taken place in some of his treated cases. To question these results or those of other men because of the inability to understand the method of operation is illogical and unreasonable.

Swift and Ellis studied the blood serum after the injection of salvarsan and showed that when serum was taken within six hours, it inhibited the growth of spirochetes, but if taken before treatment or after six hours there is no inhibition. This spirocheticidal activity of salvarsanized serum was further studied by Gonder, Castelli, and others. They found that heating the serum to 56° Cent. for one-half hour markedly increased its activity, and that this increase is due only in part to the destruction of some inhibiting substance. Stuehmer has shown that salvarsanized serum unheated exerts a curative action for twenty-four hours in mice infected with trypanosomes and a protective action

for forty-eight hours. If the serum is heated for thirty minutes at 56° the curative action is prolonged to three days and the protective action to four days. It is probable that the good effects of salvarsanized serum are due not entirely to its salvarsan content, but also to the formation of certain substances in the blood serum.

Intraspinal treatment is comparatively free from danger in the hands of men experienced in this work. Numerous bad results have been reported, but a great many of these are explainable by errors in technique. If it is admitted that parenchymatous disease of the central nervous system is not amenable to treatment by the older methods or by intravenous injections of salvarsan, it is the belief of the writer that a certain risk from this method is justifiable in the same way that surgical risks are assumed, even when there is an operative mortality of 8 or 10 per cent. Tabes and paresis lead to certain incapacity and death, and this method of treatment should be tried until its exact value is determined. It need not be said that the best results will be obtained in the early stages, when the diagnosis can be made from the spinal fluid findings. Physicians who have under their care or charge patients who have had syphilis should feel that every suspicious sign or symptom justifies a spinal puncture and examination of the spinal fluid. Results in early tabes have been comparatively good. There is a decrease in meningeal irritation with disappearance of pain, and an improvement in many other symptoms. Restoration of function which has been lost by actual nerve degeneration is not to be anticipated. It is noteworthy, however, that Weisenberg of Philadelphia reports one case of paresis where the pupils were almost rigid which responded promptly after sixteen intravenous injections of salvarsan and six Swift-Ellis treatments. Nonne reports similar observations in four cases.

All results after treatment should be measured by the changes in the spinal fluid. The cell count is easiest to influence, but has little prognostic value. The Nonne reaction may subside parallel with the cell count, especially after direct injections of neosalvarsan. Estimations for globulin and the total albumin content in the spinal fluid are subject to error after therapeutic injections of blood serum, on account of the albumin and globulin contained therein. The Wassermann and the Lange gold reactions are hardest to influence, and for that reason efforts should be continued until these reactions, at least the Wassermann, become negative, when that is possible. The method should not be disparaged because a few injections are unsuccessful. It is to be regretted that the difficult technique and expense of salvarsan makes a large number of injections impossible to many patients for financial reasons, but judgment should not be passed on a case unless there have been enough treatments, which may run as high as ten or even more.

The writer has given or has had given for him in his hospital service fifty-seven injections in seventeen patients. Some of these patients had but one injection and no conclusion whatever can be drawn from them, excepting the comparative safety of the method. The direct injection of neosalvarsan was practised in twenty-four instances, and salvarsanized serum used in thirty-three injections. The amount of neosalvarsan injected ranged from three to twelve milligrams. There were no deaths in the series, or other symptoms of severity. Pain in the back or legs was not uncommon during the first twenty-four hours, but was always relieved by an injection of morphine. A twitching or jerking of the legs was very troublesome in two cases, but subsided without after-effects. Bladder or rectal incontinence did not result in any case. All patients were kept in bed at least twenty-four hours after the injection and in some instances, as in the cases with twitching of the legs, were not permitted to get up for four or five days. It has not been the experience of the writer that the direct injection of neosalvarsan is dangerous, although a review of the literature leads to that opinion. The neosalvarsan has always been well diluted with spinal fluid before the injection and this may obviate some of its irrigating effect.

It was possible to get the spinal fluid Wassermann negative in three cases. The amount of fluid used in these reactions was 1 c.c. Whether the Wassermann will remain negative it is not possible to state. The cell count was variable and although lower in all cases after treatment, this is not considered a criterion of improvement. The three cases which became Wassermann negative were cases of primary optic atrophy, tabes, and tabo-paresis respectively. The case of optic atrophy became Wassermann negative after six intraspinal injections, three of undiluted salvarsanized serum heated at 56° and three of neosalvarsan direct (dosage six mg.). The oculist who examined this patient (Dr. Charles Lukens) states that his vision is improved by actual measurement, although the patient himself does not notice a great change for the better. The case of tabes showed after treatment a decrease in his ataxia, disappearance of pains, a general improvement in his well-being enabling him to go back to work. The third Wassermann negative case (tabo-paresis) has shown a remarkable change in his mental state after seven intraspinal injections. The writer is convinced that these patients have been improved and feels that the method should be continued until its status is definitely determined.

The relief of pain in patients getting but one or two injections has been noteworthy. This has happened from the direct injection of neosalvarsan as well as from salvarsanized serum. This shows that the result is not nessarily due to the preliminary intravenous injection of salvarsan, as has been claimed. It is not possible to exclude a psychological effect in judging relief from such a symptom as pain. Patients who were getting morphine, however, did not require it any more and it seems that the relief of pain can be ascribed fairly to the intraspinal injection. It is the impression of the writer that much of the unfavorable opinion from this method of treatment has been based on cases treated insufficiently. It is to be regretted that such persistency in treatment is necessary, and this fact may militate against its continued use. The writer believes that good results judged by the biological tests need not be anticipated unless five or six or more injections have been given. This number may be increased if necessary to twelve or fifteen before it is discarded as worthless in a given case.

The following case reports give the spinal fluid before and after treatment:

Case I.—Male, age 40. Tinsmith. Had primary infection at 21. Has ataxia, positive Remberg's sign, intense girdle and leg pains, numbness in extremities,

negative Babinski, absent patellar reflex, and fixed pupils.

Date	Treatment	Cell Count	Nonne	Spinal Wa. R.
Feb. 6, 1914	20 c.c. undiluted salvarsanized serum	66	+	+++
April 9, 1914	Ditto	52	+	+++
May 9, 1914	Ditto	41	+	++
May 23, 1914	Ditto	35	+	+
Feb. 5, 1915	Ditto	28	+	+

This patient has shown a marked symptomatic improvement. He does not have pain, the ataxia is less, and he is able to work every day. The reflexes are unchanged. This patient considers himself greatly benefited by the treatment.

CASE II.—Male, age 45. Primary infection at 27. Present trouble dates back about one year. Had sharp, shooting pains in legs and back. Slight urinary incontinence, memory poor, weakness, and impairment of mentality. Pupils irregular and react but slightly. Patellars absent, Babinski negative. No ataxia. This patient received three injections of undiluted salvarsanized serum in 20 c.c. doses and four injections of neosalvarsan, dosage 0.003 mg. His general condition has shown a marked improvement, pains absent, and the mental condition has cleared up. The urinary incontinence is not so troublesome, but is not entirely gone. The spinal fluid findings are tabulated below.

Date	Treatment	Cell Count	Nonne	Spinal Wa. R.
June 3, 1914	Salvarsanized serum, 20 c.c.	83	++	+++
June 11, 1914	Ditto	33	++	+++
June 18, 1914	Ditto	39	++	+++
June 30, 1914	Neosalvarsan, 0.003	11	+	++
Aug. 19, 1914	Ditto	20	+	++
Sept. 22, 1914	Ditto	28		++
April 5, 1915	Ditto	36		

CASE III.—Male, age 38, jeweler. Patient has no knowledge of any luetic infection at any time in his life. Has optic atrophy with falling vision, absent patellars, and fixed pupils. This patient has received three injections of salvarsanized serum in 20 c.c. doses and three injections of neosalvarsan direct in dosage from 0.003 to 0.006 mg. The Wassermann has become negative in the spinal fluid and his vision as determined by the oculist is better. The atrophy of the disc does not show any change to the ophthalmoscope.

Date	Treatment	Cell Count	Nonne	Spinal Wa. R.
Nov. 11, 1914	Neosalvarsan, 0.006	128	+	++
Nov. 23, 1914	Ditto	63	+	++
Dec. 14, 1914	Salvarsanized serum, 20 c.c.	40	+	++
Dec. 23, 1914	Neosalvarsan, 0.003	38	+	+
Jan. 9, 1915	Salvarsanized serum, 20 c.c.	56	+	+
Jan. 28, 1915	Ditto	12	—	—

CASE IV.—Male, age 42. Primary infection at 27. Has had symptoms for the past year. Severe pains in left arm and hand. No ataxia. Knee jerks absent, pupils do not react to light. Numbness in legs.

Date	Treatment	Cell Count	Nonne	Spinal Wa. R.
Dec. 23, 1914	20 c.c. salvarsanized serum	20	+	++
Jan. 6, 1915	Ditto	8	+	+
Jan. 20, 1915	Ditto	7	+	+
Feb. 10, 1915	Ditto	8	+	+
Feb. 22, 1915	Ditto	20	+	—

This patient shows marked symptomatic relief of his pains, numbness, and general well being. The patellars and pupils have not changed. The spinal fluid Wassermann is negative.

The remaining cases did not continue treatment sufficiently long to influence in a favorable manner the spinal fluid, excepting the cell count. These patients had from one to three injections each and for various reasons discontinued them. It was distinctly noted that some of the patients getting but one injection of neosalvarsan direct into the spinal canal showed great relief of pain. This relief does not appear to be a psychological one in consideration of the intensity of the pain in some cases. The withdrawal of spinal fluid may possibly be a factor.

Conclusions.—1. The effort to treat syphilis of the central nervous system by direct intraspinal injection has a rational basis in the inefficiency of treatment by the older methods and also from the results of intraspinal treatment by more recent methods in meningitis, poliomyelitis, and tetanus.

2. The cell count of the spinal fluid is a variable factor and cannot be utilized as a criterion of cure or improvement in a given case.

3. It is the consensus of opinion that therapeutic remedies administered by mouth or into the blood stream do not reach the spinal fluid in sufficient concentration to influence bacterial involvement of the central nervous system.

4. Intraspinal injections of salvarsanized serum or neosalvarsan in proper dosage is not a dangerous procedure in careful hands.

5. Intraspinal injections will relieve pain and a great many of the symptoms of syphilis of the central nervous system.

6. It is possible in some cases to render the laboratory tests of the spinal fluid negative if the treatment is continued sufficiently long.

7. The method should not be discarded, but continued until its proper place in therapeutics is definitely determined.

237 MICHIGAN STREET.

THE IMPORTANCE OF THE PERSONAL EQUATION IN THE TREATMENT OF THE TUBERCULOUS.*

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IN this period of scientific and more nearly exact investigation and treatment of disease, there seems to be a possibility that we may sometimes fail to give sufficient consideration to the personal factors that may have much influence both in the causation and progress of the disease; that the "art" of medical practice may be neglected for the "science" of it. This is more likely to be the case in a chronic affection like tuberculosis; and it is about some of these various conditions that influence the progress of a patient ill with tuberculosis that I wish to speak.

First, I would not be understood as questioning in the least the importance of exact knowledge as to the pathology, bacteriology, and scientific data that are now or may be available. But I desire to state what is evident to a body like this—that as yet there are no specific agents or means of treating the disease and that, until such specific means are discovered, our chief aim must be to raise the resistance of the individual to the disease. In other words we must study and treat the individual who has tuberculosis rather than the disease itself.

Everyone realizes that all cases require an abundance of fresh air, good food, and proper regulation of rest and exercise. But are we not too often content to give our patients this general advice, leaving them to work out details which, for many reasons, they are incompetent to do?

Given a patient ill with tuberculosis should not our first thought be that he is ill not simply because

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he has become infected, but because his resisting powers have not been sufficient to overcome the infection; and should not the second step be to hunt out and treat the causes which, in him, have produced such lowered resistance?

Of course one may have such an overwhelming infection that no resistance can control it. The question of hereditary predisposition or immunity will not be discussed here, but the fact of the very infrequent incidence of tuberculosis in Colorado and other health resorts where there is an unusually large proportion of tuberculous population, is good proof of the reality of acquired personal resistance.

Resistance may be influenced by so many factors in a person's physical, nervous, mental, and moral make-up; by his circumstances as to proper living; and by his adjustment to and viewpoint of his environment, that much study is often necessary to get at the real situation. But in many cases our success will be about in proportion to the care and accuracy with which we do it.

A person ill with tuberculosis may have reason for lowered resistance in some previous or coexistent disease, and the recognition and correction of these conditions may be the means of giving him the "lift" needed to enable him to overcome his tuberculosis.

Occasionally we are deceived as to the amount of food taken by a patient and it may appear, on careful observation, that this is the keynote to his failure to improve, and perhaps the reason of lowered resistance in the first place.

A man had been sick several years; never very ill, but with very limited strength and always very thin. He was unusually intelligent and there seemed no reason to think that he was not eating abundantly. Careful observation of his diet led to suspicion that he was underfed. He was more liberally fed with the result of prompt gain of nearly 20 lb. and marked improvement in all particulars.

Numerous instances could be quoted of marked improvement and even cure of tuberculosis after finding and removing the cause of prolonged digestive disturbances and analogous conditions. Mention will simply be made of a few.

A young man had been moderately ill with tuberculosis for several years without material gain. He had more or less indefinite digestive disturbance during this time. Finally a frank attack of appendicitis led to the removal of his appendix. His digestion from that time was greatly improved, he gained weight and strength, and his disease became inactive to the extent that he was able to complete his interrupted college course and has since lived a fairly productive life.

A woman had been thin and weak for several years, unable to eat or digest comfortably, was obstinately constipated, and constantly "bilious." A sharp "Lane's kink" was found and remedied with the result that she now is largely relieved of her digestive disturbances.

A young woman failed to improve during several years while living under nearly ideal conditions. She constantly had poor digestion, ate and slept badly; was nervous and introspective. She had a material cavity and her disease was slowly progressing. After long and careful consideration, and against the advice of able consultants, she was allowed to take up horseback riding, tentatively at first. There was prompt relief of her digestive difficulties followed quickly by general improvement. After about two years she was married. This seemed to improve some nervous complications and she has for seven or eight years lived a normal active life in an eastern coast climate, apparently well.

The recognition, during the past few years, of the importance of obscure focal infections in the causation of varied systemic and general diseases, has brought help to some victims of tuberculosis.

Two patients, a man and a woman, had failed to improve materially under intelligent and faithful care extending over many months. Both had continuous fever, poor digestion, were sallow and had moist pulmonary lesions. Finding and relieving an alveolar abscess in one and marked pyorrhea in the other changed the whole picture. Both quickly lost their fever, ate and digested well, color improved, cough and expectoration became much less, with drier chest signs and a gain of about 20 lb. in two or three months in ease case.

Similar improvement appears, in many instances, to have been brought about by the removal of diseased tonsils or the cure of diseased accessory sinuses. These conditions probably did harm both because of the prolonged slow absorption which occurred from them, and from the fact that they were the starting points of repeated infections, either of the respiratory tract or of a more general character.

Such occurrences bring up a very important and pertinent question. If the late removal of these depressing lesions has been of so much benefit, how much better that the conditions should have been discovered early, before extensive and perhaps irreparable damage had come to the patient.

The depressing effects of living under unhygienic conditions as to sunlight and ventilation, physical overwork, insufficient rest and sleep, and various forms of dissipation are so well recognized that they are not likely to be overlooked. But I am quite sure that we often fail to appreciate how frequently weakened resistance is caused by lowered nervous and mental tone from fatigue, worry, grief, discontent, homesickness, and unhappiness from whatever source.

I have never known a person ill with tuberculosis to do well while continuing to be homesick. This is a difficulty frequently encountered by physicians practising at health resorts. It is a condition not always easy of detection; for the homesick patient is very apt to conceal his state of mind with the idea that it is a matter of lack of will power and that he will fight it out alone.

In my experience it has many times been necessary to send for a patient's friends or some member of his family or to send him home in order to overcome this most distressing and depressing malady.

A young woman only moderately ill and apparently living happily and properly with friends from her home town, made no gain during a period of many months. She insisted that she was happy and her friends did not suspect that she was homesick. She ate and digested poorly and lost weight without apparent reason in her physical condition. Finally she admitted that she had been constantly homesick and at times almost desperate. She was sent home, to very unfavorable conditions, where she promptly gained markedly in weight and in all particulars—though eventually she died.

A mother of two small children, whom she had left at home, during many months failed to do well; slept and ate badly and was very nervous, though apparently always cheerful. For a long time she insisted that she was contented and satisfied with the existing plans. Finally she gave way, said she had been constantly homesick and that she must go home without a day's delay. On the trip her train was wrecked and she was subjected to severe nervous and physical hardship, which produced a condition bordering on collapse. As soon as she was able to travel again, she returned to Colorado to identically the same conditions as before, except that she brought the children whom she insisted on personally caring for. From that time on she ate, digested, and slept well without medicine, lost all nervousness and has since been doing much better.

In contrast with the above class of cases, patients are sometimes worried and nagged by their over-

anxious and indiscreet family or friends. It may be a very difficult and delicate matter to handle, but often a patient's improvement will depend on the physician's detection and management of these incompatible people. Someone's facetious remark that a physician must also be a policeman if he would successfully treat the tuberculous, contains much truth.

Worry about finances or anything else may do immense harm. Even though we may not be able to remove the cause of the worry, we may help the patient to be philosophical about it and to minimize its importance. The attainment of a cheerful state of mind may be almost as helpful as removing the trouble itself. I have often been impressed with the importance of cheerfulness, content, and hopefulness as a therapeutic measure, as well as the effects of various depressing mental and nervous factors in the causation of lowered resistance. In looking over the histories of 740 cases of tuberculosis treated during the past fifteen years, I find that 129 show reasons for believing that some form of nervous depression was at least an important causative factor. A large proportion of the earlier histories were carelessly taken and give no evidence at all bearing on the subject. I feel certain that it is much more commonly a cause than these figures indicate.

The great mistake and cruel injustice of sending people ill with tuberculosis far from home without sufficient financial resources to enable them to live under proper conditions and for a sufficient time without worry and embarrassment, has often been noted. But those who practise in health resorts still see so much distress from this cause that it cannot be over-emphasized. Getting well of tuberculosis is a long process and the cost of living and of care suitable to the patient's needs is usually greater in a health resort than in one's own home. A better climate will rarely overbalance lack of proper living conditions or worry and anxiety in obtaining them. Moreover, distinct harm is likely to come from advising a plan which the patient is financially unable to carry out.

The prolonged physical and mental rest and the limitations necessarily imposed during a "cure" sometimes become so irksome as to be a real detriment to the patient. In such cases finding out and making available suitable diversion and mental occupation may be the means of changing failure into success. The prescription must be suited to the individual, else harm rather than good may be done.

All these considerations help to show the need of personally taking the histories of our patients and getting into close confidence with them, in order that we may know all the factors in their lives which have to do with their powers of resistance. They should also indicate the danger of giving routine directions based on a physical diagnosis alone and of treating our patients as a class. We need to make a sort of social service diagnosis and to do the kind of work done by social service workers if we would most efficiently help our patients in the personal struggle to get well of tuberculosis.

Physiological Icterus of the Newborn.—Ada Hirsch finds that the blood of the umbilical cord contains more bilirubin than the blood of adults or of children after the icteric period. The intensity of the icterus of the new born is parallel with the degree of bilirubin content. These facts appear to controvert the hypothesis that icterus in the new born is the result of an infection.—*Zeitschrift für Kinderheilkunde.*

DIAGNOSIS AND TREATMENT OF GASTRIC NEUROSES.*

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RECENT medical literature is replete with discussions of gastroenterological subjects, emanating mainly from the surgical clinic and operating amphitheater. The contributions of surgery to our knowledge of gastric diseases has been invaluable. When I began to pay particular attention to gastric diseases some five years ago and to increase my knowledge had recourse to some standard text books on this branch of medicine, I was bewildered by the number of neuroses listed as distinct diseases; the whole subject was rather chaotic in my mind as a result of text-book reading. I then turned to surgery's contributions, such as, for instance, the work of Mayo's staff. Moynihan's work, Lane's, Deaver's, etc., and it was as though a thick veil shrouding the whole subject of gastroenterology had been lifted and I began to perceive clearly the distinctions, the diagnostic difficulties, and the medical as well as surgical aspects of many gastric conditions. The neuroses began to vanish in the light of day thrown upon them in the operating room by the aseptic knife. What was heretofore diagnosed and treated as a nervous hyperchlorhydria, was shown to be due to a gastric or duodenal ulcer, gall-bladder disease, chronic appendicitis or certain medical conditions as tuberculosis, chlorosis, nephritis, etc. Surgeons emboldened by their findings in large series of cases ventured to deny the existence of neuroses altogether. They challenged the internists and gastrologists to subject their cases of so-called nervous dyspepsia and other neuroses to the knife and they would be convinced that there was a pathological condition in the stomach or in the neighboring organs that would account for the dyspepsia. The glove thrown down by the surgeon was picked up by the medical man, and following the cases to the operating room he found that not a few cases which had been diagnosed as ulcer or other organic disease by the surgeon, revealed nothing to account for the gastric symptoms when opened up. I followed my own cases to the operating room and then I followed them home. The supposed chronic appendix which was removed, did not relieve the patient. This condition I have seen too often, and I have become convinced that many surgeons in a hurry blame the poor appendix for numerous gastric conditions which may be accounted for otherwise.

My own personal experience then leads me to the conviction that many gastric disturbances are nothing more than neuroses. But owing to the indefiniteness of this condtion I thought it was worth while to ask the question and attempt an answer, namely, What is meant by a gastric neurosis? It is generally admitted that the stomach, when not diseased in itself, is reflexly irritated through the autonomic system. Embryologically, the liver, pancreas, and appendix are offshoots from the primitive gut, all having the same nervous supply, largely through the sympathetic nerves. But as the human species developed a cerebral nervous supply was superimposed upon this primtive nerve apparatus, and the disturbances of these two regulators, sometimes working at cross purposes, produce many of the gastric neuroses. And so we find that the

*Read before Mt. Sinai Hospital Clinical Society.

cerebral or psychic control of our gastrointestinal tract is interfered with by a disturbance in the sympathetic nervous system. Exhaustion of one or the other produces many symptoms not accounted for by any pathological condition. Thus in neurasthenia, hysteria, and mental depression, we find that the stomach is involved.

In a great majority of stomach patients who consult a physician no organic lesion exists, even after the most painstaking diagnostic procedures have been employed in its discovery. Hence, they must be accounted for on other grounds than a chronic appendicitis, or latent gallstones or ulcer, as surgeons would have us believe. Let us designate these cases as neuroses. To be more specific, let us take up the various neuroses that I have seen myself in private and clinic practice: They are usually classed as sensory, secretory, motor, and psychogenic.

The sensory neuroses include the anamolies of the sensation of hunger, such as anorexia, bulimia, and parorexia. The first is by far the most important clinically, as we meet with it every day. Anorexia, the absence of the sensation of hunger, is a frequent accompaniment of many organic lesions of the stomach, notably cancer, gastritis, and later stages of ulcer. But it is frequently found as a pure neurosis accompanying neurasthenia and hysteria. Nervous anorexia sometimes leads to very grave results in nutrition. The onset might have been some error in diet, or some particular aversion to certain foods, or mental strain. The patient begins to select his diet, will not eat enough, and meat will be the first article of diet to be discarded. With the irregularity of the daily meals, irregularity of the intestinal evacuation will set in, and this will become the most notably conspicuous symptom to the patient. Intestinal stasis will lead to headache, insomnia, flatulence, and even intestinal pains. Von Leube also described a clinical condition which he called nervous dyspepsia, a condition in which the subjective symptoms are many and varied, but which do not harmonize with the physical and chemical examination of the alimentary tract. Many writers have doubted the existence of such conditions as nervous anorexia and nervous dyspepsia, but two cases under my present observation convinced me of their existence.

Case I.—Mrs. F., a lady of about 50 years, repeatedly complains that she has no appetite, and says she was treated for about a year for stomach trouble. It commenced soon after the death of her husband; she lost considerable weight, and the numerous stomachics that other physicians prescribed did not help her. When I first saw her she was so weak that she was in bed, cried easily, and feared that she, too, was going to die. On inquiry I found that she subsisted on a glass of milk and sometimes on less than that a day; while plenty of food was offered her, she partook of very little. On examination I found her rather emaciated, anemic, with a general viseroptosis. Before her husband's death she was up and about and attended to the household duties. It is evident that the mental worry and depression following her husband's death also depressed the hunger center which is situated in the medulla oblongata near the nucleus of the vagus. Special nursing and forced feeding, as well as an assurance of no serious stomach trouble, helped her to recovery.

Case II.—A woman of about forty looks the picture of health, and yet all she eats a day is not enough to sustain a child. She complains that even milk will produce epigastric pressure, make her vomit, cause her to feel bloated, and eructate; and she sometimes will go into collapse before vomiting. On the physical side, there is nothing discoverable that may produce reflex irritation in the stomach. She had a perineal tear and a slight retroversion of the uterus, both of which were corrected without however improving her condition. This patient is a profound neurasthenic or rather psychasthenic. In the hands of one who did not know patient as well as I do, she would have been a subject for gallstone operation, appendectomy, or what not. Fortunately, I happened to strike her fancy and was able to observe her for two years. She has been a patient in various other hospitals, and of several private physicians.

To say that a patient has neurasthenia and rest the diagnosis there is to fall into frequent error, because many organic diseases of the stomach, as latent ulcer or gall bladder disease, will in time produce nervous symptoms sufficient to brand a patient as neurasthenic, and surgery has demonstrated that many so-called neurasthenics really suffer from organic diseases, hence the witticism that it takes seven medical cures to discover an ulcer. Therefore to make a diagnosis of nervous dyspepsia and to persist in it, prescribe rest cures and world tours, the physician must be certain of his diagnosis, and to be certain one must know the patient, indeed from childhood, either through personal acquaintance or through a minute analysis of the life of the individual. This patient had been left an orphan by wealthy parents and intrusted to the care of a well-to-do uncle and aunt, who supported her from the estate left to her. She was treated kindly and her every caprice was gratified. In short, she grew up spoiled and capricious. Whenever she was in ill humor she refused to eat and only by extreme persuasion and bribes could she be persuaded to partake of any food. When she grew to adolescence, she assisted in a wholesale grocery firm, indeed she was one of the managers of it. In due time she married, receiving an ample dowry from her uncle. Her husband, however, was a ne'er-do-well, and in a short time the money that they had was eaten up. The fear of military service drove her husband, herself, and her two children to the United States. Here her husband became a skirt operator, earning from $12 to $15 a week and this woman, reared in comfort, had to manage a poor man's home. The result was that she could not accommodate herself and she gave way to the same capriciousness of her youth. And instead of a loving aunt with divers presents coaxing her to eat and drink, an irritable unsympathetic husband who saw her only at rare moments during the day, and the clamor and quarrels of the children helped to intensify her moods. She is subject to fainting spells, has spasmodic sensations of the esophagus, and is convinced that it is the food which she is persuaded to take occasionally that causes the symptoms.

I have related this case in detail to show how difficult it is to treat this and similar cases, for even rest cures and forced feeding for a while will not cure this woman's ailment, which is rooted in a lack of accommodation of her personal ego to surroundings. It is a real case of nervous dyspepsia.

Gastralgia is classified as a sensory neurosis, but I think it is dangerous for the general practitioner to consider any pain in the stomach as a gastralgia of nervous origin. It is so frequently associated with pathological conditions in the stomach or outside of it that while treating a gastralgia we may overlook a gastric or duodenal ulcer, tabes dorsalis, pancreatisis, etc. The other night a patient was operated on here and a perforated duodenal ulcer was found which cost the patient his life. Two days previous to the operation he was treated by some physician for gastralgia. One night I was visiting a physician and about 12 o'clock the physician was hurriedly called to see a patient. When he returned I asked him to tell me about the case. He answered that a woman patient of his had an attack of pain, a simple gastralgia. That patient had my sympathy.

Of the important secretory neuroses, achylia, hyperchlorhydria, and hypersecretion are mentioned. I have seen cases of achylia gastrica of neurotic origin. The classical experiments of Pavlov demonstrate it beyond a doubt. He held a piece of meat before a dog with a gastric fistula and obtained profuse gastric secretion. He then brandished a whip before the dog's eyes and the

secretion ceased. Continued mental depression or fear may produce a total or partial absence of gastric secretion. Hyperchlorhydria, as a secretory neurosis, is so frequently dependent upon reflex irritation that it is doubtful whether it exists as a pure uncomplicated neurosis. I have seen it in a family of three—mother, married daughter, and young girl, where there was a strong probability that it was neurotic. All are of nervous temperament, subject to emotional crises, when heartburn follows. Soda or milk is a regular stand-by. I should hesitate to treat a case of hyperchlorhydria as a neurosis without keeping in reserve the possibility of commencing ulcer, gall-bladder disease, or chlorosis, or chronic appendicitis.

In the wards I have seen a case of hypersecretion. The patient was an elderly gentleman, and he was admitted with suspicion of some serious gastric disorder. But as none was found excepting this hypersecretion the man was discharged without any improvement. Here again, development of the *x*-ray methods and Lane's claims dependent on various adhesions, suggest that it is possible that some extragastric adhesion is the underlying cause of his hypersecretory disturbance.

Of the motor disturbances such as nervous eructation, regurgitation, pyloric spasm, and cardiospasm, all are important because of their likelihood of being mistaken for organic diseases. I had an opportunity of observing three cases of nervous eructation for a long time. This condition occurs in air swallowers. I have seen a most typical case of this:

Case III.—Miss K., age 25, single, while spending her vacation at Atlantic City, one day partook of a heavy meal and to slake her thirst after it went out to drink some soda water. She drank rapidly two glasses and in a few minutes she felt as though something was being stretched and loud belching followed. She felt immensely relieved, after that she tried to belch voluntarily thinking it would relieve her occasional epigastric pressure. She then returned home and the next six months she kept on belching. She thought something was wrong with her stomach and began to diet without avail. I might add that her father died after an operation for gastric ulcer, that her mother is suffering from intestinal stasis and epigastric symptoms. So the home atmosphere was one to make her think of stomach disease and fear its consequences. While sitting in my office, and while I was writing down her history, I heard periodically about every five minutes, a rumbling and then when I tried to observe her, I also noticed that her facial muscles and throat were moving as though in the act of swallowing something. Undoubtedly she was swallowing the air which she subsequently belched up. Now it is quite possible that at the onset, the excessive amount of carbon dioxide stretched the cardium and left it patulous, thus making it easy to swallow air.

In two other cases, in men, this condition was quite distressing. In fact, one subjected himself to an operation without relief and only an intimate acquaintance with their life history convinced me that the conditions were neurotic. Both are tailors by trade, both have been subjected to thorough physical examinations in many hospitals and by private physicians without disclosing organic lesions.

Regurgitation as a neurosis I have seen once, and unless closely observed it will be mistaken for vomiting and serious gastric disease might be mistaken for it. The case of regurgitation that I have in mind is complicated by achylia gastrica. The patient is a conductor. After his evening meals and while on a car small quantities are regurgitated and spat out. It is characteristic that this will occur a number of times after a meal, while real vomiting happens only once or twice. This particular patient dates his trouble back to a wedding at which he ate some decayed chicken, after which he felt sick, vomited, etc. It is quite possible that the memory of this event lurks in his subconscious mind and automatically produces this reflex of spitting out morsels of food. This patient's nutrition did not suffer in the least, but usually, if the condition endures for a long time, emaciation sets in and the sufferer begins to look like an advanced consumptive.

This by no means exhausts the list of gastric neuroses, but I have discussed enough of them to indicate their variety and their importance.

The diagnosis of gastric neurosis should be held in abeyance until a thorough physical examination and a positive exclusion of organic disease directly or indirectly is made. The pre-existence of neurasthenia as a condition of gastric neuroses is not always true, because it may coexist with organic disease of long standing. Indeed, the cause of the neurasthenic symptoms themselves should be looked for. These can usually be found in an inquiry not in the conventional line of history taking, but an inquiry as to the social and personal life of the individual as far back as childhood days. This is important, as it has a direct bearing upon the treatment of these very difficult and baffling conditions. I am a firm believer in the Freudian practice of psychoanalysis in the neuroses. The old-time methods of treating these conditions whether gastric, traumatic, or post-operative, have not sufficed. Suggestion through authority and mystic therapeutics do not produce any lasting results. On the other hand, countersuggestion, reeducation, enlightenment of the patient as to his condition through an appeal to his own reason or intellectual capacity, have produced better results. Case III completely recovered after a minute explanation of the mechanism of air-swallowing and a suggestion that she could overcome it voluntarily. Dr. Williams, in an article on the treatment of traumatic neuroses, says that it is false notions that maintain the neuroses, and that it is by the substitution of these false notions by true ideas that cures are obtained. Psychic treatment, then, is of great importance. Where domestic relations are abnormal, these must be corrected first in order to influence the gastric neurosis.

Of the physical and medicinal therapeutics the following have been found of service: Intragastric or extragastric electricity tends to tone up an atonic condition of the stomach, acts as a sedative to a spastic condition. Hydrotherapy, massage, Swedish movements are of great help in nervous anorexia and nervous dyspepsia. Of drugs, iron, arsenic, strychnine, and the hypophosphites, and most important of all, the bromides, have been helpful. Finally, the diet: All the gastric patients do themselves an immense amount of injury by dieting themselves, by omitting to eat meat and vegetables, etc. Most of these patients are afraid to eat, and thus forced feeding under proper conditions is the best remedy. After such a regime a troublesome anorexia becomes changed to a voracious appetite. The fear of food disappears, normal health returns, but unfortunately for many of our patients such a regime is next to impossible. They cannot afford the necessary amount of the diet itself, nor the nursing or private hospital accommodations. In few hospitals can ward patients

be treated on the principles of the rest cure. The poor neurotics deserve our best efforts—medical, psychic, social, and preventive.

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TREATMENT OF ACUTE EPIDIDYMITIS BY ASPIRATORY PUNCTURE.

By H. W. E. WALTHER, M.D.,

NEW ORLEANS.

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THE frequency with which the epididymis becomes involved in cases of Neisserian urethritis and the difficulty so often encountered by those called upon to alleviate the intense pain this complication produces, has led to the adoption of many different methods of treatment. The importance of speedily terminating any infective process in the epididymis should be apparent because of the liability of permanent secondary changes that at times ensue from such inflammation by which the functional (procreative) power of the testis is destroyed. In these cases it has been found that the sterility due to azoöspermia results from the nodular obstruction of the seminal ducts as a direct sequence of inflammation in the epididymis.

Epididymitis occurs as a complication of gonorrhea in about 25 per cent. of cases. The symptom which causes patients so much distress is *pain*. It is this symptom which usually brings them to the physician seeking relief. There is no gainsaying the fact that the pain experienced by many of the sufferers of acute epididymitis is agonizing. When they present themselves they are usually ready to undergo any operative ordeal whereby relief from this symptom alone is assured, and it is by operative means that results have been best attained—results that were prompt, safe, and permanent.

Many operative procedures have been described by various writers for the relief of this condition. I shall not attempt to mention them all. Prominently among the most popular have been: *epididymovasotomy*, as performed by Martin; *epididymal puncture* with fine bistoury, as advocated by Smith; *epididymotomy*, according to the technique of either Bazet, Hagner, or Belfield; the *aspiratory puncture* of Baermann and Ernst, and, finally, the *epididymal injection* with electrargol, as recommended by Asch.

In this modern day when surgery is attempting to wend its way along the paths of conservatism, it does not seem rational to perform an open operation when simpler means are at our disposal which are just as efficient. There is one means of dealing with epididymitis surgically in which the scalpel is not needed. I refer to the method of treating acute epididymitis by means of *aspiratory puncture* with a hypodermic syringe, as practised successfully by Baermann and later popularized by Ernst.

As early as 1852 puncture was practised by Pirogoff, and in 1854 Velpeau advocated the puncture of the tunica vaginalis in epididymitis, claiming that by relieving the tunica of its serous effusion content, thereby releasing the tension imposed upon the inflamed epididymis, he relieved the pain accompanying this complication almost instantly.

The technique we have adopted is as follows: The scrotum is prepared aseptically as for any operation; our practice being to shave the skin, thoroughly cleanse the same with green soap and sterile water, and then paint the site of puncture with tincture of iodine. The affected testis is then firmly grasped with one hand, the epididymis to be punctured pointing uppermost, and the skin over the selected area of entrance of the needle is put on tension. A very sharp-pointed, fairly large needle which is connected to a 10-c.c. record syringe, and which has been previously sterilized, is then thrust through the skin of the scrotum into the substance of the epididymis for ½ to ⅔ inch, and then the attempt is made to aspirate gently some of the seropurulent content. By withdrawing the needle slowly, aspirating all the while, one will often succeed in obtaining fluid from the different levels in the gland when the same would not be gotten if the needle was held in only one plane. Usually two or three punctures at different points in the affected organ are made.

The wounds are then sealed with a collodion dressing and a suspensory applied to the scrotum. Confinement to bed is not necessary and the after-care of these cases is very simple.

The only anesthetic which we have used has been that of spraying locally the site of puncture with ethyl chloride to freeze the part. In hospital practice even this spray has not been found necessary to gain the patient's consent to have the punctures made. A general anesthetic is never necessary for this procedure. In dealing with hypersensitive patients one might inject a few cubic centimeters of 2 per cent. novocaine solution subcutaneously and down to the epididymis so as to diminish the sensation when the needle punctures are made.

As a rule very little fluid is withdrawn. The effect of the aspiration, however, becomes manifest by an almost immediate relief from pain, and within 6 to 12 hours the swelling in the gland and the fever will be noticed to have diminished considerably.

The procedure is a painful one, at times very painful, but the aspiratory puncture causes a cessation of the patient's sufferings so promptly and shortens the duration of the infection so markedly that we believe this method of treating acute epididymitis is deserving of more attention and favorable consideration than has been accorded it in the past.

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Macheca Building.

The Gas Bacillus and Digestive Disturbances in Childhood.—P. H. Sylvester and F. H. Hibben find that the gas bacillus is not a normal inhabitant of the intestinal tract. Its pathogenicity is apparently demonstrable in certain cases of infectious diarrhea, fat intolerance, carbohydrate intolerance, and chronic intestinal indigestion. The dietary treatment by means of fat-free lactic acid milk unpasteurized, by imposing conditions unfavorable to the growth and activity of the gas bacillus, is rational, safe, and more immediately effective than any other treatment so far advocated.—*Archives of Pediatrics.*

ROCKY MOUNTAIN SPOTTED FEVER TREATED WITH ADRENAL SECRETION.

By M. H. SMITH, M.D.,

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THE remarkable views expressed by Sajous in his "Internal Secretions and the Principles of Medicine," very evidently offering a clue to a treatment for Rocky Mountain spotted fever, led the writer to subject three cases of the infection during the spring of 1915 to medication with adrenal secretion. Necessarily the treatment was experimental as there were no available data for determining the size of the dose or frequency of its repetition, medication being per os.

An attempt was made to secure a fresh preparation of the solution for each case; however, case number one was for the greater portion of the first week of treatment upon a solution of questionable activity. The adrenal product of one firm was selected and utilized throughout the treatment.

A tabular view of the symptoms and treatment of the three cases is here shown:

	Case No. 1	Case No. 2	Case No. 3
Sex	Male	Male	Male
Age	24	45	54
Incubation	6 days	4 days	3 weeks
Fever	High	Moderate	Relatively moderate
Fever duration	20 days	16 days	14 days
Eruption appeared on day of invasion	3d day	3d day	4th day
Eruption	Discrete macular with some papules	Discrete macular	Discrete* macular and papular
Delirium	Slight for 2 days	None	None
Pains	Not noteworthy	Annoying, articular	Quite severe, articular
Gastric disturbance	None	Marked	Slight
Complications	None	None	None
Dosage adrenal solution	M viij to x	M x to xij	M xij to xvj
Dosage frequency	4 hours	4 hours	4 hours
Convalescence	Rapid	Rather slow	Rapid
Sequelae	None	None	None
Calcium used	3 days	None	3 days
Result	Recovery	Recovery	Recovery

*Confluent on dorsum of hands, attempts at confluence on dorsum of feet under calcium administration.

In view of the colloidal changes from the infection, calcium was given experimentally in case number one over a period of three days. On the third day of such administration the normal rose tint of the eruption on the lower extremities began to darken, interruption of the calcium being followed by a cessation of the ecchymotic discoloration and its gradual return to the rose tint of the general eruption. This was repeated in case number three in which a brisk epistaxis on the third day of treatment required tamponage of the left nasal passage with gauze saturated with a solution of adrenal secretion, calcium being given internally for three days, the third day showing a development of ecchymosis upon the dorsum of the feet and ankles and an attempt at coalescence of an otherwise discrete eruption in the locality showing a petechial discoloration. Interruption of the calcium was followed by an inhibition of farther discoloration, that, however, which had been already produced being quite sluggish in its disappearance. Case number two had no calcium, no indication for its administration being apparent.

The three cases, except for the darker coloration mentioned, showed little violaceous coloration, the use of adrenal solution quite evidently preventing other than a deep rose color in the eruption. The eruption gradually faded without the mottling often noticed in cases under other forms of treatment.

In case number one there was a noticeable temporary fading of the eruption after each dose of adrenal secretion administered, this however not being at all marked in either of the other two cases. In every case, however, it was perceptibly shown that the eruption was darker before the four hourly dose of the glandular extract, the rose tint of the eruption being reestablished after the remedy was given.

Serially, the three cases under progressively larger doses of adrenal secretion had a shortened febrile disturbance or infection period. There was not apparent any control of the daily temperature excursion by the administration of the adrenal solution. The daily temperature range was quite satisfactorily controlled with acetphenetidin.

Although quinine had no part in the treatment of the cases here reported, the alkaloid has been quite generally utilized by physicians treating the affection, varying results being reported. Presumably the beneficial action from quinine may be explained in conformity with ideas of stimulation of the adrenal glands.

As bearing upon the colloidal aspect of the disorder, one might anticipate that sodium citrate would render assistance in the treatment, and while there was some intention to administer this compound experimentally, its trial was deferred to avoid confusion in treatment, the clouding of adrenal activity, detracting from the credit due the organic extract or an interruption of what appeared as a salutary progress.

Accessory treatment consisted of the administration of strychnine every four hours, acetyl salicylic acid was given as required for pains, acetphenetidin for controlling temperature, a daily saline and milk diet.

It was determined that in event of untoward symptoms, normal salt solution should be used, but no necessity was evinced for its utilization. The sphygmomanometer showed a relatively normal blood pressure.

The decided shortening of the febrile duration of the infection upon increased dosage of the adrenal solution, and the absence of other than a slight darkening of the rose-tinted eruption except as noted, may well be believed to be due to an influence extended by the glandular secretion.

WHAT PATIENTS WITH TOXIC GOITER SHOULD DO AND WHAT THEY SHOULD NOT DO.

By G. P. COOPERNAIL, M.D.,

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THE following will apply either before or after a toxic goiter is operated on.

You should avoid all excitement or irritation. Keep from work or pleasure that would cause you to become nervous or excited. Be very cautious about your exercise.

You should not take any alcoholic drink; no tea or coffee; no tobacco.

You should not eat any of the red meats or any kind of broth or soup made from them.

For your diet you may use a great deal of milk and things made with milk. Eat butter, eggs, stale bread, rice and all other cereals well cooked; chicken or fish only with the consent of your physician.

Eat an abundance of cooked fruits and vegetables. Very ripe, raw fruits and fruit juices are allowed.

Milk, butter, cream, and buttermilk are especially good for you.

Drink an abundance of good water; if you are not sure of its being good, boil it for twenty minutes.

Get all the fresh air you can both night and day; live out of doors as much of the time as you can.

You should have abundance of rest; go to bed early and take a nap through the day.

For a patient after operation for toxic goiter. Much depends on the success of the operation in your after care. Keep in mind your diet and avoid exhaustion either mental or physical.

Most of the above I gathered at Kocher's and Ochsner's clinics.

Medicolegal Notes.

"Chiropractics" Is Practising Medicine, and Requires a License.—On appeal from a conviction of violation of Massachusetts Rev. Laws, Chap. 76, Sec. 8, by practising medicine without being lawfully authorized, the defendant contended that he was a chiropractor, and that his acts did not constitute a violation of the statute. The evidence tended to show that he kept an office in Boston, indicated by a sign on which was his name followed by the word "chiropractor"; that he practiced for pay; that he said that the basis of chiropractic is the adjustment of the vertebræ of the spine; that the vertebræ when not in their normal positions press upon the nerves at the spine; that the malposition of these vertebræ was the cause of abnormality and that the adjustment of these vertebræ to their normal positions would remove the pressure at the spine; that he said that he did not coure, that he simply adjusted. He testified that "chiropractic is the specific science that removes pressure upon the nerves by adjustment of spinal vertebræ; there are no instruments used; it is done by the hand only." The treatment pursued by the defendant was to have those who resorted to him go into an inner room and remove their outer garments until they were stripped to the waist. The patient then took a sitting position. The defendant examined down the spine, beginning at the top, by feeling with his fingers to see whether each vertebræ was in its proper position. The method to discover whether a vertebrae was out of position was by making a gliding move of the three middle fingers of the right hand, which constituted the process of "palpation" whereby one vertebrae was compared with another. As a result of this "analysis" the defendant was able to tell whether vertebræ were out of alignment or out of their normal positions. In making "adjustments" the patient was placed face downward on a low table and the vertebrae which was out of condition was given a quick thrust or push by the hands of the defendant. The acts performed by the defendant constituted, first, an examination of the vertebrae of the spinal column and a determination whether they were in a normal or in an unnatural position; and, second, a manipulation of such of the vertebræ as were found to be out of position, so that they would become regular and correct with reference to each other. Although the defendant did not prescribe medicine, and testified that he paid no attention to the patient's description of symptoms or disease, yet it was obvious that his purpose was to treat the human body in order to make natural that which he found abnormal in the narrow field of his examination. "Chiropractic" is defined as: "A system of healing that treats disease by manipulation of the spinal column (Webster's International Dictionary). The court said that the defendant's manipulation was of a most important part of the body and related to a nerve center. It might have been found that it could have no other aim than a prevention of disease or relief from existing disarrangement of body functions. That which the defendant did and its manifest purpose might have been found to be practising medicine within the meaning of the statute. Medicine relates to the prevention, cure, and alleviation of disease, the repair of injury, or treatment of abnormal or unusual states of the body, and their restoration to a healthful condition. It includes a broad field. It is not confined to the administering of medical substances or the use of surgical or other instruments. It comprehends "a knowledge not only of the functions of the various organs of the human body but also the diseases to which these organs are subject, and the laws of health and the modes of living which tend to avert or overcome disease as well as the specific methods of treatment that are most effective in promoting cures" (Knowlton, C. J., in Com. vs. Jewelle, 199 Mass. 558, 560, 85 N. E. 858). In order to practise medicine one need not cover the entire field of the science. If he devotes himself to a very restricted part of it he still may be found to practise medicine. It is matter of common knowledge that there has been great specialization in that profession in recent years. It was held to be of no consequence that the defendant abstained from the use of the words "diagnosis," "treatment," or "disease" in description of what he did, and employed the terms "analysis," "palpation," and "adjustment." The acts which he did and their manifest design were to be examined rather than the words used, in order to ascertain the true nature of the defendant's conduct. A physical examination of the vertebræ, a decision whether or not they were in normal position, and strong manual pressure upon them with the object of changing the position with reference to each other of those found to be irregular, and thereby relieving pressure upon nerves, may be found to have such relation to the cure or prevention of disease or the relief of pain as to constitute the practice of medicine. The statute was held to be constitutional. The protection of the public from those who undertake to treat or manipulate the human body without that degree of education, training and skill which the Legislature has described as necessary to the general safety of the people is within the police power of the State. This general purpose may be effectuated by requiring even of those who profess to confine their practice to a narrow specialty a much broader knowledge of the subject provided such qualification is regarded by the Legislature as necessary for the practice of any branch of medicine. The statute did not impair in any constitutional sense the liberty of the defendant. The protection of the public health is an object of such vital importance to the welfare of the State that any rational means to that end must be upheld. The defendant was placed in no worse position than others. The circumstance that Section 9 of the statute to an extent exempts certain classes, such as osteopaths and pharmacists and those practising Christian Science, mind cure, massage and others, did not render the statute unreasonable as to the defendant nor deny to him the equal protection of the laws. The conviction was sustained.—Com. vs. Zimmerman, Massachusetts Supreme Court, 108 N. E. 893.

Promise to Pay Expense of Operation on Another.—Action was brought by a physician and surgeon on his own behalf and as assignee of H. E. Southworth, also a physician and surgeon, for services rendered, in performing, at the request of the defendant, a surgical operation on the defendant's brother-in-law. The evidence tended to prove that, while Dr. Southworth had formerly treated the patient, he was not under employment by him at the time the operation was performed, that the defendant asked him to perform it, and, upon being told by Dr. Southworth that the latter had spoken to Dr. Thomas (the plaintiff) regarding the matter, personally requested him to perform the operation, and said: "I want you to give him all the service that is possible, every attention, and I will foot the bills." On the morning when the operation was performed, in conversation with both the plaintiff and Dr. Southworth, the defendant said to the former: "I suppose you have called me in here for the purpose of having me say that I will pay for these services," and the plaintiff said: "Well, if those are the facts, Mr. Boruff, that is all right." "Well," said the defendant, "you boys go ahead and fix him up the best you can and I will pay the bill." Upon the plaintiff telling the defendant that the operation was necessarily attended with great danger and uncertainty the latter replied: "Go ahead and do the best you can for him." Another witness testified that Mr. Boruff said to the plaintiff to do the best he could for the man, and he (the plaintiff) would pay the bill. Not only did this testimony strongly tend to establish an original promise on the defendant's part to pay for the services both of the plaintiff and Dr. Southworth, but the testimony of the defendant himself was corroborative of that view. It was held that the evidence was sufficient to support a finding that the defendant promised to pay the expenses in connection with the operation. Thomas vs. Boruff (Cal.) 148 Pac. 226.

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COLLOIDAL SULPHUR IN RHEUMATISM.

THE therapeutic uses of sulphur have been mainly confined to its external application in various cutaneous diseases. Its internal administration has been recognized for a long time chiefly as a valuable aid in the treatment of constipation. Its mildly laxative property probably explains its reputation in household medicine as an alterative. At one time sulphur was largely used in the treatment of chronic bronchial affections but despite the clinical acumen of Graves, who extolled its virtues in this condition, this application of sulphur has been all but forgotten. In the treatment of chronic rheumatism and sciatica sulphur has appealed to some observers as a sovereign remedy. Recently there has been a revival in the use of sulphur as an antiarthritic agent chiefly in the new colloidal form in which it is now available.

Loeper and Vahram (*Progrès Médical*, August, 1915) report that they have obtained exceptionally good results in the treatment of acute articular rheumatism by means of intravenous injections of colloidal sulphur. Their experience comprised seventeen patients, some of whom were under observation in one of the military hospitals in France. The drug was employed in daily doses of 33 to 66 milligrams. In every instance the pain was relieved within twelve hours after the injection and sometimes as early as two hours. The temperature began to fall on the day following the injection. In relatively mild cases one or two doses sufficed; in the more serious cases four or five doses were necessary; in the most severe types of this disease as many as ten doses were required to effect what seemed to be a cure. In five of the cases the sulphur was employed after the use of the salicylates had failed to make any impression upon the course of the disease or upon the intensity of the symptoms.

The intravenous injection of colloidal sulphur is followed by a marked systemic reaction. This is manifested first by a violent chill which occurs forty to fifty minutes after the injection and lasts about twenty minutes and a rise of temperature. The latter reaches 38° to 41° C (100.4° to 105.8° F.) in the course of one or two hours and then suddenly falls to normal. This rise of temperature is more pronounced in cases of acute articular rheumatism than in those of the chronic type of this disease; it is also greater with the use of larger doses of the remedy. The injection of colloidal sulphur causes a rise in the blood pressure, an increase in the number of red blood cells, and a transient leucocytosis.

As to the mode of action of colloidal sulphur, the question arises whether this stimulates the resisting power of the tissues or whether its antirheumatic virtues depend upon its antiseptic power. There is apparently an elective though not necessarily a specific rôle played by colloidal sulphur in acute articular rheumatism.

PHOTAUGIOPHOBIA.

THIS word is proposed by Ernest Clarke (*Medical Press and Circular*, August 4, 1915) to connote a shrinking from the glare of light, in contradistinction to photophobia, which signifies literally a shrinking from light. Shrinking from the glare of light is very prevalent in otherwise normal people who are deficient in retinal pigment—as fair people and especially albinos. The condition is much more prevalent than is generally recognized. The normal individual is protected from the glare of light out of doors by contraction of the pupil and by a wide-brimmed hat, but even these do not protect him from the excessive glare of snow or of improperly installed electric lights. That the glare of light actually hurts the eyes is proved in the cases of "eclipse blindness" or solar retinitis and in the cases of "electric retinitis" from an arc lamp. In these the ophthalmoscope reveals pigment changes at the macula, and there is a central scotoma which often remains permanent. In the worst cases there is an inflammation in the outer layers of the retina often extending to the choroid. Glare may cause cyclitis. When intense, as from snow or the electric arc, it produces a traumatic conjunctivitis sometimes accompanied by opacities and erosion of the cornea.

The treatment adopted for photaugiophobia has been the use of smoked or colored glasses, the colors most used being green, greenish blue, and blue. The disadvantages of these glasses are that they cut off a considerable degree of luminosity, they are quite unsightly, and their use tends to render the eyes very sensitive. Sir William Crookes has performed a large number of experiments extending over a period of several years with the view of discovering a kind of glass that would provide the best protection against the rays that are supposed to cause glassblowers' cataract. He found that in glass work the infra-red rays are the most injurious, the ultra-violet rays being almost equally so, and the luminous rays are injurious only when in great excess. Crookes has succeeded in finding a number of kinds of glass that cut off the infra-red as well as the injurious ultra-violet rays. There are now on the market two glasses known as Crookes "A" and Crookes "B". The former is composed of 83 parts of fused soda flux and 17 parts of crystallized cerium nitrate. There is present a small amount of didymium which gives the glass a pale pink when viewed edgeways. This glass is

said to be ideal for photaugiophobia, since it cuts off 27 per cent. of the heat rays and practically all the ultra-violet rays, and transmits 99 per cent. of the light. Clarke regards this glass as of the greatest value in refraction work, especially in the correction of myopia. Crookes "B" has a slightly darker tint, but is not to be recommended for general use, being especially indicated when very great glare or heat is encountered.

In the treatment of photoaugiophobia, in addition to the use of a protective glass, such as one of the above, the following details should be attended to: A suitable hat or cap should be worn in bright weather; the eyes ought to be well protected from top-glare. Naked incandescent gas or electric lights should not be fixed on the "eye-line," but should be placed high up or quite low down and then carefully shaded. The reflected electric light provides the best form of illuminant. The decoration of rooms should be in "cool" neutral tints, dull sage-green being the best. Desks should never face the windows. This should also apply to the beds in dormitories and hospital wards. With proper attention to these details, particularly in youth, photaugiophobia may never show itself.

INJURIES DUE TO THE WIND OF EXPLOSIVES.

Even weeding out all the fantastical tales which drift over to this country from embattled Europe and which continue to excite their measure of wonder from naïve auditors until they are discredited entirely, there still remain more things in war and its horrors than are dreamt of in the textbooks of military surgery, to paraphrase the old quotation. There are disease syndromes which are new to the internists, there are neuroses which baffle the neurologists and there are mysterious deaths the causes for which are not apparent. During the present war there have been numerous stories of men killed who were struck by no weapon or missile but who died apparently of fright, when a large shell exploded in their vicinity. Sometimes they maintained the attitude they held last and were discovered later on by their comrades who at first could not realize they were dead, so natural were they—a sort of grisly wax-works. Sometimes instead of instant death the soldier falls stunned, then rises and goes on fighting, apparently unhurt albeit dazed. A day or so later he suddenly collapses and is dead within a short while.

These deaths from the wind of missiles are mentioned by writers in other times, although they seem to have been comparatively infrequent before this war, probably because explosives never before attained such high potentiality. Larrey, Napoleon's great surgeon, expressly denied that such a thing was possible, but he seems for once to have been wrong judging by the well authenticated reports which we have to-day. Of course we must not confuse this condition with the deaths due to injuries by spent pieces of shell where there may be no outward sign of injury. In these latter cases the force of the missile is transmitted through the skin into the viscera which are found post morten to be lacerated or hemorrhagic.

Dr. Paul Ravaut of the Academy of Medicine of Paris, has investigated a number of these injuries due to the wind of explosives and thinks that the symptoms are due to a sudden, great change in the atmospheric pressure in the immediate vicinity of the soldier. Lumbar puncture was done on some of the cases soon after injury and the protein content of the cerebrospinal fluid was found always increased. Occasionally it would be found to contain blood. Hematuria was present in one case. One of Dr. Ravaut's patients had a paraplegia and in a case reported by Dr. Sencert the man who died was found to have intrapleural and gastric hemorrhage.

IGNORED SYMPTOMS IN CHILDREN.

In these days of diagnostic refinements we are no longer justified, if indeed we ever were, in dismissing the aches and pains of children with the assurance that they will be outgrown. It is certainly unscientific and uncritical to say the least to entertain a picture of the evolution of the child into the adult as a sort of pulling and hauling process, not accomplished without much creaking of the machinery. Some such simplistic formulation, however, must be responsible for the use of such terms as "growing pains." It seems probable that, leaving out of consideration the fatigue pains following unusual muscular exertion in children, as occur after a long holiday filled with hard play, the presence of pains in the muscles and joints is always indicative of some pathological process.

Such at least is the opinion of Dr. Mary H. Williams (*Lancet*, June 19, 1915), who says that growing pains are in reality rheumatism despite the general impression that this disorder is very rare in children. Other conditions she says may rarely cause these pains, as tuberculosis or syphilis. They may also occur in pubescent girls at the time of the monthly period, but then the etiology should be easily elicited. In Dr. Williams' examination of many thousand school children she found that these pains were preceded by tachycardia and that the children suffered from a slight pyrexia almost constantly. The first demonstrable symptom was impairment of the heart. This took the form of a displacement to the left and a muffling of the sounds. The writer thinks that rheumatism can often be prevented if the above symptoms are noted in time and recommends excision of the tonsils and adenoids as a preventive measure. This therapy, of course, depends upon the truth of the assumption that rheumatism is caused or precipitated by the absorption of toxins through the tonsils or through adenoid vegetations, a point which we cannot consider as definitely proved yet.

Another condition rather frequently seen in early life and too often not recognized is epiphyseal trauma. In the *Lancet* of August 7 Dr. Davies speaks of the dislocation of the epiphysis caused by a blow from a cricket ball on the tip of the finger and the consequent arrest of growth and limitation of usefulness of that digit. He shows a radio-

graph taken twenty-nine years after such an accident and another picture of a similar trauma just received. In this country, of course, this form of injury is usually due to a baseball, and we are all familiar with the distorted hands of old baseball players, especially the catcher and infielders. Dr. Davies advises a prompt *x*-ray of all such injuries and certainly it will not do to overlook the possibility of this condition in the growing boy who comes to us with a swollen finger as the result of a "hot liner."

Physical Signs Referable to the Diaphragm.

These signs may arise as the result either of irritation of the nerves supplying the diaphragm or of mechanical factors which change the normal position of this organ. Richard Dexter (*American Journal of the Medical Sciences*, August, 1915) has made an interesting clinical study of this subject. He finds that inflammation or irritation of the pleural or peritoneal surface of the diaphragm does not give rise to local symptoms. The resulting pain is referred upward along the phrenic nerves to the third or fourth cervical segments or downward along the sixth to twelfth intercostals into the lower thoracic segments. The pain is usually accompanied by tenderness and cutaneous hyperalgesia. These signs may be of considerable importance in the differential diagnosis between intrathoracic or intraperitoneal disease in the absence of any signs in the lungs. When a part or the whole of the diaphragm is forced downward the contraction of this organ causes a more powerful inward pull along the line of its attachments, which action is especially marked when the anterior portion of the diaphragm is depressed. This results in a lessening of the outward excursion of the subcostal angle or an actual retraction along the line of diaphragmatic attachment. Whatever forces the diaphragm upward lessens the strength of its inward pull and consequently increases the normal outward movement of the costal margins. These changes are of particular value in the diagnosis of obscure diseases of the viscera lying immediately below or above the diaphragm, especially of cases of pericardial effusion or of subphrenic abscess.

Should We Treat Fever?

The age-old controversy between empiricism and rationalism is entertainingly reopened by Dr. Harrington Sainsbury in the *Lancet* for August 14. This writer, after calling attention to the antiquity of the discussion, points out that if we are going to withhold our therapeutic attack until we have probed behind each effect for its cause our endeavors will resolve themselves into a chase after *primum mobile*. Disease is after all but a collection of symptoms and if we succeed in removing or alleviating all these symptoms we have cured the patient. Of course some will say that we have not affected the disease process itself, but, as Dr. Sainsbury justly says, a hypothetical disease process which does not produce any symptoms and consequently has no effect upon a patient's health or well-being might just as well be nonexistent. Even those who object to antipyretics, or at least chemical ones, recommend hydrotherapy. Provided we have no positive evidence that these chemical febrifuges do harm why not use them, at first in small doses and gradually in larger ones, to relieve the suffering of the patient? Certainly continued high fever devitalizes the tissues and reduces the resistance to the disease process. The true empiricism is after all the Hippocratic method, the study of the individual patient.

An Atypical Case of Cerebrospinal Meningitis.

The "spots" which have in general characterized "spotted fever" have always shown great variation, so that cerebrospinal meningitis has masqueraded as typhus, typhoid, rheumatic fever, influenza, erythema multiforme, and various other conditions. During the present war in Europe two differential tests have proved their great value. One is Eugen Fraenkel's histological examination of suspicious macules, papules, and petechiæ. Typhus is quickly recognized by specific changes in the adventitia of the finest arteries of the pars reticularis of the integument. The other is lumbar puncture which usually discloses the presence of Weichselbaum's meningococcus. At a recent session of the Munich Medical Society (*Münchener medizinische Wochenschrift*, June 8) Craemer reported the following case: a man admitted for vomiting and motor excitation presented peculiar nevus-like formations in his skin. He was very restless and screamed in his sleep. The vomiting ceased suddenly. The patient was found to be quite deaf. Next day it was learned that his skin was naturally clear. There were no further symptoms, save moderate elevation of temperature. The examination of the ear gave negative results. Lumbar puncture showed the presence of the meningococcus. The supposed congenital nevi in reality represented a rash. Stiffness was never present at any time.

News of the Week.

Committee of American Physicians for the Aid of the Belgian Profession.—Dr. F. F. Simpson, treasurer, 7048 Jenkins Arcade Building, Pittsburgh, Pa., reports the receipt of the following contributions for the week ending September 25, 1915:

The Norfolk County Medical Society, Norfolk, Va..	$28.00
Carroll County Medical Society, Wolfeboro, N. H...	10.00
Muscogee County Medical Society, Columbus, Ga...	14.00
Total	$52.00
Previously reported receipts	7,814.84
Total receipts	$7,866.84
Previously reported disbursements:	
1,625 standard boxes of food at $2.20....$3,575.00	
1,274 standard boxes of food at $2.30.... 2,930.20	
353 standard boxes of food at $2.28.... 804.84	
Total disbursements	7,310.04
Balance	$556.80

The Red Cross in Siberia.—It is reported from Geneva that Austria, Germany, and Russia have concluded an agreement under which the American Red Cross will be authorized to send twenty-five physicians and fifty nurses to Russia and Siberia to care for German and Austrian prisoners of war.

Tuberculous Prisoners to Be Sent to Switzerland.—Twenty-five hundred tuberculous prisoners will shortly be sent to Switzerland from England, France, and Germany for treatment in accordance with an agreement between these governments. The prisoners will be taken care of at sanatoria under Swiss guard at the expense of the countries whose captives they are. The British section of the sick prisoners will be sent to various places in

Oberland, the French to Leysin, and the German to St. Moritz.

A Remedy for Gaseous Gangrene.—Experiments at the American Ambulance in Paris seem to show that quinine hydrochloride is more efficacious than carbolic acid in the prevention and cure of gaseous gangrene and other wound infections. The experiments were conducted with guinea-pigs, but the final test was made by Miss Mary Davies, a young Englishwoman assisting in the laboratory, who, unknown to her chief in the laboratory, inoculated herself with a virulent strain of the gas bacillus and then presented herself for treatment with quinine hydrochloride. This was begun at once and the daring experimenter was sent to the hospital for observation and further treatment. Quinine injections were given a second time. Symptoms of a slight degree of infection developed within twenty-four hours, but they subsided without operation becoming necessary. She recovered completely.

The Recovery of Dr. Woods' Body.—The body of Dr. Edmund F. Woods of Janesville, Wis., who was killed through the torpedoing of the steamship *Arabic*, was washed ashore Wednesday of last week at Ross Carberry, County Cork, Ireland.

The New York City Death Rate.—During the week ending September 18 there were 1,291 deaths with a rate of 11.60, as compared with 1,330 deaths and a rate of 12.43 for the week ending September 19, 1914. The difference of .83 in the weekly rate means a saving of 92 lives. The death rate for the first 38 weeks of 1915 is 13.49, as compared with 13.94 for the first 38 weeks in 1914.

Cancer Increasing in Pennsylvania.—According to the report of the Cancer Commission of the Pennsylvania State Medical Society, made at the sixty-fifth annual meeting of this society in Philadelphia last week, the death rate from cancer in that State is increasing out of all proportion to the increase in population and that immediate action by health officials and the medical profession has become imperative. Since 1906, the report states, the death rate has increased 23½ per cent. Last year the number of deaths from malignant growths reached 5,197.

The Superintendency of the Randall's Island Hospital.—We are informed that the New York Civil Service Commission has withdrawn the notice of examination for superintendent of Randall's Island, upon which we commented last week, and through agreement with the Mayor, the President of the Board of Aldermen, and Mr. Kingsbury, has created the position of medical superintendent at a salary of $5,000 a year.

Report of the Rockefeller Hookworm Commission.—The work of the International Health Commission of the Rockefeller Foundation in fighting the hookworm, both in the southern part of the United States and in other countries, is made public in the first annual report of the foundation issued. Up to December 31, 1914, the Commission had treated 19,425 hookworm sufferers throughout the world. In addition it had instituted an educational system by which many thousands were instructed in the dangers and means of fighting the disease. The infection belts the globe in a zone about 66° wide, centering at the equator. Practically all countries in this belt are infected. Work was begun in British Guiana, Antigua, Trinidad, St. Lucia, Grenada, and Egypt. In Ceylon the Government and the Planters' Association started work on a small scale, meeting the cost locally. The campaign also took in Panama, Nicaragua, Costa Rica, and Guatemala. Besides its work in foreign countries, the commission has undertaken to complete the work of the Rockefeller Sanitary Commission in fighting the disease in the Southern States of this country.

Noticeable Reduction in Rabies.—Figures compiled by the Bureau of Preventable Diseases of the New York City Health Department for the second quarter of 1915 indicate that the measures adopted last year to control the spread of rabies in this city have borne fruit. The number of cases of hydrophobia in animals examined in the laboratories of the Department of Health decreased from 64 during the second quarter of 1914 to 15 during the corresponding quarter of this year. A reduction also occurred in the number of persons examined for dog-bite, and in the number of dogs examined for rabies.

Vaccination of School Children.—A recent bulletin of the Health Department calls attention to the sections of the public health law as amended recently by the Legislature which provide that no unvaccinated child shall be admitted into any school in a first or second class city. The vaccination, the department points out, can be performed only by a regularly licensed physician. No virus can be used unless it has been approved by the State Commissioner of Health. The exemption from the necessity of vaccination applies only to school children in villages and country districts.

Sterilization of Mental Defectives.—The question of the constitutionality of the law prescribing the sterilization of mental defectives is to be determined by the Supreme Court of New York State in an action recently brought to restrain the prevention committee. The committee proposes to sterilize a young man, one of a family of sixteen, all of whom are said to be more or less defective. The man is at present an inmate of the Rome Custodian Asylum.

Dr. Charles K. Mills has resigned from the chair of neurology in the medical department of the University of Pennsylvania. He had occupied the position since 1893.

Dr. A. H. Comforth, city physician of Fitchburg, Mass., has resigned to accept an appointment to the superintendency of a hospital in Paterson, N. J.

Dr. Harry A. Elcock has been appointed medical examiner for New Britain, Conn.

Dr. Andrew J. Gilmour of New York has added to his feats of mountain climbing by getting to the summit of Mt. Geikie of the Canadian Rockies. His companion was Prof. Edward Holway of the Department of Botany in the University of Minnesota.

Dr. Frederick Cook of Brooklyn, whose claims to have climbed Mount McKinley and to have reached the North Pole have not been widely accepted, is reported to have been refused permission by the Indian Government to scale the heights of Mount Everest in the Himalayas.

Discharged Hospital Physicians Invited to Return.—Six years ago eighteen physicians, comprising the attending staff of the Elliot Hospital at Manchester, N. H., were dropped by the trustees owing to ill feeling engendered by a dispute with the superintendent. Three of the eighteen have since died, and recently the trustees have invited twelve of the survivors to return to the staff, without, however, deposing the present members, the work of the hospital having increased sufficiently to

warrant an increase in the number of attending physicians and surgeons.

Annual Meeting of the First District Branch.—The ninth annual meeting of the First District Branch of the Medical Society of the State of New York will be held at Nyack on Saturday, October 9, under the presidency of Dr. James E. Sadlier of Poughkeepsie. The secretary is Dr. Charles Ellery Denison, 143 West Seventy-sixth Street, New York City.

Medical Society Elections.—The Medical Society of the State of Pennsylvania, at the meeting held at Philadelphia from September 21 to 24, elected the following officers for the ensuing year: *President*, Dr. Charles A. E. Codman of Philadelphia; *First Vice-President*, Dr. J. Torrance Rugh of Philadelphia; *Second Vice-President*, Dr. Edgar M. Green of Easton; *Third Vice-President*, Dr. William Albert Nason of Roaring Spring; *Fourth Vice-President*, Dr. Myers W. Horner of Mt. Pleasant; *Secretary*, Dr. Cyrus L. Stevens of Athens; *Treasurer*, Dr. George W. Wagoner of Johnstown; *Chairman of the Section on Medicine*, Dr. J. Wesley Ellenberger of Harrisburg; *Secretary*, Dr. David Riesman of Philadelphia; *Chairman of the Section on Surgery*, Dr. Levi Jay Hammond of Philadelphia; *Secretary*, Dr. John L. Atlee of Lancaster; *Chairman of the Section on Diseases of the Eye, Ear, Nose, and Throat*, Dr. C. M. Harris of Johnstown; *Secretary*, Dr. George B. Jobson, Jr., of Franklin. The next meeting will be held at Scranton, Pa.

The Oregon State Medical Association held its forty-first annual meeting at Portland during the second week in September when the following officers were elected: *President*, D. W. Kukendahl, Eugene; *Vice-Presidents*, Drs. Robert C. Yenney, Portland, B. F. Ferrell, Bend, and H. J. Clement, Salem; *Secretary*, Dr. M. B. Marcellus, Portland; *Treasurer*, Dr. K. C. Manion, Portland; *Delegate to the American Medical Association*, Dr. Walter T. Williamson.

The Second District (Wisconsin) Medical Society, at its annual meeting at Kenosha on September 8, elected the following officers: *President*, Dr. A. S. Keech of Racine; *Secretary-Treasurer*, Dr. S. Sorrensen of Racine.

Charitable Bequests.—By the will of the late Elizabeth Bartlett of Philadelphia, bequests are made as follows: to the Episcopal Hospital $1,000, to the Woman's Homeopathic Hospital $1,000, to the Emergency Hospital of Easton, Md., $1,000.

By the will of the late Susan E. Brown of Philadelphia, the sum of $200 is bequeathed to the Mercy Hospital.

Postgraduate Study in the Philosophy of Surgery.—The New York University has just admitted to its graduate school courses in surgery by which it will be possible for graduate students of the more theoretical or philosophical side of surgery to secure the advanced academic degrees of Master and Doctor of Science. The course does not deal with the technique of surgical practice but rather with the philosophy of this science, with the application of biological laws to surgical diagnosis and therapy. A similar graduate course will, it is understood, be introduced next year at Harvard, Johns Hopkins, the University of Minnesota, and perhaps elsewhere.

The New York Homeopathic College has begun this year a five-year course by enrolling a subfreshman class in which the subjects of chemistry, biology, and physiology will be studied. The requirement for admission to this class is the equivalent of one year of collegiate study as determined by examination or a Regents' certificate.

Genito-Urinary Clinics.—The third winter course of public genito-urinary clinics held by Dr. Abr. L. Wolbarst, will begin on Thursday, October 7, at 8.30 P. M., at West Side German Dispensary and Hospital, 328 West Forty-second Street, New York, and will continue throughout the winter every Thursday evening. A similar series of clinics will be held every Tuesday afternoon at 3 o'clock, at Beth Israel Hospital (Dispensary), Jefferson and Monroe Streets, beginning on Tuesday, October 5. Physicians and medical students are welcome. Interesting cases may be brought for diagnosis and conference.

New Hospital Wards.—The Augusta Caroline Thorn Wards of the Philadelphia Polyclinic and College for Graduates in Medicine were formally opened on September 22, addresses being made by Dr. S. McC. Hamill, president of the Faculty, and by Dr. John B. McAllister of Harrisburg, president of the Medical Society of the State of Pennsylvania. The improvement represents the gift of Miss Mary Thorn, a daughter of the woman in whose memory the wards are named, and who was herself a generous and early benefactor of the hospital. The additions include a woman's medical ward, a woman's surgical ward, a woman's private ward, a recovery room, and a room for serious cases.

Obituary Notes.—Dr. Colin McDougall of New York, a graduate of the Bellevue Hospital Medical College, New York, in 1878, a member of the New York State and County Medical Societies, formerly physician of the Actors' Fund, and for many years connected with the New York Nose, Throat, and Lung Hospital, died at his home on September 19, aged 73 years.

Dr. George F. M. Lamont of Newark, N. J., was drowned on September 19 through the capsizing of a motor boat in a heavy sea off Avon, N. J. He was born in 1873 and was graduated from the Long Island College Hospital in 1896. He was a member of the New Jersey State Medical Society and of the American Medical Association.

Dr. James O'Sullivan of Tama, Iowa., died at Machias, Maine, on September 2, of cardiac disease. He was born in Manchester, N. H., in 1868, and was graduated from the Bowdoin Medical College in 1902. He began practice in Portland, Me., and later moved to Iowa.

Dr. U. L. Taylor of Columbia, Ky., died suddenly on September 3 at the age of 83 years. He was a graduate of the medical department of the University of Louisville in the class of 1875. He was for a number of years health officer of Adair County.

Dr. Thomas W. Sargent of Luflin, Texas, died on September 3 after an illness of several months' duration. He was born in 1860 and was graduated from the Memphis Hospital Medical College in 1890. He was at one time mayor of Lufkin.

Dr. Erasmus D. Skinner of Mineola, N. Y., a graduate of the Berkshire Medical College, Pittsfield, Mass., in 1858, physician to the Children's Home of Mineola, and a member of the New York State and Queens-Nassau County Medical Societies, the Association of New York and New England Railroad Surgeons, and the Associated Physicians of Long Island, died at his home on September 21, aged 77 years.

Correspondence.

SYPHILIS, GONORRHEA, AND GOUT.

To the Editor of the Medical Record:

Sir:—I have read with considerable interest Dr. Max Strunsky's article on gout in the current issue of the Medical Record. So there is no such disease as gout? Maybe. So all the old physicians (and patients) who gave such vivid and classic descriptions of gout were mistaken? Maybe. Such things do happen. It has happened more than once that things which were universally accepted without question have proved to be wrong, and it is possible that Dr. Strunsky's abolition of gout as a pathologic entity will prove of great benefit to the medical profession and their patients. But isn't it rather strange, if gout is merely a manifestation of venereal disease, that venereal specialists who see thousands of cases of syphilis and gonorrhea yearly, but very, very rarely come across a case of gout presenting the symptoms so well known to us from our various text-books? The writer has seen several cases, three of them absolutely typical, of gout of the big toe, but none of them was in a syphilitic, gonorrheic, or pyorrheic patient. That gout is much rarer now than it was formerly is admitted, but that is due to our improved and more rational mode of living.

And that brings me to another point in Dr. Strunsky's article. He says: "What is to-day was yesterday. Things do not change in this world; it is only our conception of them that changes. If one sees so little of gout now, it is fair to assume that there was very little of gout before." This, I regret to say, is a very untenable, a very erroneous statement. Things do change in this world, and particularly do diseases change. Whether a change in the symptom complex of the disease is due to a change in the pathogenic agent or to a change in the soil, that is to an improvement in our food, mode of living, etc., does not matter. But there is no question that very many diseases have lost their severity of former days and are much milder entities to-day. To mention but one disease, syphilis. We never see those horrible cases now with which our esteemed predecessors in the medical profession were so familiar. And this improvement cannot be ascribed entirely to improvement in treatment, for the disease is of a milder type in people in whom treatment has been neglected. No, I believe we will still have to let gout remain as a pathologic entity a while longer.

William J. Robinson, M. D.

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OUR LONDON LETTER.

(From Our Regular Correspondent.)

ROYAL SANITARY INSTITUTE—HOSPITAL AT BRIGHTON—PROVISION FOR INDIAN SOLDIERS TO PRESERVE CASTE IN ENGLISH HOSPITALS—KITCHENER HOSPITAL—MATERNITY AND CHILD WELFARE AND MORTALITY—WAR NOTES, RED CROSS, ETC.—OBITUARY.

London, Sept. 10, 1915.

The Royal Sanitary Institute had an interesting meeting at Brighton on Friday and Saturday. It was opened by the Mayor, under the presidency of Sir H. Tanner, and a number of Indians, khaki-clad, of various castes, and many officers of the R. A. M. C., were present. Mr. H. M. Black of the Health Committee of the Corporation, in a brief address, said no other town in the country had so many wounded soldiers staying in it, yet the health of the community was unprecedently high.

Major S. James, chief of the hospital, which is equipped for 2000 patients and is run by officers of the Indiana medical service, described the provision made for enabling Indians to live in accordance with the customs of their own country, and pointed out various conditions which must be strictly observed to prevent patients losing caste. They had to serve eight separate diets, cooked in twenty-one cookhouses in the hospital grounds, for the patients. For the staff sixteen other cookhouses were in use in the village. The Hindu cooks have to be of the same caste as the patients they cook for, or else higher. No beef is allowed inside the hospital, as the cow is a sacred animal to Hindus. Bacon and pork are also prohibited. As Indians must themselves slaughter the sheep they use for food, and in their special manner, a slaughterhouse has been provided for them. Hindus sweep off the head of the animal with a single stroke of a talwar or sword. For Mohammedans the mouth of the animal must be pointed towards Mecca.

The hospital requires 60 or 70 gallons of water per man a day—not so much when it is remembered that an Indian must bathe before prayer, and that a good Mohammedan must pray five times a day. The flooding of the bathrooms is a common trouble, as the patients neglect to turn off the water. Before the electric light was in use they persisted in blowing out the gas, so there was always danger of poisoning. As Hindus who die must be cremated by members of their own caste, a site has been set apart for this, and the funeral ceremonies can be carried out as precisely as in India.

Mr. Clement (Deputy Surveyor) estimated the consumption of water at the Kitchener Hospital as over 100 gallons a day. He added that one amiable failing of the Indian was to turn on the hot water and wait till it cooled to a comfortable temperature for bathing.

Lieutenant-Colonel Kenwood, Professor of Hygiene, London University College, read a paper on camp sanitation, on which there was some discussion. In the afternoon the members visited the Kitchener Indian Hospital and the Royal Pavilion Indian Hospital.

On Saturday Dr. Booth, M. O. H., of Nottingham, read a paper on "Maternity and Child Welfare," in which he maintained that there had never been a period in which it was more necessary to raise a healthy offspring. The stock was sound physically and morally, but we should not rule our conduct entirely by science. At least we should cultivate common sense. It was suicidal folly and immorality to restrict families. Parents of an only child might lose that through war or sickness and mourn they had no other to comfort them in old age. Dr. Duncan Forbes, M. O. H. for Brighton, followed on "Infant Mortality," and suggested that income spent on education of children should be exempt from the income tax. He further said some bachelors might be taxed. It would be a foolish policy to raise the birth-rate of any one class at the expense of another. The varying good qualities of every class should be preserved. If our best qualities were to be maintained we must give relatively equal encouragement to each class.

The war intrudes into meeting of all kinds, so it was not surprising to find it occupying much atten-

tion at the one held in support of the School of Medicine for Women, when Mr. F. D. Acland began by declaring that the supply of male doctors is insufficient to meet the demands of the present day. That being so the question arises of providing not merely for immediate but for future necessities. Mr. Acland said there are some hospitals in London where the possibility of having to close for lack of medical men has been mooted. I suppose he must have been thinking of the junior and resident officers, for I believe that there are many highly qualified men ready to take on staff appointments. He enforced his statement by adding that the war is teaching the nation the importance of medicine to the people's welfare, showing them in a terrible way the cheapness of life and at the same time realizing its value. We were determined, he said, to win this war, but we must make it worth winning. It would be so if our people were made finer and stronger than others, and to this end he held the women's school is to play a part worthy of all support.

Mr. Berkeley Moynihan, following, said if five years ago the cost of one day's war at the present rate had been devoted to research work the scourge of tuberculosis would now be hastening to its conclusion, and we should probably be free from cancer.

Lord Faber, who had presided at this meeting, in his closing remarks confessed he was convinced that this war would lead to a regeneration of the soul of England.

The Red Cross Society has required additional buildings to convert into hospitals and infirmaries for the wounded. The Women's Emergency Corps is collecting and dispatching to the front sandbags at the rate of about 5000 a week. Letters of appreciation and earnest appeals for more are being continually received. The ambulance committee, which has 150 cars at the front and has thus far dealt with 86,000 wounded, is in need of more cars to convert into ambulances. Volunteer drivers who are ineligible for military service can render valuable assistance. There are also a number of voluntary aid detachments for persons having special qualifications, especially those with some experience of army forms and methods. This statement applies to women as well as men.

Dr. Ralph W. Johnstone, Medical Inspector of the Local Government Board, died on the 26th ult., aged forty-nine. He had been British delegate at the International Health Office, Paris; was one of the Commission on Mediterranean Fever, chief delegate for Great Britain at the International Sanitary Congress, 1911-12, and plenipotentiary to sign the convention at Paris in 1912.

Progress of Medical Science.

Boston Medical and Surgical Journal.

September 16, 1915.

1. Surgical Experiences in France. W. J. Mixter.
2. The Common Shoulder Injuries. E. H. Risley.
3. Technique of Transfusion by Means of Glass Tubes. By A. R. Kimpton and J. H. Brown.
4. The Use of the Schick Test in a Children's Institution. H. Linenthal and S. H. Rubin.
5. A Case of Anterior Poliomyelitis with Multiple Paralyses, Including the Hitherto Unrecorded Involvement of the Left Diaphragm. P. H. Sylvester.
6. Auricular Fibrillation and Complete Heart-Block. P. D. White.
7. Suction and Irrigation Apparatus for the Diagnosis and Treatment of the Antrum of Highmore. J. Prenn.
8. A New Method of Treating Flatfoot. P. B. Howard.

1. **Surgical Experiences in France.**—W. J. Mixter summarizes his impressions as follows: Gunshot wounds do best if let alone as much as possible, unless there is some direct indication for interference. All war wounds except those caused by bullets which do not "upset" will almost certainly go septic. Gunshot fractures, even if septic, show remarkable powers of repair. Military surgery is so different from civil surgery that those who would expect to serve as military surgeons should have some definite training to fit them for their duties.

2. **The Common Shoulder Injuries.**—E. H. Risley emphasizes the following points: The diagnosis in shoulder injuries is not made by clear cut signs and symptoms, but only by a careful process of exclusion and *x*-ray examination in every case. The *x*-ray is of the utmost importance in every case as it often reveals the underlying cause of a persistent bursitis to be some of the frequent lesions of the greater tuberosity or acromion, which are very often overlooked unless especial search is made for them. About 60 per cent. of subacromial bursitis cases are of the occupational type. The remaining 40 per cent. have as an underlying cause in the great majority of cases, some lesion of the greater tuberosity or acromion. The diagnosis of ruptured supraspinatus tendon should not be made until at least three months of non-improvement have elapsed. Cases of long standing bursitis with adhesions give a picture identical with that of ruptured supraspinatus tendon and give extremely satisfactory results from operation. Calcareous deposits in the subacromial bursa may be spontaneously absorbed. The term insertion fracture should be substituted for the non-descriptive term of sprain fracture. Occupational neurosis *per se* does not exist in the shoulder joint. Injuries to the brachial plexus are rare. The percentage of patients benefited will be greatly increased by early exploratory operation. Slight injuries to the greater tuberosity and acromion process and arthritis of the acromioclavicular joint are of far greater importance than generally supposed in prolonging disability after shoulder injuries. The author places especial emphasis on the importance of these seemingly trivial injuries to the shoulder joint as factors to be considered in the diagnosis, prognosis and treatment.

4. **The Schick Test.**—H. Linenthal and S. H. Rubin note that of 126 children, ranging in age from 5 to 16 years, thirty-six were found susceptible to diphtheria and ninety were found immune. Antitoxin in a dose of 750 units administered to the non-immune produced an immunity which did not last over four weeks in 50 per cent, in several as long as eight weeks, and in six children the immunity conferred by the antitoxin persisted after five months. With the exception of the six children with the persistent antitoxin immunity and one child who gave a negative reaction the first time and a positive reaction the second time, the results of two tests, five months apart, were uniform. The test is of great value in determining susceptibility to the disease and thus serves as a guide to determine in the event of exposure to diphtheria, who should and who should not receive prophylactic doses of antitoxin. Persons naturally immune will thus be saved the annoyance and the possible disagreeable results apt to follow the injection of horse serum.

New York Medical Journal.

September 18, 1915.

1. Gynecological Aspects of Backache. G. W. Kosmak.
2. Backache from the Standpoint of the Neurologist. M. Neustaedter.
3. The Influence of Civilization upon Insanity. M. J. Karpas.
4. Röntgen Rays in the Study of Gastric Diseases. F. J. Dever.
5. Foreign Bodies in the Conjunctiva and Cornea. A. Brav.
6. The Hygienic Features of School Lunches. D. B. Armstrong.

7. The Maintenance Diet for Adults. R. H. Rose.
8. Intraspinous Injection of Neosalvarsanized Serum. D. T. Miller.
9. The Formation of Urinary Calculi. B. G. R. Williams.
10. The Cancer Problem. J. W. Long.
11. Refraction in School Children (with One Chart) A. S. Tenner.
12. Hydatidiform Mole. J. F. Robertson.
13. The Indications for Surgical Treatment of Hyperthyroidism. T. Jameson.

1. Gynecological Aspects of Backache.—G. W. Kosmak states that when backache has been determined to be due to a retroverted uterus, relief ought to be obtained within a comparatively short period after the restoration of the uterus, if movable, to a more favorable position by the insertion of a pessary. Before this is done, however, it is well to do away with all evidences of pelvic inflammatory conditions. If exudates in the perimetrium are present, the application of astringent and sedative tampons at regular intervals, together with the use of hot prolonged douches, must be employed before pessaries are made use of. Pelvic tumors, including fibroids, annexal disease, broad ligament cysts, or collections of pus in the pelvis must be taken care of in the accepted manner. Inflammations of the uterus from any cause, whether acute infections or produced by subinvolution, need to be brought to a condition of subsidence before relief may be obtained. If it is determined that the backache is due to a dislocation of the sacroiliac joints, absolute rest in bed with the application of adhesive plaster strapping, or in the very severe cases a plaster cast may be necessary before a cure can be secured. In the milder cases the application of a tight pelvic band which is worn constantly by the patient will do much to overcome the distress. Similarly the wearing of low heeled shoes will do much to overcome a false position of the spine which often increases the pain in sacroiliac luxations. Coccygodynia may be treated by conservative or radical measures depending on the severity of the case. In the milder forms hygienic and medical remedies, including the application of the electric current, will do much to alleviate the distress. Attention to the bowels and any hemorrhoidal conditions present will also act in a favorable manner. Where these measures fail, and especially where a deformity of the coccyx can be elicited on examination, it may be necessary to remove this appendage. Sedatives, including morphine, chloral, etc., should be employed with the greatest care, as the complaint is apt to be a chronic one and the necessity for continued administration may lead to unfortunate consequences. This common complaint in women should not be dismissed without due attention to the detailed findings in every case that presents itself. A diagnosis as to the etiological factor or factors in each instance must precede any method of treatment. It is possible that two or more causes may be present in the individual case and these must be treated in order. The mere finding of a gynecological lesion is not sufficient finally to determine the treatment.

9. The Formation of Urinary Calculi.—B. G. R. Williams in a series of very simple experiments has ascertained that a deposit of certain salts in the urinary tract may be influenced indirectly by over-plus elimination, concentration of the urine, the presence of organic matter, and so on, but that a deposit *in vivo* is directly accounted for by the action of certain ferments, doubtless of microbic origin.

11. Refraction in School Children.—A. S. Tenner notes that myopia is a condition rarely present at the beginning of school life and gradually increases with the age of the child, so that at the age of sixteen years almost one-half of the cases have more or less myopia. Children with hypermetropic conditions became myopic, the percentage of emmetropia or normal eyes remaining about the same. The correction of the hypermetropia and astigmatism with the constant wearing of the correcting glasses will prevent the development of myopia in many instances. Myopia in its high degrees becomes more than a mere handicap in life's race, producing degenerative changes, detachment of the retina with ultimate total loss of sight; therefore, apart from the relief and improvement in vision afforded by the wearing of glasses in cases of hypermetropia and astigmatism, the early refraction of children to prevent the development of myopia is most important. Every child before beginning school life should have its refraction estimated. If correcting glasses are required, they should be worn. If a child has a high degree of hypermetropic astigmatism, mixed astigmatism, or myopia of medium or high degree, with vision after correction of only 20 50 or less, it should be placed in special classes with a curriculum that minimizes the amount of near work. London has already taken such a step, several schools having special classes for myopes. There should be close cooperation between school authorities, school nurse, and school doctor on the one hand, and ophthalmologists on the other. Education boards should employ some one interested in the conservation of vision of children, preferably an ophthalmologist, in an advisory capacity. Such an officer could work to improve many existing defects, such as improper desk adjustments and poor lighting. The regulation of type and paper in school books is another matter to come under such an officer's control.

12. Hydatidiform Mole.—J. F. Robertson outlines the treatment of this condition as follows: If a positive diagnosis is made, evacuate the uterus immediately. Uusually a tampon in the vagina stimulates contractions of the uterus sufficiently to cause expulsion of the mass. The uterus is then cleaned out gently with placental forceps and packed with sterile gauze for twenty-four hours. The patient should be kept under observation for years; one should look especially for menorrhagia or any irregularities in the menstrual flow. If menorrhagia is present, the uterus should be curetted and the scrapings examined microscopically. In case of doubt a hysterectomy is the wisest procedure.

Journal of the American Medical Association.

September 18, 1915.

1. Intraurethral Operation for Pathological Conditions in the Prostatic Urethra and at the Bladder Neck. G. MacGowan.
2. Nitrous Oxide Analgesia in Obstetrics. Its Advantages Over the Freiburg Method. C. H. Davis.
3. Morphine and Scopolamine Amnesia in Obstetrics. J. O. Polak.
4. The Treatment of High Blood Pressure. A. R. Elliott.
5. Infantile Scurvy. II. A New Aspect of the Symptomatology, Pathology and Diet. A. F. Hess.
6. Further Observations on the Fate of Free Bone Transplants. W. L. Brown and C. P. Brown.
7. Observations on the Intracutaneous Reaction of Schick in 455 Infants and Children. R. D. Moffett and A. C. Conrad.
8. Myositis Ossificans Traumatica. O. M. Shere.
9. Trachea Position. G. B. Webb, A. M. Forster and C. B. Gilbert.
10. Cases from the Skin Clinic of Leland Stanford, Jr., University School of Medicine. W. E. Alderson.
11. Adenoma of the Breast. J. L. Bubis and A. Graham.
12. Gastrointestinal Studies. X. An Investigation of the Gastric Residuum in Over One Hundred Normal Cases. C. C. Fowler, M. E. Rehfuss and P. B. Hawk.
13. The Fallacy of the Indiscriminate Internal Use of Bulgarian Bacillus, with Some Evident Dangers. O. Smiley.
14. Foreign Bodies in the Throat. T. McS. Barrett.
15. Local Anesthesia in Intravenous Injections. J. H. Stokes.
16. Irrigating Nozzle for Cystoscopy—Modification of the Young Urethroscope—Holder for Fulguration Wires. J. W. Churchman.
17. Method of Finding Tubercle Bacilli in Spinal Fluid, and the Cell Count in Tuberculous Meningitis. J. Roby.
18. An Improved Blood Cell Counting Chamber. C. C. Bass.
19. A New and Handy Inoculation Needle. F. M. Wood.
20. Recent Simplifications of the Syringe Method of Transfusion. L. J. Unger.

2. **Nitrous-Oxide Analgesia in Obstetrics.** — C. H. Davis cites the following advantages of this method. Nitrous oxide and oxygen constitute the safest of anesthetics. Given to the stage of analgesia they may be administered with safety over long periods of time. Nitrous oxide can cause death only by asphyxia. Dentists give it to the stage of analgesia to thousands of patients every year. It is quickly eliminated and has no deleterious effects on mother or child. In no case does the analgesia lengthen labor, but rather shortens it because of better assistance on the part of the mother. The Freiburg method may be used only by the specialist, while nitrous oxide and oxygen analgesia may be employed safely and efficiently by all. It is as safe in the home as in the hospital. It may be used in all classes of cases, the results varying with the cooperation of the patient and the skill of the obstetrician. It gives an increased control over the patient, in that there are none of the hysterical outbursts so often seen in the delivery room.

3. **Morphine and Scopolomine Amnesia in Obstetrics.**—J. O. Polak concludes that the twilight-sleep state is a reality and is applicable in any labor in which there is no primary inertia, marked pelvic contraction, or the presence of obstetrical accidents. It is especially applicable to nervous women of the physically unfit type. It is a valuable adjunct in the management of borderline contractions, for it allows the woman a full test of labor. It is distinctly a first-stage procedure and bears the same relation to the first stage as chloroform and nitrous oxide bear to the second stage; it relieves the pain but does not inhibit the progress of labor. It is particularly useful in cardiac cases as it relieves the nervous apprehension and secures dilatation with less muscular effort. It diminishes the shock of labor, whether that labor be normal, prolonged or operative. It does not diminish the milk supply. It does not predispose to postpartum hemorrhage. It does decrease the number of high forceps operations. And, finally, it has a distinct place in hospital obstetrics and should be tried out by those who have control of sufficient material definitely to determine its position in obstetrical practice.

5. **Infantile Scurvy.**—A. F. Hess finds that the pathology of infantile scurvy, including Barlow's classical account, is almost entirely devoted to a description of the lesion of the bones; little or no mention is made of the heart, the lungs and other internal organs. On the clinical side, attention focused on the evidence of hemorrhage—in the gums, beneath the periosteum, in the urine, etc. In several instances, definite cardiac enlargement was ascertained by means of physical signs and Roentgen examination. Necropsies also show that the heart in some cases is hypertrophied and dilated. The examinations made during life, as well as those carried out after death, demonstrated that this enlargement was mainly of the right ventricle. Another symptom which should be accorded greater significance is edema, which is almost always present to some degree. This occurs early in the course of the disease and involves most frequently the eyelids. It is often manifested as a firm edema over the lower end of the tibia, infiltrating the skin, and is readily overlooked, as it does not pit on pressure. This extravasation, which is due to a nutritional disturbance of the smaller vessels, may also infiltrate the muscles. When this occurs in the thigh and causes swelling, it may be mistaken for the typical subperiosteal hemorrhage. It would also seem probable that the nerves are involved in infantile scurvy. The knee jerks are increased, and there are indications of superficial tenderness of the limbs and neuroedema of the optic disks. In the light of this symptomatology and pathology, infantile scurvy is supposed to assume actual relationship to beriberi, in which the right heart is also hypertrophied and the nerves invariably involved. This correlation is emphasized still further by a dietetic test modeled after the treatment of beriberi, which, as is well known, is brought about by a diet of polished rice which has been deprived of its pericarp, and is cured by the addition of rice polishings to the diet. In the author's study, the addition of middlings—the pericarp of the wheat—caused in many instances a prompt amelioration of the symptoms, although it did not suffice to cure the disorder. This indicates the advantage of giving a cereal which contains the outer layers of the grain when the diet includes no other antissorbutic food.

6. **The Fate of Free Bone Transplants.**—W. L. Brown and C. P. Brown point out that in all of their free transplants, either with or without peristeum, into the muscle, subcutaneous tissue or omentum, were uniformly absorbed if sufficient time were allowed. This occurred regardless of the size or age of the transplant, the sizes ranging from one-fourth grain to an entire ulna. All of their scapular spines completely covered with periosteum were invariably absorbed. A review of the earlier clinical cases of McWilliams, reported to disprove Murphy's theory that transplants in contact with living osteogenetic bone always become united, indicates that the operations were performed by faulty technique as compared with the present standards. The same also applied to his experiments cited under the same head. They did not have sufficient contact and immobilization to secure primary union. In the author's experiments with free transplants, those covered with periosteum seemed to be absorbed about as rapidly as those without, though experiments of McWilliams, Phemister, and Davis and Hunnicutt indicate that the periosteum is a protection from absorption to both free grafts and contact grafts. The periosteum is evidently a protection to the process of regeneration and union between the graft and parent bone, preventing the ingrowth of fibrous tissue, exactly as a nerve sheath is a protection to the reperative process in peripheral nerves. From a study of their own experiments and those of others, the authors do not believe that the same interpretation should be placed on the behavior of the single free transplant, and multiple transplants in contact with one another. The latter seem to have an influence on the life and reproductive capacity of the grafts. The authors do not believe it has been proved that the periosteum is an important factor in the restoration of circulation in the graft. On the other hand, the indications are that it is a protection to the free graft from the circulation and absorption, and performs the same function for the contact graft, while circulation is being established from the living bone, its regular source of blood supply. As the periosteum has slight vascular connection with the bone, it is hard to understand how it assumes this particular function in the transplant. The authors do not believe that a free transplant should be considered as permanent except after several years, or that it lives as long as its host. Otherwise, it would be of no clinical value.

The Lancet.

September 4, 1915.

1. Leprosy, with an Account of a Case. C. M. O'Brien.
2. On Phantom Aneurysms. S. West.
3. Further Experiences in the Treatment of Gunshot Wounds of the Femur by the Modified Thomas's Splint. C. Wallace and B. C. Maybury.
4. Notes of a Case of Undulant Fever Treated by an Autogenous Vaccine. S. A. Owen and H. B. Newham.
5. The Use of Quinine in the Treatment of Experimental Gaseous Gangrene; with Notes on the Value of Quinine Hydrochloride as a General Antiseptic. K. Taylor.

6. Observations on Some of the Agglutination Reactions of the Blood of Soldiers Inoculated against Typhoid Fever. D. I. Dakeyne.
7. Brain Lipoid as a Hemostatic. A. D. Hirschfelder.
8. Economy in Food During War. A. K. Chalmers.

5. Quinine in Treatment of Experimental Gaseous Gangrene.—K. Taylor states that quinine has shown a marked bactericidal activity against the gas bacillus. It has inhibited the growth of the latter *in vitro*, where it is ten times as effective as carbolic acid. It has reduced the mortality from gaseous gangrene in animals from 100 per cent. to 41 per cent. Quinine has shown strong laboratory evidence of value as a general antiseptic. Its general bactericidal power is higher than that of carbolic acid. It is especially effective in a menstruum of pus. It does not damage healthy tissue in local injections of effective concentrations. It is known to produce local anesthesia, frequently a desirable result. It produced no symptoms of intoxication in the animals treated. It is used in hypertonic solution. It shows a strong antitryptic action *in vitro*. Upon the evidence of these experiments a 1 per cent. solution of quinine hydrochloride is now being tried in the treatment of gaseous gangrene and other infections.

6. Agglutination Reactions after Anti-Typhoid Inoculation.—D. I. Dakeyne finds that a man inoculated twice has a much greater chance of developing and retaining a reaction than one inoculated only once. There is a gradual diminution in the reactions as the result of the lapse of time. This is specially marked at the end of the eighth month. Only one case out of nineteen examined within a month of incubation was found negative. This man had been inoculated once only in France, and his serum, though giving no reaction with the *B. typhosus* used, gave a marked reaction with a strain of the *B. paratyphosus B*. There was no history of paratyphoid infection. If this case be excluded, all those examined within a month of inoculation gave a reaction. It appears that after the end of the first month the reaction is liable to disappear rapidly.

7. Brain Lipoid as a Hemostatic.—A. D. Hirschfelder notes that Howell has shown that the socalled fibrin ferment is not a true ferment at all, but a lipoid substance which seems identical with the diphosphatide kephalin, first isolated from the brain by Thudichum. Since Fonio, on the staff of Kocher, and others have shown the wide usefulness of local applications of fibrin ferment as a hemostatic in rhinological, gynecological, and surgical conditions, and A. F. Hess has found that tissue extracts which are rich in thrombin (especially brain and liver extracts) injected subcutaneously are of great value in the treatment of hemorrhagic conditions in children, it seemed of interest to determine whether a similar usefulness might be found for lipoids derived from the brain. Fonio's fibrin ferment is derived from the layer of centrifugalized blood which contains the platelets and is therefore present in relatively small quantities. The kephalins, on the other hand, are present in relatively large quantities in brain tissue. They are only slightly soluble in cold alcohol, but readily soluble in ether. For the purposes of military surgery it is important to obtain an active substance by the simplest possible method. In the author's experiments it was first used for stopping hemorrhage from the vessels of the skull and dura of the rabbit in a class experiment in which the action of drugs on the exposed pial vessels was being tested. It was found that when a trace of lipoid was smeared over an oozing surface of bone and a gauze sponge held for compression for one-half minute to two minutes, the oozing of blood ceased much more rapidly than it did in corresponding areas where no lipoid was applied. Equally satisfactory results were obtained upon rabbits' jaws, from which the entire teeth and alveolar processes were extracted. The lipoid accelerated clotting and left the denuded surface of the bone as a clean surface with a thin layer of glistening fibrin. When the lipoid is applied to a region traversed by an eroded artery of medium size, however, the cessation of bleeding is not nearly as striking as when the lipoid is applied to surfaces of oozing from capillaries, because the force of the blood pressure in the artery pushes the clot away before it has time to become firm and adhere. When, however, the bleeding occurs in a pit or trough between tissues, so that the blood can form a little pool, the result is quite different. The fibrin ferment action of the lipoid becomes manifest in from one to two minutes, and in normal mammals the entire mass of blood becomes transformed into a clot which is decidedly firmer than that which sets in spontaneously, and the resistance which this firmer clot offers to the blood stream hastens hemostasis.

Berliner klinische Wochenschrift.

August 9, 1915.

Anti-Mosquito Campaign in Germany.—Zucker states that 1915 was a mosquito year by reason of the unusual heat of the summer. In the same class were the years 1906, 1907, and 1911. Mosquitos amounted to a severe hardship in the Crimean and Russo-Japanese wars, although in the latter the plague was largely discounted among the Japanese by precautionary measures. At the front in the present war there are active four species of culex and one of anopheles. The culex pipiens is the chief offender. The edema from its sting is due to the presence in its saliva of formic and lactic acids. Secondary infection of the stings is not uncommon. The insect should not be killed while sucking blood by slapping it, for then its snout is driven further into the tissues. The first bites are the most severe; in fact a sort of skin immunity develops in time. Certain measures have been in vogue for years for waging war against the insects but they represent a mere jumble and are based largely on ignorance of mosquito biology, the latter being as yet but imperfectly known. There are many substances which keep mosquitoes away from the person. Aside from screening, air draughts and ordinary flypaper, there are the chemical substances—tarry oils and oils of certain flowers. Of special value are the alcoholic extract of insect powder, oil of clove-pink, or gilliflower, oil of cloves. Certain powders are useful for fumigation; these contain niter, valerian, capsicum, etc. Lime twigs placed in flower pots filled with earth are extensively used in some localities. The best applications for bites are alkalies, especially in the form of soapsuds which have some penetrative power. Alkalies neutralize the acids already mentioned and keep the skin supple. Menthol or thymol ointment or solution is a good followup application and benzine or benzol is useful for reducing the wheals.

Clinical Experiences with Tetanus on the Western Front.—Klieneberger, despite the experience of a year with war tetanus, was able to save but 5 out of 31 cases which developed about the same time in a number of hospitals. But 3 of the patients had received immunizing injections and two of these died of hyperacute tetanus, of so severe a type that nothing could have saved them. The treatment of all the cases was intensive and the best that could be said of it is that it did no harm. Death did not occur as a rule from the primary intoxication of the disease, but from the original injuries, sepsis, pulmonary complications and heart failure. The five survivors showed the longest incu-

bation periods. The chief characteristic of the entire material was the steady, evolution of the disease. This is in marked contrast to the irregular and salatory character of many reported cases, in which exacerbation and remission are in evidence. The deadly character of these cases is associated by the author with unknown factors connected with the weather, etc. They all developed at about the same time but without real cumulation for they appeared in scattered localities. If this view is correct there must always be cases which even under most favorable conditions do not respond to treatment. Naturally many will insist that prophylaxis was almost entirely left out of the case, for in 90 per cent neither before the battle nor after injury was antitoxin given.

Münchener medizinische Wochenschrift.

August 10, 1915.

Influenza as Based on Autopsies.—Hubschmann regards this as a timely subject because influenza is one of the great war scourges, responsibility for the prevention of which rests upon the shoulders of the physician, who is no less important in warfare than the surgeon and maybe much more important when great plagues flourish. Now that Pfeiffer's bacillus is recognized as the cause or a cause of influenza, we have something tangible to stand on in pathological reports. On the other hand this germ may behave as a saprophyte, while the number of microorganisms which are able to cause grippe like syndromes is constantly increasing, and includes perhaps a series of unfilterable viruses. The picture of influenza is more labile than that of any other affection. The author enumerates hemoglobinophilia as highly characteristic of epidemic influenza when present; but that only in cold weather is this phenomenon in evidence. The author examined a series of miscellaneous cases between January and March, 110 in all, using smears of bronchial mucus. In 40 cases the latter proved to be sterile, in 70 not sterile. In 31 cases Pfeiffer's bacillus was present in pure culture while in 39 it was associated with other germ life. In other words over a third of these 110 cadavers had had influenza or were carriers at the time of death. But cultures from the cadaver often fail, and the author seems inclined to believe that Pfeiffer's germ is not often a saprophyte. In regard to a symbiosis the latter bacillus has been found in the bronchial mucosa of a true typhus, which, as is known, often simulates influenza at the outset. Returning to hemoglobinophilia and genuine influenza the necessary connection has not as yet been worked out. If the present belief is upheld in the future we should possess a first class criterion for genuine epidemic influenza and be able to differentiate the latter from the pseudo-types, such as "pneumococcus influenza." There is a vexed question which bacteriology should finally answer, to wit: may severe influenza (sporadic) exist when there is no influenza epidemic? We also have special clinical types, such as an "influenza sepsis" and an influenza bronchiolitis and pneumonia, which require correlation. It is asserted that in only 50 per cent of true influenza are there Pfeiffer's bacilli in the bronchial mucus. Such fluids show some error in the conception of the disease, and seem to point to the possibility that Pfeiffer's bacillus is not pathogenic for true influenza. But upholders of this view like Klieneberger believe that Pfeiffer's bacillus is pathogenic for different local affections of the bronchi and lungs. The author proves to be slightly skeptical in the whole, as if our researches into the nature of influenza had best begin anew. But he sees an undoubted connection of some sort between Pfeiffer's bacillus and epidemic influenza which he thinks will some time be proved to be that of cause and effect.

Deutsche medizinische Wochenschrift.

August 12, 1915.

Salvarsan Fatalities.—Fischer concludes his long serial article on this subject with the following summary: It is positively known that salvarsan sometimes causes local necroses and hemorrhagic encephalitis. Other accidents, including fatalities, which follow upon salvarsan injections are positively not due to the medicament. There belong all cases in which no lesions, not even microscopic, and no evidence of chemical action can be discovered. Some of the fatal cases are more readily traceable to mercury when the latter has been given with salvarsan. In one suspected case of this sort, proof was forthcoming. It is now known that salvarsan does not produce acute yellow atrophy of the liver which may be due directly to the virus of syphilis. The toxic action of salvarsan does not correspond to arsenical poisoning. Cases whoch appear to justify this conclusion have been imperfectly studied.

Treatment of Syphilis with Salvarsan Alone.—Krefting claims that mercury adds nothing to the efficacy of salvarsan in the treatment of syphilis. Primary syphilis can almost certainly be cured with from three to five injections of salvarsan with fourteen days interval, the doses being large. Definite rules for the salvarsan treatment of secondary syphilis are not readily laid down. The remedy should be used for a long time and should be persisted in for a time even should the war become negative. There is no universal contraindication for salvarsan treatment.

Epidural Injections.—Enderle recommends these in old, recurrent cases of sciatica which have proved rebellious to all other plans of treatment, and also as an adjuvant to other methods in all cases of neuralgia of the lower extremities, the gastric crises of tabes, the enuresis of childhood and as a sedative in all functional ailments of the urogenital organs. The technical execution is easy and with the usual precautions quite safe. With patient in the knee-elbow position 20 cm. sterile physiological saline infusion are injected into the sacral hiatus, but not too deeply. The author has as yet had no untoward result.

Treatment of Typhoid Fever with Besredka's Vaccine.—Szécsy uses this vaccine when it is not more than 10 or 12 days old. He gives it in a certain dosage daily for four consecutive days, injecting it under the skin of the abdomen. The doses increase according to a certain prearranged scale. Abortive results are not claimed, but the duration of the disease is shortened by 6 to 8 days including the four vaccination days. Relapses are diminished in frequency and when they develop indicate one or two extra doses of the fourth day or maximum size; upon which they terminate by crisis or two day lysis. The mortality of the series treated was but 2 per cent of 58 cases.

Analeptic Action of Calcium and Bromine Ions.—H. Januschke and M. Masslow conclude that calcium ions in large doses are not capable of counteracting the acute hyperexcitability of the motor centers in the brain, medulla, or spinal cord, or the motor nerve endings in the skeletal muscles. The combination of calcium and bromine ions in acute cases of motor excitability is not more effective than the use of bromine alone; nor is calcium bromide more effective than sodium bromide.—*Zeitschrift für die gesamte experimentelle Medizin.*

Insurance Medicine.

The Scope and Function of the Medical Department.—In a paper read before the fifth mid-year meeting of the Medical Section of the American Life Convention Charles F. Coffin pointed out that it was quite apparent that the scope of the medical department of a life insurance company was an exceedingly wide one. First, it had its own specific place as a department of the corporate organization. It had its own specific daily duties growing out of its definite work. It was also quite apparent that it had a tolerably definite relation to the actuarial department, an important relation to the legal department, and a vital relation to the agency department.

The following extract from a paper read at the St. Paul meeting by Dr. DeVancy was read: "A medical director who confines his duties to merely looking over papers and appointing examiners does not earn his salary, if it is very large. His position is one of trust, requiring judgment, honesty, and unlimited diplomacy. If I were organizing a company, I would select, as medical director, a man who, along with his medical knowledge, possessed good business judgment and marked diplomacy, for his duties are largely executive, requiring these qualifications. A medical director who is not in himself a stimulant to the business of his own company is more or less of a failure. He should be a living, vital, active force in the official staff of the company." He also quoted Mr. Hopp, who said at the San Antonio meeting: "The ultimate object of all activities in the medical department, is the attainment of a favorable mortality experience. Success in that direction rests chiefly upon a careful selection of risks and an effective control of medical examiners." As a careful selection of risks, so far as the medical department is concerned, begins with the duties of the examiners, the efficient control of medical examiners may well claim our consideration as the one great direct responsibility of the medical department; and it is the responsibility receiving in the majority of cases the minimum of systematic attention.

After stating that the duties of a medical director were more onerous by far than is recognized generally the writer quoted Dr. Talbot, who at the New Orleans meeting, said: "As a rule, the best examiners for large towns or cities are young men with hospital training, who have not been in practice long enough to have their time fully occupied and whose hospital training offsets the short time they have been in practice," and then went on to say that they should be intelligent and well educated, both generally and professionally. They should be appointed only after a careful inspection and only such physicians should ever be appointed as show some aptitude for the work required; an interest in the business of life insurance, and a willingness to study its general principles; a responsiveness to the needs of the field, a clear conception of his duty to the company, and a genuine confidence in the strength and character of the company in whose service he enlists.

The examiner selected must now be trained and this training or special education must be so planned, so applied, and so persistently applied as to produce, as nearly as possible, the ideal to which reference has heretofore been made.

In the second place, the medical department had a tolerably definite relation to the actuarial department. It was further pointed out that the medical department had an important relation to the legal department, and finally attention was drawn to the vital relation of the medical department to the agency department. The medical department and the agency department, or to be more specific, the medical director and the agent were so closely related that each was useless without the other. It was important, it was indispensable that harmony and a spirit of sympathetic cooperation should be established and maintained between these two strategic persons.

The agent's work was hard. Competition was keen and not always ethical. The agent, as a rule, was on a commission, not on a salary, and a rejection of an application was, to him, a serious matter. He was subjected to great strain, to much annoyance by the indifference and indecision of his prospects; to discouragements and obstacles before which most of us would retire defeated, if not routed. These were facts which a true medical director would never forget and they furnished a basis for sympathy and patience even when the fatal word "declined" must be written across the application. The relation between the agent and the medical director must not only be friendly and sympathetic: it must be personal as far as possible.

Carelessness in Physical Examinations for Life Insurance.—In the *Providence Medical Journal* Dr. W. H. Peters writes on this subject. He says that we know that comparative indifference to physical tests on the part of many medical examiners for life insurance is likely to occur. It is often overlooked purposely by the insurance agent in the field, the man who gathers in the risks. To those agents life insurance provides a livelihood first of all, but they are all very practical men. They do not of course, want to see the company they represent lose any applicant. It is a hard blow to them, and one they are going to avoid, if possible, to have a prospect they have been working on hard for weeks, months, even years to get to the point of signing an application for insurance turned down by the careless examiner in the company's service just when the well-earned commissions are almost within their grasp. The author says he has witnessed life insurance examinations for good-sized policies by medical men of repute that were valueless. The examiners are not strict enough; they pass over in their reports a heart a little wobbly, or a little sugar in the urine, and so on. All they think is necessary is to use the stethoscope, go through the motions of putting a blood pressure machine on the arm, make one simple test for albumin, and let it go at that. Some examiners are very strict, letting no point escape them. There are a few who believe it their bounden duty to protect the company against risks that might die after having paid no more than one or two premiums.

As the agent who receives the application can in most cases pick and choose from the list of the company's examiners the doctor to whom he may send his risk it soon follows that the strict medical examiner keeps long on conscience while he gets short on assignments and the consequent fees, while the careless examiner may lose a little sleep in worrying over his reports, but is able to soothe himself with the larger share of the assignments. The applicant for life insurance, Peters says, should be thoroughly examined by a physician competent to make all necessary physical and laboratory tests, even if it takes three or four days or a week.

Book Reviews.

Disease of the Arteries, Including Angina Pectoris. By Sir Clifford Allbutt, K.C.B., M.A., M.D., F.R.C.P., F.R.S., Hon. M.D., LL.D., D.Sc., etc., Regius Professor of Physic in the University of Cambridge, Fellow of Gonville and Caius College; Hon. Fellow New York Acad. Med., etc. In Two Volumes. Price, $9.00 net. London: Macmillan & Co.; New York: The Macmillan Company, 1915.

In the preface to this work the Regius Professor of Physic at Cambridge points out the sense of imperfection that haunts the composer throughout his work, which is keenest when the task is completed, and apologizes for the faults of the book. Sir Clifford Allbutt, however, need have made no apologies. He is one of the greatest masters of the subject on which he writes in the world, in fact, it may be said that he has made the subject almost his own. His contributions to the literature of the arteries have been numerous and have sufficiently testified to his wide and intimate knowledge thereof. The greater part of the two volumes is devoted to a consideration of arteriosclerosis, 680 pages; to aortitis is given 70 pages, and to angina pectoris 330 pages.

Arteriosclerosis proper is described as "Subintimal hyperplasia with splitting of the internal elastic layer." To some extent in the arrangement of the chapters on arteriosclerosis the cart seems to have been put before the horse in that the chapter on morbid anatomy of arteriosclerosis comes after the description of its causes, its symptoms, and occurrence in the kidneys. However, this of course detracts nothing from the merits of the work. Arteriosclerotic sufferers, from the clinical point of view, are divided by the author into hyperpietic and involutionary or decrescent. From the standpoint of morbid anatomy arteriosclerosis is described as a degenerative process. Emphasis is laid on the structural design of the arteries and especial stress is laid upon the fact that extensive vascular degeneration often occurs without either chronic elevation of the blood pressure or its constant accompaniment, cardiac hypertrophy.

The best part of the book is that which deals with angina pectoris. It is indeed a masterly exposition of the writer's own knowledge of the subject, presenting, in effect, all that is known of the matter. Sir Clifford displays his critical acumen throughout the work, in selecting that which is true and discarding that which is false or which is open to doubt. It goes without saying that from the purely literary standpoint the work is beyond cavil. The language is English of the best, easy flowing and yet expressing the writer's views without redundancy. It will not be too much to say that the work will stand the test of time as a model both of knowledge of the subject and of literary merit. The books are well bound, well printed and are in every respect worthy of the author and subject.

The Popes and Science. The History of the Papal Relations to Science During the Middle Ages and Down to Our Own Time. By James J. Walsh, K.C.St.G., M.D., Ph.D., LL.D., Litt.D., Sc.D. Professor of Physiological Psychology at the Cathedral College, New York. Notre Dame Edition. Price, $2.00 net. New York: Fordham University Press, 1915.

Those who are familiar with this work will welcome it in its new edition which has been enlarged by the addition of 100 pages of appendices. These additions embody numerous documents, brief biographies of the Papal physicians, and a special section devoted to Draper's "Conflict between Religion and Science." Dr. Walsh's accepted position, not only as a churchman, but as a physician and a student of history, lends added weight to the forceful argument here presented. The book has already found a wide circle of readers and in its new dress will no doubt find its field distinctly broadened.

Urgent Symptoms in Medical Practice. By Robert Saundby, M.D., Edin., Lieutenant-Colonel, R.A.M.C. (T.) Price, $2.10 net. New York: Longmans, Green & Co.; London: Edward Arnold, 1915.

The contents of this volume completely belie its title. The symptoms described in it are not all urgent by any means and diseases are described as well as symptoms. It is "intended to be a handy work of reference for the busy practitioner or student who desires to learn quickly, without the delay and labor of consulting several volumes, the significance of a particular symptom." The author has missed the opportunity of producing a really valuable book by not living up to the title. One can readily imagine how much use would be made of a work which discussed symptoms only and told the diseases in which they might be found. Instead we have here an abridged encyclopedia or extended dictionary containing brief articles on many topics and including more or less treatment. The result is often far from satisfactory. The length of the article is often out of proportion to its apparent value, as, for instance, the one on albinism is longer than that on acidosis. Leucocytosis gets less than one page and is extremely inadequate, and Gait is given four lines. There are some grave errors, as where under the heading Monoplegia the author says that anterior pollomyelitis is caused by the meningococcus of Weichselbaum. Under hematemesis is discussed the treatment of bleeding piles. In fact, one gets the impression that the author started out with a worthy idea, but either found the job too big for him or else had too little time to finish it properly.

An Introduction to the Study of the Endocrine Glands and Internal Secretions. Lane Medical Lectures, 1913. By Sir Edward Schäfer, Regius Professor of Physiology, University of Edinburgh. Price, 75 cents. Stanford University, California. 1914.

In this monograph Professor Schäfer gives us an authoritative account of what is known of the ductless glands and the internal secretions. The book is evidently a copy of the lectures as they were delivered, for there is neither preface nor index. The lectures are entitled: 1. General considerations regarding internal secretions and the organs which furnish them. 2. The function of the thyroid apparatus. 3. The functions of the adrenal apparatus. 4. The pituitary body or hypophysis cerebri. 5. The internal secretions of the pineal gland; of the alimentary mucous membrane; of the pancreas, and of the sexual organs. The author uses the term "endocrine gland" to imply "an organ which is known to form some specific chemical substance within its cells and to pass this directly or indirectly into the blood stream." He attributes the activity of the internal secretions to "hormones" and "chalones, the former of which have a stimulating action and the latter an inhibitory action. He also introduces the word "autacoid" as a generic term to include both hormones and chalones. The work will be welcomed by all students of physiology and by all who are interested in the newer methods in therapeutics.

Alveodental Pyorrhea. By Charles C. Bass, M.D., Professor of Experimental Medicine at the Tulane Medical College; and Foster M. Johns, M.D., Instructor in the Laboratories of Clinical Medicine at the Tulane Medical College. Illustrated. Price $2.50 net. Philadelphia and London: W. B. Saunders Company, 1915.

This is a book of particularly timely interest and importance in view of the recent discovery of the pathogenic rôle of the *Endameba buccalis* in the causation of so-called pyorrhea alveolaris. The authors present a history of the investigations with reference to the amebæ whose normal habitat is the mouth. They note that in 1849 Gros described an *Ameba gingivalis*. The credit for the discovery of the *Endameba buccalis* as the cause of alveodental pyorrhea and of the favorable effect upon the lesions produced by the local use of emetine hydrochloride, belongs to Smith and Barrett who announced their results in July, 1914, although Bass and Johns made this discovery independently but reported their results two months later. The latter investigators were, however, the first to show the prompt curative action of emetine hydrochloride when employed hypodermically. In this volume they describe the etiology of alveodental pyorrhea whose specific cause they find is chiefly the *Endameba buccalis*. Secondary factors are possibly a diminution in individual resistance and chiefly a trauma to the gums with hard tooth brushes, floss, picking the teeth, etc. The morbid processes are described with the aid of many excellent drawings; the contagiousness of the disease (the common drinking cup is tabooed even in the home); the symptomatology, bleeding from the gums being probably the earliest symptom; the diagnosis, including a detailed description of the technique of examining for the specific organism; and finally the treatment and the prophylaxis. In a full discussion of the treatment the authors state that they have found that in a large percentage of cases ipecac given in suitable dosage by mouth causes the disappearance of endamebæ about as quickly as emetine given hypodermically. This book will repay reading by the general practitioner.

Society Reports.

AMERICAN CLIMATOLOGICAL AND CLINICAL ASSOCIATION.

Thirty-second Annual Meeting, Held in San Francisco, June 18 and 19, 1915.

THE PRESIDENT, DR. HENRY SEWALL OF DENVER IN THE CHAIR.

Friday, June 18—First Day.

President's Address.—Dr. HENRY SEWALL of Denver delivered this address in which he said that the scheme conceived by the founders of the society to bring together a band of workers who should systematically investigate physical forces of nature as they influenced the physiological reactions of the body did not seem to be sufficient to maintain the enthusiasm of the organization, and hence it had extended its scope to embrace practically all conceivable disorders of the human frame. After dwelling on the importance of the external environment reaction in its relation to the welfare of our minds and bodies, the speaker said there was an internal environment which came definitely with the spirit and scope originally marked out for the activities of the society, namely food and its metabolism. If it were necessary to banish from the medical curriculum every subject but one, he suspected that their practical usefulness as physicians would best be conserved if that one subject were dietetics. The meaningless and tiresome aspect which this subject had always presented had been utterly transformed in the light of the recent conceptions of intermediary metabolism, and especially of the still mysterious activities involved in the reactions of anaphylaxis. They had learned that the extraordinary manifestations of idiosyncrasy to foods and drugs were only extreme illustrations of forces common to them all. Disorder of metabolism which transformed the analysis of the most expert pharmacologist could yet often be foreshadowed or diagnosed by the every-day practitioner who but made the simple test for the presence of acetone in the urine. Acidosis, whatever its origin, was an expression of a pathological condition which it behooved the clinician to recognize, for it showed the presence of a criminal agent in the peaceful community of cells. The practitioner who would make routine tests for acetone in the urine of his patients might see many obscure conditions illuminated to the improvement of his therapeutic aim. From reports in the medical press it seemed that there was an epidemicity in the condition of acidosis which deserved definite investigation in order to determine the factors, seasonal, climatic, dietetic, or biologic, involved in its occurrence. The scientific study of diet had scarcely begun. Medical teaching on the subject of dietetics was lamentably deficient. A review of the medical literature showed very little on the subject of acidosis and that only in connection with diabetes mellitus. Here lay a rich field fallow to their plow. In speaking of the objects of the society, Dr. Sewall pointed out that their ideal should be not only happy social intercourse and intellectual uplift, but that the influence of each member should radiate far beyond the bounds of his personal activity. He should be productive. A very happy criterion of the fitness for publication of any piece of work was to be found in the query, "Does it advance medical science?" The enormous output of pathological, bacteriological, immunological, and pharmacological research had supplied them with a therapeutic armamentarium of a complexity which no man understood. This made judgment difficult. Although it was justifiable, nay imperative, that they should daily resort to the use of remedial measures of whose agents and reactions they were profoundly ignorant, nevertheless critical judgment was never to be deleted. The selfsame therapeusis might in the one case be the choice of a master and in the other of a fool. They had been reared in the teaching that to help Nature should be the guiding motto of the doctor's practice. It was not always realized that Nature held as dear the pathogenic germ as the higher organism which it invaded. As physicians they must realize that their human endeavors were simply a modern addendum to the eternal forces of evolution. In evolution there was coordinate transformation of the mental and moral with the physical attributes of man, and the practising physician must be a mind doctor and in the end his chief service was to comfort. In conclusion Dr. Sewall said that no organization was likely to duplicate the task which was theirs and expressed the opinion that it might be an advantage to appoint each year special committees for the consideration of definite subjects, such as, the alleged radioactivity properties of natural waters; the relation of the physical and chemical properties of the air in ventilation; the relations of immune sera and vaccines in the treatment of bacterial infections; the relative value of sensitized and non-sensitized bacteria in the treatment and prophylaxis, and many other themes in which they all were interested.

The Importance of the Personal Equation in the Treatment of Tuberculosis.—Dr. WILL HOWARD SWAN of Colorado Springs presented this paper, which was read by Dr. G. W. Holden of Denver. He stated that while not questioning in the least the importance of exact knowledge as to the pathology, bacteriology, and scientific data that might be available now or later, he wished to state what was evident in a body like this, that until a specific agent for treating tuberculosis was discovered, their chief aim must be to raise the resistance of the individual to the disease. They must study and treat the individual who had tuberculosis rather than the disease itself. The fact of the very infrequent incidence of tuberculosis in Colorado and other health resorts where there was an unusually large proportion of tuberculous population was good proof of the reality of acquired personal resistance. Resistance might be influenced by many factors in the person's physical, nervous, mental, and moral make-up; by his circumstances as to proper living and by his adjustment to and viewpoint of his environment, and much study was often necessary to get at the real situation. In many cases one's success would be in proportion to the care and accuracy with which this was done. Among the factors overlooked were coexistent disease and lack of sufficient food when it was supposed that the patient was getting enough. The recognition of the importance of obscure focal infections in the causation of various systemic and general diseases had brought help to some of the victims of tuberculosis and similar relief had been brought about by the removal of diseased tonsils or the cure of accessory sinus disease. It was quite certain that they often failed to appreciate how frequently weakened resistance was caused by lowered nervous and mental tone due to fatigue, grief, discontent, homesickness, and unhappiness from whatever source. The writer cited a number of cases in which these factors had played the decisive part in the progress made by the patient. Worry in any shape might do much harm. In looking over the histories of 740 cases of tuberculosis treated during the past fifteen years, 129 showed reason for believing that some form of nervous depression was at least an important causative factor, and he felt sure that it was much more commonly a cause than these figures indicated because some of the earlier histories gave no data on this point. The prolonged physical and mental rest, and the limitations necessarily imposed during a "cure" sometimes became so irksome as to be a real detriment to the patient. In such cases finding out and making available suitable mental diversion might be the means of changing failure into success. These considerations showed the need of personally taking case histories and getting into close confidence with the patient, in order that one might know all the factors in their lives which had to do with their powers of resistance. They also emphasized the need of treating the patient from the standpoint of the individual. (See also p. 562.)

Dr. J. N. HALL of Denver said the remark had been made in the paper that some patients did badly because they were not digesting their food. He had so often found than an associated appendicitis was the cause of failure to properly digest the necessary amount of food that he sometimes thought perhaps he had laid too much stress on this possibility. He thought at one time that the trouble was that these tuberculous patients had tuberculous appendicitis, but he had found that it was only ordinary appendicitis and such patients never did well until the appendix was removed. In an ordinary case of tuberculosis complicated by appendicitis it was worth while taking the risk of the operation in order to get the improved digestion which usually followed the relief of the appendiceal condition.

Dr. PHILIP KING BROWN of San Francisco said that it had been their experience at the Areouipa Sanatorium that about 10 per cent. of the patients had to have attention directed to the digestive function, and about five per cent. had to have the operation of appendectomy either considered or the appendix actually removed, and it was their practice to take as conserva-

tive a position as possible. The operation of appendectomy since it could not be done under gas anesthesia did not present such a serious problem for the tuberculous patient as formerly. In these tuberculous patients the condition of the teeth and tonsils should also be considered, and operation performed if required. In only one instance had they found a tuberculous appendix at operation. However, he believed that they should be conservative in reference to operative intervention.

Dr. W. J. BARLOW of Los Angeles pointed out that individualization which had been taken as the keynote of treatment by the author of the paper was much easier to carry out in the home than in a sanatorium. He had found that too much exercise on the part of a patient who should have been at rest might interfere with digestion, and that as soon as the patient took the proper amount of rest the digestion improved. As late as five years ago he had hesitated to operate for appendicitis on a patient suffering with tuberculosis, but he had found that these patients passed through the operation as well as a normal person. The psychological factor in tuberculosis cases was always interesting, and he felt that it was very important in every case.

Dr. JOHN M. SWAN of Rochester, N. Y., said the most important point in the paper was the emphasis placed on the importance of securing a proper mental attitude on the part of the patient, and this was not only true of tuberculosis but of every other disease. The physician was apt to expend so much energy in reaching a diagnosis in a case of tuberculosis that he had little energy left to work out the details of the case. It was the duty of the physician to help the patient adapt himself to circumstances, and this often required considerable psychical treatment.

Col. GEORGE E. BUSHNELL, U. S. A., of Fort Bayard, N. M., said it was not so easy to individualize in treating tuberculous patients in the army as in civil life. Their ideal in reference to diet need not necessarily be to get as much weight as possible but to get the patient into good condition so that he digested his food better, has perfect health and perfect metabolism. A patient might sometimes gain in weight and yet be doing badly.

Dr. G. W. HOLDEN, in closing the discussion, spoke further of the importance of the mental attitude of the patient and said it was frequently very difficult to control parents and relative of the patient who persisted in relating or writing the family troubles, financial and otherwise, to the patient. The diet of the patient also required individualization; sometimes the proteins had to be cut down and sometimes the starches, but where there were a large number of patients it was sometimes difficult to carry out the details of the diet.

Coccoidal Granuloma.—Dr. PHILIP KING BROWN presented this patient who had scalp lesions due to the coccoidal organism. The other symptoms and signs which the patient exhibited were those typical of pulmonary tuberculosis. Dr. Brown said the condition was very rare in California, though Dr. Dixon had a report of nine cases which he would present at the Pan American Congress. The lesions were somewhat like those of pellagra. It had been said that no case of coccoidal infection had been known to recover with the exception of one in which ankle was involved and prompt surgical intervention had prevented the extension of the infection. The lung symptoms were typical of tuberculosis, and the condition was not recognized until bacteriological examination revealed the nature of the infection.

Exhibition of Some Unusual Aneurysms.—Dr. PHILIP KING BROWN presented a specimen of dissecting aneurysm and gave a brief history of four cases. They were all aneurysms of the descending arch of the aorta, and in each case symptoms were present but no signs, the diagnosis having been made by the assistance of the *x*-ray.

Dr. DIXON of Leland Stanford University, said that the types of coccoidal disease were classified according to their primary lesion. Dr. Brown had spoken of one case that recovered and he also knew of one recovery. In this instance a resection of the elbow was done and a diagnosis of the condition was made after the operation, but not before. He outlined the history of another case in which a diagnosis of carcinoma of the stomach had been made. The patient died of bronchopneumonia, and after death the coccoidal bodies were found. There were findings in this case similar to those in a healed case of tuberculosis. Dr. Dixon exhibited frozen specimens and fresh cultures of the organism and also a number of specimens showing the close resemblance between the lesions of coccoidal granuloma and those of tuberculosis. Some of the cultures showed the spores, and it seemed that infection could not take place unless spores were injected. Dr. Dixon agreed with Dr. Brown that probably a large number of these cases were not diagnosed. The test for these organisms should be made in every case of clinical tuberculosis in which the tubercle bacillus could not be found.

Dr. CUMMINS of San Francisco, said he had seen a number of these cases and had studied them clinically and histologically, and it was interesting to compare them with blastomycosis. He described a case in which the patient appeared to have typhoid fever. At autopsy the gross findings appeared to be those of miliary tuberculosis, but the coccoidal organism was found and the lesions involved the lungs, spleen, liver, adrenals and kidneys. In another case the organism was found in lesions in the occipital and temporal bones, the scalp, dura, sternum, third, fourth, and fifth lumbar vertebrae, and the different viscera were involved. In another case an abscess over the left kidney showed the organisms of this disease. They must take cognizance of the fact that there were more cases of this disease in this part of the country than were being recognized. With reference to the difference between a coccoidal infection and blastomycosis a recent article in the *Journal of the American Medical Association* would clear up the uncertainty in the minds of many in regard to the difference of these two conditions.

Observations on the Blood Pressure in Cases of Dysthyroidism.—Dr. JOHN M. SWAN of Rochester, N. Y., presented this paper setting forth the results of his observations in fifty cases of dysthyroidism of varying degrees of intensity. The cases were analyzed with reference to systolic blood pressure, diastolic blood pressure, and pulse pressure. He had also studied the various factors concerned in determining the functional capacity of the heart as described in the paper which he presented at the 1914 meeting of the Climatological Association. In the cases in which the systolic pressure was higher than normal, the pulse pressure was above 40 in all. The cardiac efficiency factor was above normal in thirteen out of fourteen cases, being about 35 per cent. The percentage of the pulse pressure formed by the second phase was below 40, or could not be determined in ten out of 14 cases. It appeared to be the rule that in a case in which a high systolic pressure was determined at the first examination, such organic changes had taken place in the heart, kidneys, or arterial system that it was impossible to restore a normal condition to the circulation. The writer also included the report of a case in which he had made observations with reference to the alterations in blood pressure during and after hemithyroidectomy. Observations were made every five minutes during the operation, and after the operation other observations were made at varying intervals for several weeks. From a study of these cases it seemed legitimate to conclude that the first effect of dysthyroidism on the blood pressure was a lowering of the systolic pressure. This was accompanied by a disturbance in the pulse pressure, usually an increase. After the case had persisted for a varying period the systolic blood pressure began to rise, and after the development of cardiac hypertrophy and renal and vascular changes, the cases were converted into typical examples of chronic hypertension. The study of the various functional myocardial tests would seem to show that the myocardium was disturbed in nearly all cases, whether or not there was clinical evidence of such disturbance. During the operation of hemithyroidectomy in one case there was a sharp fall of systolic and pulse pressure and a rise in diastolic pressure. After the operation the systolic pressure again arose to a high point; but after the use of sodium nitrite it returned to a more nearly normal figure.

Dr. HENRY SEWALL of Denver said that many of their theories held well in the test tube, but clinically would not hold water. There was no subject so apparently simple as that of blood pressure, yet it presented many puzzling questions. It seemed that all the affairs of blood pressure in man had been determined before he assumed the erect posture, and it was difficult to explain the return circulation from the lower extremities on their theories of blood pressure. The physiologists were making extracts of various organs and all seemed to have a depressor effect. Howell said

that there was kinase in every living tissue and maybe it had something to do with blood pressure. All these things made the subject a very complicated one. Dr. Sewall asked Dr. Swan whether by the term dysthyroidism he meant hyper- or hypothyroidism, of what time he took the reading and whether the position of the body had much to do with the perception of the sounds.

Dr. JOHN A. LICHTY of Pittsburgh said there were several points brought out in the paper that were in accord with his experience, and yet he could scarcely reach the same conclusions as to the effect of operation on blood pressure. For instance, the operation of hysterectomy might be accompanied by a high blood pressure, and yet after a year or so the blood pressure would swing back to its usual condition. Another peculiar phenomenon was that frequently at the first consultation the blood pressure would be found high, but after the patient became acquainted with the new physician and the new régime the blood pressure would be found to be different and lower. So it seemed that it was distinctly dangerous to draw definite conclusions. The line that Dr. Swan had been observing was a very promising one, but the blood pressure should be watched in many more operations before coming to conclusions.

Dr. W. JARVIS BARLOW of Los Angeles confirmed what had been said with reference to finding a high blood pressure on first examining a patient and finding that it came down later when the patient had gained confidence. It seemed to him that the pressure findings in the operation on the thyroid were not necessarily due to operation on the thyroid, but might be found to be similar in other operations. In regard to dysthyroidism and high blood pressure, it seemed to him that the high blood pressure was due to secondary cardiovascular changes rather than primarily to the dysthyroidism.

Dr. JOHN M. SWAN of Rochester, N. Y., said that for the past three years he had been living in a thyroid country and he noticed many women with pyramidal necks indicative of thyroid abnormality, and had thus been led to make a study of this condition. He had come to the conclusion that there was no such a thing as separating hyper- from hypo-thyroidism. These conditions bore the same relation to each other as tuberculosis did to consumption. A patient was said to have tuberculosis for many years before he was said to have consumption, and the same analogy might be applied to thyroid disease, so it seemed to him that the better name was dysthroidism, though the term "thyroisis" had been suggested. With reference to the question of reading the diastolic pressure, he had had no trouble with it. He read the manometer when the sounds had disappeared. There were two methods of reading. As the blood pressure fell there was first a tap, then a murmur, and then the murmur disappeared and the tap came back. There was a point at which the tap became muffled and then disappeared altogether. Warthin said they should read when the sharp tap became muffled and others said one should read when it disappeared entirely. In his readings he took the point where the tap disappeared entirely, and he found difficulty in making it out. The study was made systematically and the conditions were the same in every observation. The patients were in recumbent position and the cuff was placed on the bare arm. Dr. Swan said he was glad Dr. Lichty had spoken of the effects of other operations on high blood pressure; he had been able to find nothing on the subject in the literature. The question as to the part played in the fluctuations of blood pressure by the results of the ether, of the operations *per se* or of both was an interesting query. Perhaps in the operation of hemithyroidectomy observed the handling of the thyroid and the possibly squeezing some of the secretion into the circulation might have had something to do with the changes in the blood pressure. In regard to Dr. Barlow's remark that the high blood pressure might be due to the secondary cardiovascular changes, his study had convinced him that the tendency of dysthyroidism was to produce a high blood pressure. He had been observing cardiovascular disease in women of the better class where infection and the excesses of tobacco and alcohol could be excluded and he had found evidences of thyroid disease that had been coming on slowly for years, so that its effects on the cardiovascular system were similar to those produced by alcohol, tobacco and other excesses.

The Physician and the Weather Bureau.—Dr. FORD A. CARPENTER of the United States Weather Bureau of Los Angeles, Cal., presented this paper, which he illustrated by lantern slides. He stated that the relation between climate and health had been recognized for at least 2,000 years. He quoted to show that Hippocrates recognized this relation. The object of his paper was to suggest means by which the medical profession might utilize the vast storehouse of climatic data accessible at Washington and at all Weather Bureau stations, to prove the readiness of the personnel of the Bureau to assist the physician to present some applications of these data from a layman's standpoint, and to offer an account of some intensive climatic studies which had been presented by the writer during the past few years. The Weather Bureau presented facts and not the ordinary health resort advertising literature. The source of the data was from the regular stations of the Bureau and from special cooperative stations. There were about 200 regular stations and about 4,000 cooperative stations scattered over the United States. The regular stations were about one to 15,000 square miles of territory. In the number of stations of all kinds California took the lead with 511 meteorological stations. Such stations were equipped with barometers, thermometers, wind-vanes, rain and snow gauges and anemometers and nearly all had sunshine records, barographs, thermographs, and other apparatus in which a continuous automatic record of the local weather conditions was registered. At each of the stations was one or more trained observers. The weather map might be most useful to the physician who kept track of the storm movements and gathered first hand information as to existing and coming weather conditions over the United States. He would soon learn to associate stormy, cloudy, and comparatively warm weather with those atmospheric whirls called "lows," and fair, sparkling, comparatively cool weather with the whirls called "highs." The indications of the weather map found many applications. For instance, one of the large California citrus fruit growers timed the shipment of his oranges so that they would have the advantage of the cool, dry weather of the weather maps "highs" in their eastern journey. There was no reason why a physician should not do likewise and by taking advantage of the weather map and advise his patient when they might travel so as to avoid deleterious weather conditions. Observations at many places were necessary before the climatology of the United States could be properly studied, and this had given rise to the Climatological Service of the Bureau. The centers of this service collected temperature and precipitation observations from more than 4,000 cooperative and other stations and published each a monthly and an annual summary, giving a large amount of climatological data for each month and for the year. The writer recommended to physicians one of the bulletins prepared by their scientific staff entitled "Climatology in the United States," which was to be found in the station library of any Weather Bureau office. In addition to placing these records at the disposal of the applicant, the Weather Bureau officials would be prompt and courteous in receiving applicants for data whether it be in person or by correspondence. There was considerable misconception regarding the relationship between air pressure and health. The mere change of atmospheric pressure from day to day had nothing whatever to do with one's physical well-being. A recent publication stated that when the barometer dropped from 30 to 29 inches the human body was relieved of half a ton of pressure with resulting effects on the physical organism. In the first place it was unusual for the barometer to drop one inch in so short a time, and in the second place observations had proven that the influence upon the body of variations in pressure were greatly overestimated. It was rather the fair weather and decreased humidity which accompanied a rising barometeric pressure that elevated one's spirits or the cloudy threatening weather and increased humidity which accompanied a falling barometer that affected the human system. The location of home, office or workroom had more to do with the health of the occupant than whether the relative humidity was much above or below the normal. Exposure to sunshine and ample ventilation were all-important. Facing houses with relation to natural air drainage was also most important in selecting a home. Many a home otherwise healthful and satisfactory had been abandoned because the architect or owner did not consider the principles laid down by Hippocrates 2,000 years ago. The author suggested other opportunities for the study of health in

its relation to climate in the light of augmented data, such as the proper selection of sanitarium sites, sensible temperature (wet bulb thermometer readings) and infant mortality, acute infectious diseases and sunlight, using the sunlight charts of the Weather Bureau. He also described an extensive series of observations being made in Southern California with a view to extensive citrus fruit culture, where 16,000 acres of land at various elevations from 100 to 1,300 feet were being intensively studied and it was believed to be possible to chart every ten acre plot. It was very surprising to observe the effect on citrus culture of seemingly slight variations in altitude and situation of the land. He also compared Los Angeles and Riverside. The former, 10 miles from the sea, showed a lower range of temperature and higher relative humidity than the latter which was 55 miles further east towards the desert and illustrated most clearly the influence of the desert upon temperature and low humidity, and above all its remarkably regular oscillations. In closing the speaker expressed the opinion of an eminent California physician to the effect that if physicians would go into this subject and study it in conjunction with the weather bureau that the State could be plotted so that the real atmospheric conditions of all localities and their effect upon the functions of the body would be known. But that altitude, temperature, humidity, prevailing and unusual winds had much effect upon many individuals there was no doubt. This subject should be worked out by the Weather Bureau and the medical profession. In response to a number of questions, he explained the ordinary day to day fluctuations of temperature in accordance with the well-known laws governing gas pressure. He discussed the question as to whether climates were changing as alleged by some and said that the records showed that no such changes were taking place. There was nothing more unreliable than popular statements on this subject. They were better equipped against the extremes of temperature than formerly. There was no evidence to show that irrigation caused any climatic changes whatever, or that the use of high explosives had any influence in producing condensation of moisture and rain. The personal equation was a very uncertain factor in taking the readings of the various instruments employed to record temperature, humidity, etc., and hence the instruments of the weather bureau made all these readings automatically and their accuracy was to be depended upon.

Lung Involvement Secondary to Suppurative Abdominal Disease.—Dr. J. N. HALL of Denver read this paper in which he declared that the frequency of subphrenic abscess was probably not appreciated by the majority of practitioners; certainly the less common instances in which a suppurative process burrowed through the diaphragm, and gave rise either to empyema or to perforation into a bronchus or the pericardium were frequently overlooked. An ascending infection from a suppurating rectocecal appendicitis was a common cause of sub-phrenic abscess. The author had reported nine cases in a series of 500 cases of appendicitis and this probably did not overstate the frequency of the complication. Diffuse subphrenic suppuration was much less often found in this type than in any of the others. Gastric and duodenal ulcers frequently caused subphrenic abscesses, but these rarely perforated the disphragm. With this condition in amebic dysentery there was frequent involvement of the pleura and lung with infrequent subphrenic abscess. Left-sided subphrenic abscess usually originated from ulcer, although suppurative appendicitis, acute pancreatitis, suppurative cholecystitis, and amebic liver abscess might be the starting point. The mere presence of subphrenic abscess must not be taken to establish its abdominal origin. Dr. Thomas H. Hawkins had reported one case in which an abscess resulting from a suppurative salpingitis finally evacuated through the lung. Archibald's figures indicated that about four per cent of cases of subphrenic abscess originated from the intrathoracic infection. The lymphatic distribution was such that the invasion from the abdomen was vastly more frequent; the right pleura and lung were therefore involved much more frequetly than the left. Appendicitis and suppurative involvement of the right lob of the liver caused most of the instances of subphrenic suppuration which brought about the involvement of the respiratory tract. Yet it was possible that the spread of the process beneath the diaphragm might cause involvement of the pleura on the side opposite the original abdominal affection. The most frequently found bacterial infection in subphrenic abscess was that of the colon bacillus. The diagnosis of subphrenic abscess often depended upon the recognition of some possible cause in the abdomen. In empyema, unless it was entirely evident that the affection followed immediately after acute pneumonia or broncho-pneumonia, the history should be taken with special care to overlook no evidence of prior abdominal disease. When one had obtained a history of appendicitis, amebic dysentery, gallbladder disease, or other similar affection, and symptoms such as irregular fever, irregular chills, sweats, leucocytosis, perhaps cough, dyspnea, pain, and even in neglected cases bulging, redness, and edema of the chest, he could feel quite certain that he was dealing with subphrenic abscess. The heart might be displaced to the opposite side. Tenderness and deep pain and discomfort were common. The diaphragmatic movements were abolished. Pushing downward of the liver in right side involvement, or of the spleen upon the left side, should be noted. Muscular rigidity below the costal arch was probably always present. The higher line of dullness over the liver and pushing upward of the diaphragm behind suggestive of pleural effusion were reliable evidence of the presence of an abscess. The *x*-ray plate demonstrated the shadow of the effusion and might prove it to be subdiaphragmatic in location. The fluoroscope revealed the absence of respiratory excursion of the diaphragm. Feeble respiratory sounds, a lessened vesicular murmur and even slight dullness might be detected. Pleural friction was occasionally to be heard, less frequently pericardial friction. Splashing was decidedly less frequent in pyopneumothorax subphrenicus than in the usual form above the diaphragm. Increased area of dullness in the lateral region of the chest was to be found if the abscess was of much size. The displacement of liver dullness by tympany if gas was present was of extreme importance in diagnosis, and was usually associated with movable dulness. Subphrenic abscess rarely broke externally. In one of the writer's cases it broke into the colon with fatal results. Given such a history and some of the findings described and they were ready to consider the possible invasion of the region above the diaphragm. This probably occurred in 25 to 35 per cent. of the neglected cases. It was more frequent in extraperitoneal type than in the intraperitoneal abscesses. The general symptoms after pleural involvement were much the same as those of subphrenic abscess. If in doubt as to subphrenic absces or pleural effusion the needle must be used freely, the patient being prepared for operation, and in serious cases an anesthetic should be used. The greater danger of using an exploring needle on the left side and the need of emptying the stomach by means of the tube before aspiration, should be borne in mind. One was likely to be satisfied if he found one kind of fluid in one place in the aspiration of the chest, hence it was well to recall that when effusion above the diaphragm existed with subphrenic abscess, the latter was too frequently overlooked. Acland stated that in case of doubt, clubbing of the nails pointed quite definitely to the supradiaphragmatic location to the disease. There were notable features in the amebic hepato-pulmonary abscess. Extensive destruction of lung tissue was not infrequent, and expectoration of the products of tissue diintegration might be noted. In case of perforation into the lung death might occur from the pneumonic process, from abscess, or from gangrene before the abscess emptied itself through the bronchus. In fact the latter process was probably a function of the milder infections only. The most striking phenomenon in the whole general process was the sudden breaking through of the abscess into the bronchus, with expectoration, of foul pus. Pulmonary embolism was spoken of as a complication of subphrenic abscess, coming from the thrombotic process in the veins of the abdomen, but a much more striking variety of embolism might occur in the cases of perforation of the lung by the subphrenic abscess. One of the author's cases described elsewhere had septic embolism of the popliteal artery, survived amputation, and suffered two other embolic attacks. The source was evidently the thrombosis in the branches of the pulmonic vein around a large cavity demonstrated in the lower right lobe. There were rare instances in which the abscess ruptured into the pericardium. Pericardial friction and even splashing might be noted. This complication was of extreme gravity. In cases of subphrenic abscess with lung involvement complete recovery was most exceptional. Yet the author could not agree with Rolleston's statement that death commonly resulted in two or three months, since he had had three patients who had lived from one to ten years, and two of

them were alive when lost track of. The prognosis was so grave that early diagnosis must be followed by prompt operation even at considerable risk. Empyema must be thoroughly drained to avoid the danger of lung involvement; after this occurred surgery rarely offered any assistance.

Dr. Henry Sewall spoke of the difficulties encountered in making a diagnosis of subphrenic abscess and said he would have to confess to having made many miscalculations in diagnosing the condition. He believed it was overlooked ninety-nine times where it was recognized once.

Dr. John A. Lichty of Pittsburgh said his experience has been somewhat different from that of Dr. Hall. In about 700 cases of appendicitis he had not found subphrenic abscess more than five or six times and in only one instance did he find an empyema and that ruptured into the lung.

Dr. Philip King Brown of San Francisco said he had just had an experience with two cases that answered this question. One had been operated on for a paranephretic abscess and had a streptococcic septicemia and pleurisy, and very striking friction râles were perceptible. The other was a deep abscess of the liver which was accompanied by a pleurisy on that side of the lung. Bevan had pointed out that in acute appendicitis pleurisy of the lower right portion of the lung was not uncommon, though there was no lymphatic connection to explain the association of the two conditions.

Dr. Hall, in closing the discussion, explained that the reason he had found these subphrenic abscesses more frequently than some others was because of the fact that he lived in a more sparsely settled country where it was improbable that a person suffering with such a condition would find a physician who would be able to make the diagnosis. Another reason for finding the condition more frequently was that patients were not so likely to be operated on early for the conditions that might produce subphrenic abscess if neglected. He related that three cases seen in succession in which the subphrenic abscess was due to appendicitis all had deep cavities just above the diaphragm; these were of the neglected type and one would not see them in a large city. That was the reason he had insisted on early operation because ninety-nine per cent. of the trouble was due to neglect and showed what an neglected appendicitis could do. In reply to the question as to whether these abscesses perforated more frequently than empyema, Dr. Hall said he thought the subphrenic abscesses perforated oftener than empyema because empyema was more likely to be recognized and treated.

The Acute Infections in Diabetes Mellitus.—Dr. John A. Lichty of Pittsburgh, Pa., presented this communication. He stated that from the beginning of their knowledge of diabetes mellitus as a clinical entity, it had generally been recognized that patients suffering from this malady were poor surgical risks and many theories had been advanced to account for this fact. One of these theories was that there was a disturbance of tissue vitality due to the existing hyperglycemia and on account of this disturbance bacterial invasion occurred more easily. This view had been largely substantiated by Dr. J. C. DaCosta and Dr. E. J. G. Beardsley in the clinical laboratory of the Jefferson Medical College Hospital. There was very little in the literature, however, that would lead one to think that the ordinary infections which were included under medical diseases were particularly fatal in patients having diabetes mellitus, with perhaps the exception of erysipelas, lobar pneumonia, and pulmonary tuberculosis. It was the author's purpose to show that the more simple and ordinary infections were not infrequently a determining factor in influencing the mortality of diabetes. The writer reported two cases of diabetes in the first of which an acute infection of the nasopharyngeal mucous membrane was followed by an acute otitis, and in the second a cold in the head was the starting point of a train of symptoms which speedily led to a fatal termination. He said he might mention other instances of similar apparently mild infections and some of the graver infections, such as lobar pneumonia and acute pulmonary tuberculosis, but they all showed the same rapidly fatal results. It was found that when the restricted carbohydrate diet upon which the patient usually maintained his weight and feeling of well being was relaxed and an attempt made to force upon him a large amount of general diet, as was usually done in pulmonary tuberculosis, the amount of sugar eliminated invariably increased and the chest signs became rapidly alarming. On the other hand, if the urine could be kept sugar free or nearly so and the caloric value of the diet could be maintained at the normal or slightly above the normal requirements, other things being equal the patient invariably improved. This observation has been made so often that it had led the writer to apply the same principle in the treatment of the acute infections in diabetes mellitus. That was, no matter how grave or apparently trivial the infection might be, the consideration of the diabetic element in the case was of paramount and extreme importance. Of 33 fatal cases of the writer's own series, eight died of some acute infection. This included cases of pulmonary tuberculosis and lobar pneumonia. Statistics which the author had collected from Joslin Janeway, and Friedenwald showed that about one-third of all the deaths were either directly due to or hastened by the acute infections. This fact should lead one to warn his patients suffering from diabetes mellitus against the dangers of infections, and to instruct them properly in prophylactic measures. It also suggested the necessity of extreme care in treating these cases even though the infection seemed the mildest and most innocent.

Dr. F. M. Pottenger said he had had the same experience as the writer of the paper in diabetes mellitus in tuberculous patients. He had found that about one-half the patients on an ordinary diet lost their sugar temporarily or for a period of months. He related the instance of one patient who had been sugar free for some time who after being struck by a croquet ball was completely unnerved and the sugar promptly appeared, though the man had been free from sugar for a long time on a regular diet.

Dr. John A. Lichty of Pittsburgh said that the treatment of the diabetic and the tuberculous patient were very much alike except that the diabetic could not take the same amount of carbohydrate. If the tuberculous patient was fed on fats and proteins with restricted carbohydrates the pulmonary lesion would heal as readily. It was necessary to treat acute infections with a great deal of consideration and care.

A Case of Primary Pulmonary Aspergillosis.—Dr. G. W. Holden reported this case, which was originally diagnosed and unsuccessfully treated as pulmonary tuberculosis, and later tentatively diagnosed as Hodgkin's disease. Only a comparatively few instances of aspergillosis in human beings had been reported, and most of these had occurred in France among pigeon feeders and those who handle grain and flour. Sporadic cases, however, had been reported from other countries. The fungi pathogenic for man had been divided by Plaut into three groups according to their pathogenic effects: (1) Moulds in the narrowest sense (mucor and aspergillus), (2) the fungus of thrush, and (3) the fungi infecting the skin. Still divided the genus aspergillus into six species, and of these the form most pathogenic for man was aspergillus fumigatus. It was very frequently observed in the lower animals and in birds, in which it often produced a psuedo tuberculosis and it was supposed that the infection might be carried from birds to man. Aspergillus fumigatus was found most frequently in the ears, nose, and mouth. In the lungs it was thought to be secondary to an already existing tuberculosis until Dieulafoy and others reported cases of primary infection about 1890. A sufficient number of authentic cases had been observed to make it worthy of consideration in diagnosing obscure cases of pulmonary tuberculosis. Pulmonary aspergillosis might be either acute or chronic; when acute it resembled bronchopneumonia, and when chronic the symptoms were similar to those of pulmonary tuberculosis. The recognition of the disease depended upon finding the parasite in the sputum. When stained the parasite appeared in the form of myceleal threads with spores scattered in and around. The case reported occurred in a woman 47 years of age who had never been robust, and gave a history of bronchitis recurring every winter since she was 16 years of age. She had been sent from her home in western Pennsylvania to Colorado on the supposition that she was suffering from pulmonary tuberculosis. The right and left cervical and axillary glands were enlarged from the size of a hickory nut to that of a small egg. They were freely movable under the skin. As expectoration was scant no specimen was obtained at first. Later a specimen showed opaque white masses containing a few epithelial and a few pus cells, but no tubercle bacilli. The microscopic finding showed a few diplococci and mycelia. The sputum was cultured and a pure culture of aspergillus found. Other cultures showed the same findings. Dr. Anna Williams and Dr. Gurley of the New York Board of Health Labo-

ratories on their first examination classified the organism as a. fumigatus and later as a. nidulans. The patient lived fifty-four days after entering the sanatorium and the course of the disease was that of chronic pulmonary tuberculosis with scant expectoration containing but few pus cells. At no time was there any hemorrhage or blood stained sputum, as would be expected in aspergillosis. Evidences of pulmonary induration and contraction became more manifest as the disease progressed and there was increasing marasmus. Death was due to right sided dilatation of the heart. Post mortem was not permitted but the writer was allowed to remove one gland. There was no evidence of glandular structure. With the exception of a few small areas near the periphery filled with small round cells the entire parenchyma was replaced by dense fibrous tissue which in a few small places had become necrotic. Scattered throughout this fibrous tissue were numerous rather deeply stained bodies showing the characteristics of the aspergillus. The gland was cultured for the organism of Hodgkin's disease but the results were always negative.

Dr. CHARLES BROWNING of Los Angeles said he had seen two cases of actinomycosis and that his bacteriologist was on the lookout for it. He had also found a few cases of saccharomycosis. They were in the habit of making a systematic investigation for these organisms in cases of clinical tuberculosis in which the tubercle bacillus could not be found.

Dr. HENRY SEWALL of Denver said the finding of a fungus in making an examination of sputum was not extremely unusual and said such a finding should not lead one to the conclusion that he had found something new. It was known that if urine was kept for a time it would develop a fungus.

Saturday, June 19—Second Day.

Cardiac Syphilis; Its Incidence and Diagnosis.—Dr. J. M. ANDERS of Philadelphia presented this communication which was read by Dr. J. N. Hall of Denver. The writer stated that the common occurrence of syphilitic myocarditis, mesaortitis, angina pectoris, and aortic incompetency was now universally recognized. A statistical investigation into the question of the bearing of syphilis upon the incidence of these conditions had yielded significant results. The statistics of Longcope, Clifford Allbutt, Feissenger, Collins, and Babcock, of which he had made a collective investigation, embraced 219 cases; of these 133 or 60.7 per cent. were clearly due to lues. In a considerable number of the cases of aortic incompetency to be found in the literature no reference was made to a Wassermann test, so it was obvious that the figures underestimated the true rôle of syphilis in the production of this condition. Early diagnosis of aortic incompetency was of the utmost importance to the end that serious damage to the aortic segments might be obviated by intensive antisyphilitic treatment. In the absence of rheumatism, gout, lead, alcoholism, pyogenic infection, or a predisposing occupation, cases of aortic incompetency should be labelled suspects and given the benefit of vigorous antisyphilitic treatment. Special physical signs that aided in the establishment of the luetic character of the chronic valvulitis were enlargement of the left ventricle (and therefore capillary pulse and double sound over the crurales were not so marked) and a greater degree of arrhythmia. The cardiac lesions of syphilis usually appeared within two or three years after the infection and sometimes much earlier. The importance of the Wassermann reaction as a means of determining the etiological variety of the lesion should be emphasized. When myocardial syphilis developed in the secondary stage the onset was rapid or even acute and the principal features were irregularity of heart action, tachycardia, intermittence, extrasystole, and rarely soft murmurs, especially in the mitral area. The symptoms did not differ from myocarditis due to other acute infections. These symptoms might disappear after a few days as a result of energetic antisyphilitic treatment. This fact helped to emphasize the importance of early recognition of the condition. True angina pectoris might be associated with the myocarditis and angoid pains were not infrequently present. The Stokes-Adams syndrome was commonly caused by syphilitic myocarditis or fibroid change in the bundle of His. The writer had collected 270 cases of angina pectoris from the literature and only 26.5 per cent. gave evidence of syphilis. This was too low an estimate since there was no mention of the Wassermann test having been made. Every case of angina pectoris during the younger period of life was open to the suspicion of syphilitic origin. When either aortic regurgitation of syphilitic myocarditis of marked extent existed curative treatment was impossible of achievement as a rule, and hence the necessity of vigorous early and prolonged treatment. The Wassermann tests should be made until they were no longer positive. The treatment consisted of the alternate use of intramuscular injections of the salicylate of mercury and salvarsan. The iodides were reserved for later use after the active syphilitic process had been checked. In the later stages the use of salvarsan was quite justifiable in the opinion of the author in myocarditis and aortic insufficiently in which the actual condition of the myocardium was undeterminable but not degenerated to a marked degree and in those cases in which the patients urgently demanded that something be done.

Dr. JOHN M. SWAN of Rochester said that it was his experience that cardiac disease where there was no history of rheumatism or of other infectious disease was very often due to syphilis. This was especially apt to be true of physicians, who often had a syphilitic lesion without recognizing it. Dr. Swan related the case of a physician with a typical case of aortic regurgitation. After going over his history carefully it was found that he had probably been infected with syphilis while attending a labor case. According to the statement of Dr. Harlow Brooks cardiac irregularities often cleared up after the administration of the iodides, and he had seen several cases of ventricular extrasystole definitely disappear after the administration of the iodides. One should always suspect syphilis in these cases in which there was no other definite etiological factor.

Dr. JOHN A. LICHTY of Pittsburgh said that no one was more competent than Dr. Anders to speak on this subject, but there were several points he wished to call attention to. He had heard Dr. Collins read his paper in Washington eight years ago when the Wassermann test was comparatively new and he had followed the work of Dr. Harlow Brooks and there seemed to be no doubt that there were more cases of syphilitic aortitis than ever before, yet the point should not be overlooked that unless there was an autopsy one was not free to speak definitely about them. For all cases having a positive Wassermann were not necessarily due to syphilis. One should have the autopsy record with which to back up his statements. Dr. Lichty stated that he had had three cases that gave a positive Wassermann and aortic lesion and yet at autopsy he found an infective aortitis. In one case the infection was a streptococcus viridans, in another a tuberculous pericarditis, and in the third the streptococcus was found in the blood stream. In Pennsylvania they did not find the spirochete so frequently in heart lesions as Dr. Warthin had found them; this was probably due to a difference in the source of the material, since Dr. Warthin got most of his from an orphan asylum. It was well to point out the value of other clinical symptoms and not to permit the Wassermann reaction to have undue weight.

Dr. SWAN suggested that in the cases spoken of by Dr. Lichty there might be a possibility that the streptococcus infection was implanted on top of a syphilitic condition.

Dr. HENRY SEWALL said it always seemed to him that the syphilitic presented a psychic or nervous condition different from the normal individual and that this would have a definite effect on aortic trouble due to syphilis.

Dr. JAMES H. MCBRIDE of Pasadena, Cal., said he could not say definitely that there was a psychical deviation which could be attributed to syphilitic degeneration. One author had said that aortic aneurysm was always due to syphilis except in cases of injury, and he had seen several cases of heart lesions directly due to syphilis, but his experience was not extensive as was that of Dr. Anders.

Some of the Disputed Anatomicopathological Questions in Tuberculosis.—Dr. F. M. POTTENGER of Monrovia, Cal., presented this paper, in which he discussed first the subject of bovine and human tuberculous infection *versus* bovine and human clinical tuberculosis and gave his reasons for believing that the bovine tubercle bacilli after living in the human tissues for a time adapted themselves to the new conditions and gradually became the bacilli which would naturally be produced on the human soil—in other words, that the bovine bacilli underwent transmutation. With reference to the primary focus and metastases, the writer reviewed Gohn's position and stated that he took a point of view

slightly different, but one which could be harmonized with it. There was a marked difference in the behavior of the infection which took place in an animal or a human being who was healthy at the time of inoculation and one which was already infected. An infection when once present produced a hypersensibility of the cells and in this way created a defense against further infection by the same organisms. The mucous membrane and other tissues of the non-infected organism showed no specific defense and consequently offered little opposition to the passage of the bacilli. This was seen in the readiness with which bacilli passed through the tonsils of children and affected the cervical glands of the bronchi and the peribronchial glands, or through the intestines and affected the mesenteric glands. The first important barrier met prior to true infection was by the lymphatic glands which were particularly active in protecting the organisms at this time. After infection the cells became sensitized and a cellular defense became general. Then a specific opposition was offered to the bacilli at every point of entry. The metastases usually occurred through the blood and were produced as a rule by a few bacilli and the contact with the sensitized cells limited their virulence, the resulting lesion being abortive. Later it might become active and other metastases might occur. This theory would explain the freedom of the lymph glands from secondary metastases both in the larynx and in the intestinal tract. The essayist discussed the reasons why the apex of the lung was usually involved in the adult while any portion might be affected in the child, and attributed it to the anatomical changes incident to assuming the erect position and to the rapid growth, particularly at the time of puberty which retarded the motion of the apices of the lungs and thus favored retardation of the blood and lymph circulation. All of these factors favored the implantation of the tubercle bacilli at the apices of the lungs. In discussing the small heart in tuberculosis the writer stated that this small heart was found in early tuberculosis where the tissues had not had time to suffer degeneration and also in otherwise normal individuals, as well as in other abnormal conditions. The feature in common in all instances was the deficiency of the inspiratory act. The author then described the mechanism of inspiratory deficiency, showing how it was responsible for the production of the small heart. The condition of inspiratory deficiency was constant in tuberculosis and the heart was obliged to accommodate itself to the lessened output.

Appendicitis as a Complication of Pulmonary Tuberculosis.—Dr. HUGH M. KINGHORN of Saranac Lake presented this communication, in which he gave the results of a study of the frequency of appendicitis in 674 cases of well established pulmonary tuberculosis. Among these appendicitis occurred in 36 instances. The disease was slightly more prevalent in the male. Of these 36 cases 22 were operated upon and 14 recovered without operation. One death occurred from fulminating appendicitis within three days of the operation. Acute appendicitis in persons suffering from pulmonary tuberculosis should be treated as in a normal healthy person. Even feeble patients stood the operation well under nitrous oxide and oxygen. When the appendicitis was not acute and the patient was feeble the pulmonary disease should be considered.

Papers Read by Title.—Among the papers read by title were the following: "Addison's Disease and Tuberculosis," by Dr. Judson Daland of Philadelphia; "The Relation of the Spleen to Tuberculosis Infection," by Dr. William Charles White of Pittsburgh; "Eventration of the Diaphragm," by Dr. Morris Manges of New York City; Movable Mediastinum and the Manometer," by Dr. C. D. Parfitt of Gravenhirst, Ontario Canada; "The Effects of Some Drugs upon the Pulse Form in Man," by Dr. A. W. Hewlett of Ann Arbor, Mich.; "The Occurrence of Bright's Disease and Nephritis in the United States, with an Attempt to Trace the Influence of Humidity in Relation to the Mortality in Twenty-five Cities," by Dr. Guy Hinsdale of Hot Springs, Va.; "Remarks on the Treatment of Cardiopathies from the Standpoint of Physics," by Dr. I. M. Taylor of Philadelphia, Pa.; "Interesting Features of a Scarlet Fever Epidemic in Gaylord Farm Sanatorium," by Dr. David R. Lyman of Wallingford, Conn.

Election of Officers.—The following officers were elected to serve during the ensuing year: *President*, Dr. James Alexander Miller of New York; *First Vice-President*, Dr. Philip King Brown of San Francisco; *Second Vice-President*, Henry Martin Bracken of Minneapolis, Minn.; *Secretary, Treasurer, and Recorder*, Dr. Guy Hinsdale of Hot Springs, Va.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON SURGERY.

Stated Meeting, Held March 5, 1915.

DR. CLARENCE A. MCWILLIAMS, IN THE CHAIR.

Exclusion of the Pylorus by the String Method.—Dr. V. GAUNDIANI presented this patient, upon whom he had operated last July for duodenal ulcer. After he had performed the posterior vertical gastroenterostomy the patient's condition was so poor that he thought to occlude the pylorus by the Paravecchie method as the quickest one. At the 1914 meeting of the German Surgical Society, Guleke of Strassburg reported thirteen cases, eleven of which had been examined for a period of time after this operatin, varying from six to twenty months. The results in this series of cases were more satisfactory than those obtained by any other method; in only one of these thirteen cases was the pylorus patent. Paravecchie emphasized in his papers that the ligature must be a string and not a thread. In the patient presented a string such as was used in obstetrics to tie the cord was passed one-half inch inside the pylorus, and tied gently, until an almost complete approximation of the mucosa was obtained. The knot was buried by seroserous stitches. The patient made a good recovery, gained afterward nearly thirty-five pounds, and could be regarded as completely cured. An *x*-ray plate taken one month ago showed the pylorus firmly closed. It seemed that this simple operation deserved to be better known by the surgeons and applied in all cases in which the classical Doyen-Eiselsberg method, owing to the condition of the patient, could jeopardize the result of the operation. One could say that, properly performed, it realized a perfect occlusion of the pylorus, at least for the period of time necessary to secure the healing of the ulcer.

Report of a Case of Intussusception with Resection.—Dr. EMERY MARVEL of Atlantic City, N. J., said that cases of intussusception in adults interested him. Intussusception in the adult was rare, and when present was usually occasioned by either a cicatrized ulcer or a neoplasm. He said he wished to cite a case coming under recent observation. An Italian laborer, thirty-seven years of age, was seized with intense pain in the abdomen associated with vomiting. At 6 A.M., January 22, 1915, he summoned a physician, who saw him at 9 o'clock and administered morphine. His associate, Dr. Andrews, saw the man at 2 o'clock and found him in intense agony, writhing with pain, unable to stay in bed, and clamoring for relief. Being informed that this pain had not let up since the onset in the morning, he believed a serious abdominal condition was present, and after an unsuccessful attempt to relieve the bowel by enema, a quarter of a grain of morphine was given hypodermically, and the necessity of an immediate operative treatment was advised. He saw the man two hours later, finding him still complaining of pain and tenderness over the abdomen; the wall was board-like and unyielding. The intense distress was located in the epigastrium. A suggestion of a gastric or duodenal ulcer was in his mind, although the man had little or no depression of the heart's action and showed no other evidence of shock. He was anesthetized at 4 o'clock, and so soon as his abdomen relaxed a tumor was visible in the left hypochondrium. An incision in the median line permitted the mass to be exposed with ease. This showed an intussusception of extreme dark color and evidently gangrenous. Tears in the serosa were observed in several places. It was impossible to reduce the intussusception. Resection was imperative, which was completed with end-to-end suturing. The abdomen was closed without drainage and a complete recovery followed. The man at this time was at work. Endeavoring to ascertain what had occasioned the intussusception, the specimen was opened and revealed small tumors of the mucosa of the bowel, one of which was at the point of intussusception, and was very evidently the cause of the bowel slipping and locking itself. There were four of these tumors in the resected bowel. The pathologist's report of these tumors showed them to be adematous polypi. Whether there were other tumors or not in the remaining bowel he could not say. He did not recognize the presence of these tumors at the time of operation. The resected bowel measured about seven feet when straightened out; it was over two feet in length upon the greater curve and was triplicated. The specimen was exhibited.

Severe Electric Burns.—Dr. S. M. MILLIKEN pre-

sented this patient, an electrician, admitted to the Lincoln Hospital after having received 11,000 volts of electricity. The burns covered the face, ears, anterior half of the neck, entire chest and abdomen (these being third-degree burns), right half of the back, left anterior axillary margin and front of the left shoulder (also of the third degree). The right arm and forearm had a third-degree burn, were enormously swollen and cadaveric in appearance and no signs of circulation could be found beyond the proximal part of the axillary artery. There was no sensation below the tip of the right shoulder. There were two areas of third-degree burns on the left arm on the flexor surface, each about the size of the palm of the hand. Similar third-degree burns were found on the left thigh and between the third and fourth toes of the left foot. After consultation with Dr. Peck and Dr. Lloyd, amputation was advised and refused by the patient and his relatives. In the hope that the vessels were constricted instead of thrombosed, relieving incisions were made from the point of the shoulder to the middle of the back of the hand. One was made through the cubital fossa, where the median basilic vein was cooked stiff. No sensation and no bleeding were encountered until deep fascia was divided in the forearm. The fascia was divided over almost the full length of the forearm. In an apparently unburned area one superficial vein was ligated and wet bicarbonate dressings were applied. The patient had been admitted to the hospital on June 16 and on June 26 the slough on the arm separating the extensor and flexor tendons were seen to be necrotic, the sheaths having sloughed off. The "cooked" area of the flexor muscles had sloughed and there was a deep slough over the first phalanx of the middle finger. On June 29 there was free bleeding from the right hand, and the digital artery on the ulnar side was found to have sloughed through and this was ligated. The patient had been running a temperature of 103° to 104.5° F. during the months and had a hacking cough and profuse rusty expectoration, though no definite signs of pneumonia could be made out. The output of urine increased from ten ounces on the first day to thirty-two on the third day and with forced fluids from that time for fully six weeks the total output for twenty-four hours was not below ninety-six ounces daily. After the first ten days there were no casts and no pus in the urine. After the first twenty-four hours no dressings were applied to the burned areas, the bedding being elevated on racks with electric bulbs hung on them. As fast as necrotic tissue loosened it was removed, but the discharge from the granulating surfaces was profuse. Both groups of flexor tendons sloughed off at their muscle origin and were amputated. Similarly the flexor longus pollicis tendon sloughed and was cut at the same level. On July 19 three large Thiersh grafts were transferred from the right thigh to the right forearm, and all were successful. At another time five grafts were made and all were successful and later seventeen small grafts were applied after the Staig-Davis method; all of these were successful but one. The patient finally left the hospital on October 17, but required three dressings weekly until December 18, at which time he was allowed to go home for the holidays with everything healed but the bridge of scar tissue across the posterior axillary fold. When the patient left the hospital there was no motion below the elbow, and motion at the elbow was limited to about 40 degrees. Abduction at the shoulder was limited to about 40 degrees by the contracture in the posterior axillary fold. At the present time the posterior axillary fold was but one inch lower than on the opposite side and abduction could be carried to 120 degrees. There was flexion at the elbow and extension was less than 20 degrees limit- the patient would have a hand which was fairly useful, ed Pronation and supination were to full range. The though the anesthesia in the palm of the hand and the palmar surface of the fingers would probably make it median nerve sloughed out with the flexor tendons, but the ulnar nerve was functionating. The prospect was that dangerous to undertake any rough work.

X-Ray Keratoses on Hand of Radiologist Cured by Radium.—Dr. SINCLAIR TOUSEY reported this case. He stated that his own hands had long been disfigured by growths which had resulted from his *x*-ray work. The lesions were of two types. A very few were raised, almost pedunculated, healthy looking fleshy tumors with a black pigmented apex. About thirty others were exceedingly hard black lumps projecting slightly above the surface of the skin. The smaller ones had a tendency to undergo spontaneous exfoliation about once a year, leaving a healed surface somewhat depressed but surrounded by an indurated base. In a very few days a deposit of pigmented granules would take place looking under the microscope, like particles of anthracite coal, and in a week or two the black lump would have been renewed. The smaller lumps of this kind could be curetted out at any time, leaving a dry reddish granular depression upon which a similar growth would be quickly reproduced. There were some larger ones which never came away spontaneously. Some of these were associated with deep painful fissures of the skin. For years the author kept these unsightly excrescences under some kind of control by the application of salicylic and lactic acids which removed them temporarily. Another application which was not permanently successful was full strength formalin. About a year ago at the suggestion of a general surgeon, two of the larger growths were treated with pyrogallic acid, one dram collodion, one ounce, applied three times a day. This application was not painful at first but later produced terribly sore fingers with suppuration beneath the areas destroyed. Eventually the growth came away and the ulcer healed, but the growth returned in a short time and all the suffering had been in vain. Dr. Caldwell had succeeded in curing certain *x*-ray lesions of his hands with radium and the author determined to try it on his own hands. He selected one of the largest growths which resembled a horn on the dorsum of the interphalangeal articulation of the left ring finger. The field of application was limited by a protective sheet metal rendered adhesive by coating it with double faced adhesive plaster. Twenty milligrams of radium element enclosed in a small glass tube covered with the thinnest soft rubber was kept almost in contact with the skin for thirty minutes. The growth had previously been pared down almost to the bleeding point with a scalpel. The result of the application was not perceptible for about ten days, and then the skin became somewhat red and shiny. Twenty days further passed without any decided change. During this month the pared off keratosis had not sprung up again, as would have been the case had the radium not been applied. On the thirty-first day the reddened skin around its edges was discovered to be loosened from the underlying tissues and in a few minutes the entire destroyed growth was frisked off like a scab. The surface beneath was pink and tender but fully healed and now, ten weeks after the application of the radium, the skin was strong and presented no marks of any kind. He had been treating the other growths seriatim and all came away in about a month, leaving a healthy surface beneath. Dr. Tousey presented the histological report from Dr. Sondern who concluded with the statement that evidently *x*-ray keratoses while in the precancerous state were curable by radium applications. The double coated adhesive plaster referred to was in regular use for different mechanical purposes. It consisted of cloth coated on the back with rubber adhesive plaster mass and on the other side with zinc oxide plaster mass. For radium therapy the back of the plaster was applied to a silver half dollar or some other piece of metal serving as a handle or as a means of shielding the patient's fingers from the radiation and the face of the plaster was fastened to the tube of radium with whatever covering was desirable to filter the radiation or prevent direct contact with the patient and contamination.

A Case Illustrating the Value of Bile Feeding in Patients with Biliary Fistulæ and Obstruction of the Common Duct.—Dr. JOHN C. A. GERSTER presented a man of 44 who was admitted to the Third Surgical Division of Mt. Sinai Hospital intensely septic with jaundice, high fever, and a large mass in the right hypochondrium. A large pericholecystitic abscess was evacuated; the gall-bladder was opened and drained; a severe grade of cholangitis was present. Convalescence was very slow. Finally at the end of seven weeks the patient presented the following picture: While he was free from fever and was able to be up and about, nevertheless his general condition was very poor; his pulse was weak; there was marked emaciation; all the bile escaped from the fistula; the stools were white. Temporary closure of the fistula gave rise to cramps and jaundice. There evidently was obstruction of the common duct. The patient's great weakness forbade operation. To effect an improvement in his condition, all the bile escaping from the fistula was collected and was introduced into the stomach by means of a stomach tube twice a day (8 ounces each time). There was no nausea at any time. The appetite became much better. A remarkable improvement in general condition took place. At the end of two weeks it was deemed

safe to operate. Under local anesthesia and nitrous oxide-oxygen anesthesia, a stone impacted in the papilla of Vater was removed. Convalescence was complicated by acute cardiac decompensation on the second day after operation which responded to appropriate medication; after that his case ran an uneventful course. Dr. Gerster concluded by saying that the administration of bile in physiological quantities, as just described, was a method for materially improving the condition of debilitated patients with biliary fistula and common duct obstruction which seemed worth extended trial.

A Report on Operating Room Technique in Roosevelt Hospital.—Dr. GEORGE E. BREWER presented this report. He stated that it was evident that every infection occurring in a clean wound, and every infected wound that was not rendered sterile by the primary operation where this was possible, resulted in increased suffering and delay in convalescence to the patient and an increased expenditure of money, time and effort on the part of the Hospital and Attending Staff; that while accidental infections would occasionally occur even in the best regulated institutions, and while it was frequently impossible to render a given septic wound sterile by the most approved and skillful operative treatment, a conscientious surgeon by perfect technique and an ever vigilant watchfulness would reduce these unfortunate accidents to the minimum. His interest in operative technique with a view to avoiding wound infection dated back to his first year of service as attending surgeon to the City Hospital, 1895, when he had found that 39 per cent. of all clean operative wounds occurring in his service became infected. Various reforms in technique resulted during the following four years in a reduction of infection in clean cases to 3.2 per cent. During the course of his studies which effected this change he visited the more important hospitals in this city and in Boston, Baltimore, and Philadelphia. When he asked the question "How much infection do you expect in clean cases?" the answer was almost invariably "Practically none." Later conversations with members of the house staffs and observations during ward visits led him to the belief that the "practically none" though it represented the honest opinion of the visiting surgeon, was not based on accurate records. He believed his own off-hand estimate of the percentage of infections would fall far below the actual figures. He was strongly of the opinion that the only way to obtain the best technical results was to keep an accurate record of infection in every case submitted to operation. Dr. Brewer said he had made reference to the City Hospital because he wished to call attention to the fact that in an institution where the patients, as a rule, were seriously handicapped by a low vitality due to malnutrition, dissipation and disease, a somewhat exaggerated technique was necessary to obtain results comparable with those in other hospitals. Another factor was that of air infection, which was greater than in other institutions. To overcome this source of infection they found it necessary to cover all instrument trays, wash basins, irrigators, and pitchers with tents or covers of sterile muslin and to employ irrigation of the wound during their operative procedures. He had found when he was appointed to Roosevelt Hospital that many of the unusual technical methods used in the City Hospital to meet the unusual conditions of that institution were unnecessary and that even better results could be obtained by somewhat simpler but equally effective technique such as was employed by Dr. Charles McBurney and Dr. Robert F. Weir. While this was in part due to the more perfect operating room equipment and to a more thoroughly trained staff of assistants and nurses, the most important factor seemed to be the better physical condition of the patients. Dr. Brewer related the details of several outbreaks of infection in Roosevelt Hospital, the sources of which were discovered by careful bacteriological tests of all material coming within range of the operation. Repeated bacteriological tests since that time had demonstrated that their materials were not only free from living bacteria but also spore free. For some years, both before and after this investigation, their results seemed so satisfactory and the accidental infections so far apart, that no special inquiry was made to ascertain the exact number or percentage. During the early part of 1911, however, one or two unexplained infections occurred which led the writer to inaugurate on the first surgical division, a weekly report of every case operated on, the condition of the wound area before operation, and the condition whether clean or infected at the first and subsequent dressings. Any case of unexplained infection was referred to a committee for investigation. They now had a complete list of these reports since January 1, 1912. During this period their technique might be summarized as follows: Whenever possible a tub bath was given to the patient the night before operation, followed by shaving the wound area, and the application of a soap poultice. After from four to eight hours this was removed, the part scrubbed with soap and hot water for five minutes, and a wet bichloride dressing applied. On the operating table this dressing was removed by a sterile assistant, the parts rescrubbed for one minute, douched with ether, alcohol, and 1-5000 solution of sublimate. The wound area was surrounded by sterile towels and the entire body covered by sterile sheets. Sterile caps, gowns and gloves were worn by all participating in the operation. The towels around the wound area were flanged as often as soiled, and always before the insertion of the cutaneous sutures. Their method of sterilizing their materials did not differ in any material way from that employed in any modern surgical clinic. Frequent bacteriological examinations demonstrated that their materials were sterile. They did not wear face masks because they had a system of signals by which they were enabled to avoid talking during operations. The tables submitted gave their results in the clean cases, and would show the number of infected cases rendered sterile by their operative treatment. It would be seen that for the first six months in 1912, the percentage of infection occurring in clean operative wounds was 2.4 per cent. This was larger than they had anticipated and certain additional precautions were instituted. For the second six months of 1912 the percentage of infection was 1.2 per cent. For the first six months of 1913 the percentage was 1.8 per cent. and for the last half of 1913 1.6 per cent. if they included three cases in which infection occurred as a result of using an unsterile solution of novocaine for local anesthesia, for which none of the operative room staff was in any way responsible. For the six months ending July 1, 1914, no infections occurred in the 273 clean cases. From July 1, 1913 to July 1, 1914, only one infection occurred in 516 cases for which the operating staff could be held responsible, a little less than 0.2 per cent.

Dr. FENTON B. TURCK said that the condition of the patient that favored autoinfection was quite as important as the care in the prevention of infection from extrinsic sources. In 1896, 1900 and 1903, he carried out a series of experiments on animals, which were published at the time, and compared them with studies in cases operated on by Drs. Senn, Murphy and others. It was found that shock or marked splanchnic congestion precipitated by trauma, anesthesia, etc., lowered the resistance so that even saprophytes such as staphylococcus albus from the skin and colon bacillus caused post-operative infection equally as fatal as the more virulent groups from extrinsic sources. Normal animals used as controls gave negative results. The essential things, which he had previously presented, and treatment outlined, were the prevention of shock and prompt reduction of splanchnic congestion and increase of the resistance—the antibodies—on the part of the patient.

New Points in the Handling of Recent Fractures of the Femoral Neck.—Dr. R. H. M. DAWBARN presented this communication, which he prefaced by referring to the use of mnemonic keys as a help to memory, and suggested "Pine Branches" as naturally associated with the brittleness of old bones. The chief signs of fracture of the femoral neck were as follows: Pain and tenderness, inability (disability), neck shortening (noticed upon rotation), external rotation of limb. The signs associated with shortening were: Bryant's triangle, Roentgen rays, Allis's sign, Nelaton's line, Chiene's lines, Hennequin's test, ecchymosis, sound. It would be noticed that there were just twelve of them, and the thirteenth (always unlucky) was crepitus. This emphasized the danger of using this sign as an intentional attempt at diagnosis, which often did harm rather than good by breaking up a kindly impaction. As to the inability, preventing the patient from lifting the foot from the bed, which had been considered pathognomonic of femoral fracture, recent experience, confirmed by the *x*-ray, showed that they must add acetabular fracture to that of the femur as causing this curious sign. Regarding rotation of the limb outward, Dr. Dawbarn said that just once he had seen the opposite condition, and then it was carried to a degree of inversion which was deceptive. Whenever

this break occurred and the foot remained with the toes forward, or but little rotated outward, one was fairly certain to be right in assuming impaction to be present and the prognosis exceptionally good from simple immobilization, preferably of Whitman's method. The various aids to diagnosis named after their famous inventors should be verified whenever possible by the roentgenograph. The writer protested against the custom of measuring for shortening from the anterio-superior iliac spine to one of the malleoli. It was always easy to feel the upper edge of the tibia just at the inner side of the patella, and this should be the lower limit as it was the limit of the bone one was measuring. As a method of measuring the degree of shortening, Dr. Dawbarn suggested that the patient be laid flat on his back on the floor, with a pillow and blanket, his legs semi-flexed, keeping the knees together. Thus his legs would be horizontal and his thighs vertical. Now the difference in height of the two patellæ, as indicated by a ruler or book laid flat upon the uppermost one, showed at a glance the degree of shortening, if any. Sound as a means of diagnosis had been badly neglected. He had been teaching it, however, for twenty-odd years under the name of "osteophonic percussion." There was no sign, except the roentgen ray, whose guidance should be placed before this in reliability to the experienced ear in most instances. This method indicated the presence of a layer of muscle, however thin, crushed between the fragments, preventing bony union, whereas if bones were in good apposition there was scarcely any change in the conductivity. In suspected neck fracture the stethoscope was placed over the great trochanter while percussion was firmly and repeately made by an assistant upon the anterio-superior iliac spine, until the listener was quite familiar to the pitch and intensity of the note produced; then this was repeated on the opposite limb and the sounds compared mentally. If it was the shaft and not the neck that was suspected, the stethoscope was placed as before and the assistant percussed strongly upon one or the other femoral condyle. It was curious to what an extent this valuable test was neglected. His excuse for mentioning it was that it was not even mentioned in most of the leading text-books. In considering the treatment of these fractures the speaker said the first question which presented itself was, "When does the exudation of callus, especially in elderly people, begin, and when does it end and calcification begin?" The statements found in the literature were very indefinite. His experience seemed to show that in middle life in the fracture, say, of the tibial shaft, the exudation of fibrin began at about the tenth day, continued freely to about the twentieth day, at which time the deposit of lime salts and great activity of osteoblastic cells began. In elderly people, after fracture of a bone, and notably of the femoral neck, it was fair to assume that these processes began later and continued longer and less actively than in younger people. If they said that callus ceased being deposited after forty days they should perhaps be not wide of the mark. They might even concede a further period of twenty days, but if two months at least had elapsed with the fragments in poor mutual relation, then, in his experience, it was no longer wise to do anything except to operate. He emphasized the point that there was a date after fracture beyond which it was hopeless to expect results save by operation. A short period of Buck's extension was advisable alike for Whitman's method part to overcome shortening. In operating the joint was opened by a straight incision along the outer edge of the tensor vaginæ femoris muscle. The fragments were freshened, loose pieces removed, and a scalpel puncture and for the operative method to tire the muscles and in made four fingers or less below the top of the great trochanter, exposing a spot on the outside of the shaft through which they drilled until they reached the dense bone of the convexity of the head (the limb was held properly in extreme abduction). They then introduced into the drill hole a rather slender trocar and cannula fitted to the nozzle of a small syringe or else used a coarse spinal needle and its regular syringe, although the syringe was detached. This aspirating needle with its obturator in place was passed along the drill hole until its point appeared on the surface of the fracture. Care should be taken to measure the extent to which its base extended outside the shaft of the femur, so that the point would finally be left between the two main fragments when they were nailed together. With the limbs in extreme abduction the fragments were spiked together, using an aluminum nail. Aluminum was chosen because, varying somewhat with the patient and the character of the metal, it was absorbed in about two years' time. He did not see that a bone spike taken from the patient's tibia or that of an appropriate donor possessed any advantages over the aluminum spike. The nail was driven home guided in pat by the cannula already in place and partly by the drill hole alone. The capsule of the joint was sutured and the wound closed, and the same kind of a plaster-of-paris outer splint applied as was used in a nonoperative case. To cause nature to do her work in the exudation of callus he injected freshly boiled glyceride of tannin, 10 per cent. On an average 2 to 4 c.c. were thrown between the bone ends. He had used this method for some years before venturing to report on it, but he now felt convinced that this plan would prove helpful in appropriate cases. At this point, especially in the elderly, they had no guarantee that nature would go on and finish the work by changing the callus into bone. To hasten this process he administered regularly three time daily, after the food, and for a long period, phosphide of zinc, beginning with 1/50 grain doses in pill form and increasing slowly, combined with rather full doses of calcium lactate. While the effect of this medication was rather difficult of proof his experience with it in the City Hospital forced him to believe that it had its value and was worth continuing.

A Controller of the Throat and Palate for General Anesthesia.—Dr. JOSEPH E. LUMBARD presented a new instrument which was specially indicated for obstructed breathing caused by the falling back of the tongue; it was also used for obstructions of the nose and mouth during general anesthesia. It obviated the barbarous methods of tongue retraction and jaw holding. Some such instrument should always form a part of every anesthetist's outfit. The advantages over other similar instruments were easy introduction; would not become obstructed with mucus; quickly cleansed; easy to maintain in position, and could not be compressed by the teeth or the gums.

Books Received.

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SENESCENCE AND REJUVENESCENCE. By CHARLES MANNING CHILD. Published by The University of Chicago Press, Chicago, Ill.; 481 pages. Price, $4.00.

MANUAL OF SURGERY. By FRANCIS T. STEWART, M.D. Published by P. Blakiston's Son & Co., fourth edition, with 580 illustrations, 774 pages.

WARP AND WOOF. By L. PIERCE CLARK. Published by Hillacre Bookhouse, Riverside, Conn., 190 pages.

DIFFERENTIAL-DIAGNOSTISCHE TABELLEN DER INNEREN KRANKHEITEN. Von Dr. med. J. CEMACH. Published by J. F. Lehmanns Verlag, München; 46 Tabellen, mit 18 farbigen und schwarzen Abbildungen sowie 8 Fiebertypen.

TASCHENBUCH DES FELDARZTES. II. Teil. Published by J. F. Lehmanns Verlag, Munchen. Mit einer Tabelle und 12 Abbildungen. Preis, 50 Pfg.; 259 pages.

HABITS THAT HANDICAP. By CHARLES B. TOWNS. Published by The Century Co., New York; 289 pages. Price, $1.20 net.

A SYNOPSIS OF MEDICAL TREATMENT. By GEORGE CHEEVER SHATTUCK, M.D. Published by W. M. Leonard, Boston, Mass. Second edition, revised and enlarged; 185 pages. Price, $1.25.

HANDBOOK OF MEDICAL ENTOMOLOGY. By WILLIAM A. RILEY, Ph.D., and O. A. JOHANNSEN, Ph.D. Published by The Comstock Publishing Company, Ithaca, N. Y. Illustrated; 348 pages. Price, $2.00; $2.20 postpaid.

THE ETIOLOGY OF TYPHUS EXANTHEMATICUS. By HARRY PLOTZ, PETER K. OLITSKY and GEORGE BAEHR. Reprinted from *The Journal of Infectious Diseases*, Vol. 17, No. 1, July, 1915; 70 pages.

STUDIES FROM THE DEPARTMENT OF PATHOLOGY, OF THE COLLEGE OF PHYSICIANS AND SURGEONS, Columbia University, N. Y. Vol. XIV, 1914; 319 pages.

THE STARVATION TREATMENT OF DIABETES. By LEWIS WEBB HILL, M.D. Published by W. M. Leonard, Boston, Mass.; 72 pages. Price, $1.00.

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CARDIOVASCULAR-RENAL DISEASE (ARTERIOSCLEROSIS).*

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You are all familiar with the characteristics of the man or woman who is suffering from cardiovascular-renal disease, but no one of you yet has been able to suggest a less cumbersome name for the disease that would include the other organs that are involved. Arteriosclerosis is such a name, but it draws too much attention to the condition of the arteries, which in fact are only participating organs in a general condition. To be sure, custom has ordained that these persons should be regarded as suffering from heart disease, kidney disease, or hardening of the arteries, according as one or the other produces the most striking symptoms. The disease itself has no symptoms until such time as some organ is involved.

The old point of view—that in which you and I were trained—regarded the structural changes in the various organs as the disease from which these persons were suffering, and when we had decided that there existed a sclerosis of the kidneys we said that the man was suffering from interstitial nephritis; when we found an enlargement of the heart, we said that he was suffering from hypertrophy of the heart; when we found thickened blood vessels, we said he was suffering from arteriosclerosis. We were not even taught to make a sharp distinction between calcification of the arteries which is physiological with advancing years and the increase in connective tissue in the arteries that is found uniformly as part of this general disease. While it is the physician's duty to know what structural changes have already taken place in the organs of the man who is to be treated, this knowledge suggests no basis whatsoever for hopeful treatment.

My own conception of cardiovascular-renal disease is of a process that is going on in the body which, if unchecked, results in pathological changes in the organs. This process is a disturbance of bodily physiology, and holds out a very great hope of treatment.

I place the disturbance of physiology in the ultimate cells of the whole body, and find it based upon the disturbance of the physiology of the cell whereby it has undergone a change in its relation to those materials by which it must be nourished and furnished with energy for its activities. This can be expressed in the term "a disturbance of metabolism."

To understand this we must consider the whole question of food intake, digestion, and assimilation, and must revise some teaching of our college days.

There are two digestions: On the one hand, the digestion by the stomach and intestines of the food and its preparation for absorption and its passage into the circulation; and, on the other, the digestion by each individual cell of these food products.

A very little observation soon shows us that the common experience of mankind and the traditional belief of the profession point to protein foods as the ones involved in the production of cardiovascular-renal disease.

A surprising fallacy that has been regarded as almost axiomatic for a long time is the supposed conversion of the multiplicity of proteins that are taken into the intestinal tract into the particular protein characteristic of man during the passage of this material through the intestinal wall. Personally, I always balked at the acceptance of the existence of this marvelous function in this delicate membrane, and I never could understand why it was that after a full meal of animal food—eggs, fish, or meat—there was no perceptible change in the blood, though the proteins had disappeared from the intestinal tract.

We all know that proteins are broken down into amino acids in the intestinal tract, but what became of these acids was a good deal of a mystery. It is now known that the intestinal wall has no such function, but that when a meal of animal food passes through the intestinal wall into the circulation these food materials in the form of amino acids are stored in the flesh, particularly in the muscles, and later on more gradually converted into proteins usable for the nutrition of the cells.

So long as the cells are normal in their reaction the presence of these animal proteins is without harm and constitutes a natural, intermediate event between digestion and metabolism, and the cells are able safely to appropriate to their nutrition and activities their necessary food supply. When the relation of the cell to a protein is disturbed and that particular protein is allowed to come in contact with the cell we have an irritation and disturbance of metabolism, which if general and long-continued results in cellular damage and the gradual development of the condition which for the purposes of this paper we have called cardiovascular-renal disease.

To understand the nature of this disturbance of metabolism we must bring to our aid the findings of modern serology, to show how and in what way the cell may lose its proper relationship to proteins. The most striking example of this disturbed physiology is brought to light by the phenomena of anaphylaxis. Anaphylaxis is a violent disturbance

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of the cell on coming in contact with a protein to which it has become sensitive. The cells of a guinea pig can be sensitized to white of egg by injecting white of egg into the circulation, and later on the animal may die a violent death when additional egg white is introduced.

The exact steps by which human beings become sensitive to food proteins is not by any means clear, but the fact remains that they do become so sensitized, and that proteins introduced through the intestinal tract can produce an irritation of the cells, which if continued for a long period of time results in organic damage, elevated blood pressure, deterioration of the heart, and all the things which go with cardiovascular-renal disease.

An examination of the histories of many hundreds of people suffering from arteriosclerosis has shown in a majority of cases a record of a sensitizing event. This may have been a severe illness from an infectious disease, particularly typhoid fever, chronic appendicitis, a period of great nervous strain, or some acute food poisoning. It seems to be a fact that up to the point in the history of these individuals where proteins were badly borne the latter had been harmless, while from the time that they became harmful they were very harmful indeed, and resulted in cellular destruction, with the replacement of the destroyed cells by connective tissue, resulting in the deterioration of organs.

Founded on these hypotheses I have become a profound believer in the value of dietetics in the management of this condition, and an earnest advocate of those general hygienic measures, hydrotherapeutics, rest, and exercise, which influence the process of metabolism.

The fact that so much of this chemical process takes place in the muscles shows that it is important that the muscular system, particularly the heart, should be kept in order by exercise, and if disordered restored by the same agency under proper supervision.

Arteriosclerosis is a disease without symptoms during the first five years of its existence, and often without objective signs. Pain in the region of the heart is one of the earliest of all symptoms, and is to be explained by the fact that the heart is one of the largest and most active muscles in the body that has a highly organized protective mechanism by which any impairment of function is reflected to the spinal cord and gives rise to pain referred to the distribution of the sensory nerves going through that level. Of course, the muscle itself has no possibility of showing pain.

Again, a disturbance of metabolism often calls for an elevation of blood pressure, so that the heart muscle impaired in its nutrition and an elevated blood pressure constitute the elements causing cardiac pain. This pain is noticed on exertion, but it may be noticed a few hours after a meal at the time when the food proteins are being stored in the heart muscle. A very unfortunate habit of the profession often refers these pains to disorders of stomach digestion, and leads to the neglect of a proper dietetic and physical hygiene until organic change in the kidneys and blood vessels is so far advanced that cure is difficult.

Particularly unfortunate is the fact that the close relationship between the innervation of the stomach and the heart leads in most of these persons to a gastric neurosis accompanied by the production of large quantities of gas. So thoughtless people from time immemorial have blamed serious heart disorder upon a supposed fermentation in the stomach, while in fact the stomach neurosis was secondary to a real disturbance of metabolism involving the heart muscle. Hence, nine times out of ten the early stages of cardiovascular-renal disease are treated as disturbances of gastric digestion.

Just why this supposed gastric pain in the region of the heart is increased by exercise, if it is a gastric pain, I have never heard anyone attempt to explain. I have yet to see an example of pain on exertion at the time of the absorption into the muscles of the proteins of digestion that did not represent a commencing cardiosclerosis, that if untreated did not reveal itself a few years later in arteriosclerosis.

So much for the consideration of the true nature of so-called cardiovascular-renal disease—arteriosclerosis.

Founded upon these conclusions our treatment must be directed to the underlying cause, namely, the disturbance of metabolism. As this disturbance consists in a majority of instances in a loss of tolerance of the cells to particular proteins, and as it does not make much difference in the field of nutrition what protein is used, it is a simple matter in theory to supply the necessary nitrogenous food by a single safe protein. Experience has shown that this safe protein is found in milk, which is the only protein provided by nature exclusively for food purposes.

My experience leads me to believe that practically all well-advanced cardiovascular-renal sufferers are sensitive to meat proteins; that nearly all are sensitive to fish proteins, and that a large part are sensitive to egg proteins. The single exception seems to be with the flesh of fowl, which is tolerated by many who cannot tolerate meat or fish.

In the presence of severe disease all eggs, fish, meat, and stock soups should be excluded. This leaves a much wider dietary than would at first be supposed.

After disposing of the supposed gastric origin and the uric-acid origin of the disease, we have open to us practically all the fruits, vegetables, cereals, fats and oils, with every kind of milk product. We exclude only things which the individual finds from actual and repeated experience to disagree with his stomach.

Alcohol is not specifically harmful, though its side effects are unfriendly to any systematic hygienic treatment.

Tobacco is a matter of individuality. A few people are profoundly sensitive as to their cardiovascular system to tobacco. Most people can use it in moderation.

The second indication of treatment founded on the belief that all these examples of degenerative circulatory disease are in their ultimate analysis examples of chronic food poisoning is attention to the intestinal tract, particularly as to the elimination of stagnating materials. For this purpose the good and tried remedy, castor oil, is so much better than any other that I use it almost exclusively, and as nearly as possible in its pure form.

In starting treatment of a person with cardiac pain, high blood pressure, and albuminuria, I give a full ounce of castor oil every other day for three days, then at the end of a week, then in two weeks, then in three weeks, and follow this by a monthly dose as the rule for a long period of time.

The third element in treatment of the disturbance of metabolism that is the underlying cause of cardio-

vascular-renal disease is found in exercise. Exercise constitutes the best cardiac stimulant, the best pulmonary excitant, and the best remedy for intestinal inactivity. I am accustomed to tell people with high blood pressure that bodily fatigue judiciously obtained out of doors is the best antidote for that condition.

To sum up this conception of the nature and treatment of cardiovascular-renal disease it may be said that we must seek the underlying cause of the disease in the ultimate cell. We must regard the organic changes as the result of the process—not as the disease itself.

In treatment we must primarily treat the disturbed metabolism by cutting off the source of irritation in proteins to which the individual is sensitive, by a diet to which I have given the name "the few-protein diet," because it implies the complete elimination of irritating proteins rather than the diminution of their quantity, the recognition of exercise as the best cellular and organic stimulant, and the use of castor oil as the best single remedy.

In addition to these things we will bring to bear on the treatment of the individual organs such methods as are needed and as our judgment dictates.

Time does not permit of the discussion of the place of iodide of potassium, nitroglycerin, digitalis, hydrotherapy, and many other implements of the art of medicine that are appropriate.

The great enemy of the cardiovascular-renal patient is the supposed specific, whether it be electricity, radium, some fantastic combination of salts, or the latest fashionable combination of iodine. The road to restored health is rugged and beset with discouragements, but the comfortable by-way offered by the supposed specific has led to the subtraction of many years of life from persons who have been so unfortunate as to rely on them to the neglect of the essentials of treatment.

The cure resort as exemplified by the cures of Europe and now by our own Saratoga, makes the strict regimen much pleasanter to carry out, though many cures are constantly being successfully conducted by people in their own homes. The sufferer from cardiovascular-renal disease is often the most valuable citizen in his community and much more worth saving than those liable to succumb to infectious diseases, and if after hearing this paper you can return to your homes with renewed hope that you can help these people I will be more than satisfied with my day's work.

54 West Fifty-fifth Street.

THE SIMPLIFIED TREATMENT OF ANORECTAL AFFECTIONS—RECTAL CONSTIPATION—RESUME OF INTESTINAL STASIS.*

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THE SIMPLIFIED TREATMENT OF ANORECTAL AFFECTIONS.

Examination.—Some physicians base their diagnosis, usually "piles," on finding blood upon the shirt or on the patient's statement that he has pain in the rectum. There is no excuse for not diagnosing anorectal affections to-day because they can be inspected through the proctoscope, the character of the feces can be detected by chemical, microscopic, and macroscopic examination, and the extent and connection of rectal diseases with neighboring organs can be determined by digital exploration, bimanual palpation, fluoroscopic examinations, and radiograms.

Preparation of Patient.—The common practice of surgeons purging patients and deluging the colon before rectal operations courts annoyance and infection, since the field of operation will be bathed with fluid feces, which delays the work, contaminates the wound, soils the dressings, and makes the patient uncomfortable afterward.

For *fistula, hemorrhoidal, fissures, polypoidal,* and other *minor operations* but a few moments are required to prepare the patient, which is done by having him inject a glassful of soapsuds into the rectum to bring away solid feces, after which the mucosa is mopped over with peroxide of hydrogen or other antiseptic, procedures which forestall many annoyances. When the bowel is to be amputated or resected for rectal procidentia, stricture, tuberculosis, or cancer three or four days' preparation is required and the gastrointestinal tract is first cleansed by catharsis and colonic ichthyol 1 per cent. irrigations, and then tied up with an opiate or astringent which insures a dry field of operation.

The parts are never shaved, except where *sutures* are used, and primary union is anticipated because the hair stubs cause great annoyance.

Anesthesia.—Local anesthesia is dependable and indicated in about 80 per cent. of rectal operations, but is contraindicated where one does not know what is required beforehand. Many drugs have been employed, but none are superior to a ½ per cent. eucaine solution, which anesthetizes the part quickly without inducing toxic manifestations.

The writer has successfully operated upon thousands of patients under eucaine or sterile water anesthesia, and has found that preliminary pain is slightly less after eucaine than water and that postoperative pain and bleeding follow eucaine very much more frequently than water anesthesia.

Quinine and urea solutions take longer, but produce anesthesia which lasts hours following operation and prevent postoperative pain, but this advantage is offset by occasional sloughing and retarded wound healing which usually follows their employment.

The writer does not employ adrenalin in local anesthetics, for it primarily causes contraction and later relaxation of the tissues, and he prefers an immediate hemorrhage if bleeding is to occur, so that he can arrest it at once.

Postoperative treatment.—General surgeons are divided in their method of controlling the stools after rectal operations. Many purge the patient, liquefy the feces, and keep him busy and miserable through his frequent visits to the toilet, while others administer an opiate and tie up the bowel for days, procedures to be condemned because the *former* insures continuous irrigation and favors infection through soiling the field with fluid feces and the *latter* leads to excruciating pain and tearing open of the wound when accumulated, dry, and nodular fecal masses are evacuated.

The writer keeps his patients on a regular diet and does not order a laxative unless the stools are hard, when he prescribes mineral oil, fruit, or other

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laxative in small doses to soften but not liquefy them, for at one sitting semisolid feces are evacuated without pain or injury.

The former practice of *cauterizing* wounds no longer obtains, and they are *drained* and not *packed*, pernicious procedures responsible for many unhealed sores and fecal incontinence. For cleansing wounds, the swab and cotton moistened in an antiseptic is substituted for copious irrigation, which leaves the rectum filled with the solution, which dribbles out, soils the dressings, and keeps the patient uncomfortable. When healing is tardy the wound is satisfactorily stimulated by placing a gauze pledget moistened in a silver nitrate 6 per cent., ichthyol 10 per cent. or balsam of Peru 20 per cent. solution in it, but when the tissues are irritable and rebel against stimulants methylene blue 10 per cent. is soothing and effective.

Pain from topical applications can be minimized by eucaine or cocaine 10 per cent. applications, but all suffering can be prevented by injecting eucaine ($\frac{1}{8}$ per cent.) beneath the lesion before it is treated.

Pruritus Ani.—Ball's operation for pruritus ani, having for its object the severing of nerves from the skin, is an elaborate procedure and leaves extensive wounds to heal when infection occurs. The writer has modified this procedure so that it can be performed under local anesthesia in ten minutes and the patient need not remain in bed more than two or three days.

External Thrombotic Hemorrhoids are anesthetized by injecting enough eucaine into the pile to turn it white, when it is transfixed with a sharp-pointed curved bistoury, slit open, the clot turned out, and the wound drained to prevent reformation of the tumor. Subsequent dressings consist in cleansing the wound and inserting gauze drains until healing is complete.

External Cutaneous Hemorrhoids are quickly removed with knife or scissors after having been injected with eucaine, which induces complete anesthesia within 20 seconds. Following excision the wounds are closed with catgut or permitted to heal by granulation which is preferable, since there is less danger from infection and postoperative pain is slight.

Many operations have been suggested for the cure of *internal* hemorrhoids, but the following procedures named in the order of their usefulness, viz.: ligature, clamp, and cautery and modified excision operations are the most dependable and less often followed by annoying and dangerous sequelæ.

Ligature Operation.—The ligature operation is generally used, reliable, is rarely followed by hemorrhage or complications, and its technique is simple and can be carried out under local or general anesthesia. Except when there is a special reason for administering gas or ether the writer always operates under sterile water or eucaine ($\frac{1}{8}$ per cent.) anesthesia. Hemorrhoids are brought into view by a small enema, suction pump, having the patient strain, everting the anus, tilting the fenestrated speculum as withdrawn, or by inserting cotton tampons and withdrawing them simultaneously which extrudes the piles.

The hemorrhoid is then injected with water or eucaine until white (which indicates complete anesthesia) incised at the mucocutaneous juncture, ligatured, and removed with knife or scissors.

Remaining tumors are similarly treated and the operation completed by pushing hemorrhoidal stumps above the sphincter. A thick wedge-shaped gauze pressure-pad is then placed over the anus and held in place by a strong T-binder to arrest and prevent bleeding.

Hemorrhoids located high after having been injected through an opening in the speculum are brought downward into the field of operation with forceps.

Formerly following ligature operations patients suffered considerably, and it often became necessary to catheterize them, but since the writer discarded large, heavy, harsh plaited silk for linen ligatures, severe postoperative pain and inability to void the urine have been rare complications because the sphincter and levator ani muscles are irritated less.

Clamp-and-Cautery Operation.—The steps in this procedure are as in the ligature operation up to and including the cut at the mucocutaneous juncture. The pile is then drawn downward, clamped, excised, and the stump thoroughly cauterized. A cauterized hemorrhoidal wound should never be sponged or handled because when the burned surface is broken dangerous bleeding follows.

Rectal tubes and gauze plugs should not be employed in hemorrhoidal operations because they are unnecessary, make the patient uncomfortable, and their removal is attended with excruciating pain or bleeding.

The clamp-and-cautery operation is radical, causes but little suffering, and can be painlessly performed under local anesthesia, but is not as satisfactory as the *ligature* operation, because the patient fears the glowing cautery point and may move, and the cautery frequently fails to work.

Excision.—There are several ways of excising piles, but the most elaborate technique is Whitehead's, which consists in removing the lower two inches of the rectal mucosa or supposed pile-bearing region and uniting the divided mucous membrane to the anal skin. This procedure appeals to the surgeon, but is rarely performed by proctologists and then only in a modified form, because it is difficult, bloody, and frequently followed by infection, hemorrhage, delayed healing, pain, stricture, fecal incontinence, incurable ulceration, loss of sensation at the anal outlet, intolerable itching, or other complication when infection occurs. The writer does not believe Whitehead's operation is justifiable in the treatment of uncomplicated hemorrhoids and has treated more than 200 men and women permanently invalided by Whitehead's operation.

A simple method of excising hemorrhoids is to seize each tumor, cut it off, ligate bleeding vessels, and close the wound with a catgut suture or permit the wound to heal by granulation. Again tumors may be removed in successive steps by alternately cutting and suturing until they have been excised and the wound closed. The advantage of these operations over Whitehead's is that a stricture will not follow because healthy strips of mucosa are left between the denuded surfaces and the bowel cannot retract.

Injection Method.—Since popularization of operative procedures under local anesthesia, the injection treatment of hemorrhoids has become almost obsolete, but quacks continue to use the method since they are unfamiliar with the newer technique.

The injection of protruding and bleeding internal hemorrhoids with a 30 per cent. solution of carbolic acid sometimes works magic and stops bleeding and protrusion immediately without detaining the patient from business or causing much pain; but in

other cases under similar conditions, the treatment is followed by considerable swelling, great pain, sphincteralgia, sloughing, abscess, and fistula, phlebitis, pyemia, a tedious postoperative treatment or imperfect cure, and a number of deaths and annoying sequelæ have resulted from the procedure. In recent years the author has had no occasion for injecting piles because under eucaine anesthesia he has been able to painlessly remove hemorrhoids within five minutes without a lengthy convalescence, leaving dangerous or distressing sequelæ and with the assurance that a permanent cure will follow.

Fissure.—When non-operative measures, viz, keeping the feces soft, cleansing the wound, and topical applications of silver, ichthyol, or balsam of Peru (8 per cent.) have failed to heal a fissure, an operation is indicated.

Three surgical procedures—*incision*, *divulsion*, and *excision*—have been recommended in the radical treatment of *fissure-in-ano* or painful ulcer.

Fissures do not heal because the wound obtains little rest, owing to sphincteric contractions, consequently it is necessary to select an operation which will place the anal muscle at rest.

The *incision* (division) operation is the simplest and most reliable procedure, causes the least suffering, and gives the quickest and best results. Formerly the writer favored divulsion, but now he incises the *anal canal* because this puts the external and internal sphincter muscles at rest, allows the wound to heal promptly, and widens the rectal outlet, which lessens the possibility of a future tear and often cures constipation. In his earlier operations he introduced a curved sharp-pointed bistoury into the rectum and divided the sphincter by withdrawing it. The operation arrested sphincteralgia, but the wound required from three to seven weeks to heal and he decided that delayed healing was due to imperfect drainage of the cup-shaped cut. This defect, in the technique was overcome by substituting a straight probe for the sharp curve-pointed bistoury. The following procedure has been successfully employed by the writer in hundreds of cases without a complication.

Using his goose-necked anesthesia syringe, a few drops of eucaine is injected into and beneath the skin posterior to the fissure. The needle is then pushed forward—upward—and the sphincter and lower rectum are anesthetized. Using his scissors having sharp- and probe-pointed blades he passes the sharper through the tissues upward and posterior to the lower rectal wall for an inch or more at the same time the probe-pointed blade passes up the bowel. With one cut the skin and sphincters are divided, leaving a clean wound, which is drained by a gauze pledget. Afterward the wound is treated as following fistula operations. Good results are also obtainable by dividing the muscle in the posterior median line on either side or by a posterior V-shaped incision. Some surgeons advise *partial* division of the sphincter, but this procedure is unsatisfactory because of the difficulty in knowing how deep to cut and it does not put the muscle completely at rest, which is essential for a cure.

Divulsion is popular, but the writer discontinued it because the paralysis induced by stretching of the sphincter does not always last long enough to permit the fissure to heal. Stretching of the sphincter may be done gradually with bougies, or quickly with the fingers under local or general anesthesia. The writer has treated cases where fecal incontinence followed careless forcible divulsion of the sphincter with mechanical dilators or the fingers and has seen multiple large rents caused by the stretching.

Excision.—Fissures should not be excised because considerable time is required, infection frequently follows, and the results are unsatisfactory. This procedure consists in trimming the edges of the rent and closing the wound by sutures or permitting it to heal by granulation and the operation is not effective except when accompanied by division or divulsion of the anal muscle.

Ulcers located near the anus require the same treatment as fissures since they seldom heal until the sphincter muscle has been divided. Lesions higher up are usually numerous, large, deep, and caused by syphilitic, tuberculous, dysenteric, entamebic, bacillary, or catarrhal colitis. In this class of cases the bowel should be frequently irrigated with antiseptic, stimulating, or soothing solutions (silver nitrate, ichthyol, or balsam of Peru 1 per cent.) with the patient in the knee-chest or inverted posture, and lesions low down should be individualy cauterized or treated through the proctoscope or sigmoidoscope by topical applications. When these measures fail, provision should be made for through-and-through bowel irrigation by *appendicostomy*, *cecostomy*, or the writer's *entero-cecostomy*, which provides a means of irrigating both the ileum and colon separately or at the same time.

Fistula.—There are many types of fistulæ, but the writer will not describe the operative measures of each because the underlying principle is the same in all. The more common or complete type of fistula may be operated upon by either the *division* or *excision* method.

Division is the best procedure because the technique is simple, requires but about five minutes, the results are satisfactory, and fecal incontinence seldom follows. When the sinus is divided under local anesthesia the tissues immediately above it are injected with eucaine until *blanched*, care being taken to prevent the needle from entering the tract. The end of the groove director is passed through the outer and then the internal opening into the bowel where it is caught by the finger, brought outside and left resting across the anus. All overlying tissues are then severed with a sharp-pointed bistoury, or the director may be dispensed with and the tract divided with the aid of the writer's probe-pointed fistula scissors.

Excision Operation.—Here a probe is introduced through the sinus and brought out through the anus, where the two ends are twisted together, so that the probe can be used as a guide and tractor. The sinus is then quickly dissected out by a succession of cuts made on either side and behind it. When the tract has been removed, the divided ends of the sphincter and wound edges are accurately approximated with deep and superficial chromicized gut sutures and covered by a dry dressing.

Blind Internal Fistulæ running downward under the sphincter and skin are difficult to operate upon. Formerly, time was lost and false passages were made in attempts to locate the sinus by cutting down upon it, but with the writer's grooved director the operation has been simplified, viz., His angular grooved director is introduced into the rectum until its probed point can enter the opening and be drawn downward through the sinus until the integument bulges. It is then brought out

through an opening made for the purpose and allowed to rest across the anus while the overlying structures are divided.

If the angular director is not at hand, the indurated tract is located and cut down upon, after which an ordinary director is introduced from without and the sinus divided in the usual way.

There is no danger of fecal incontinence following fistula operations where the *sphincter is cut at a right angle, the wound is drained and not packed* and *the skin and mucous membrane are prevented from growing down into the cut and separating the muscle ends.* The dressings are changed when soiled and are gently replaced to prevent destroying fresh granulations, which delay healing and favor incontinence.

Stricture.—Formerly rectal stenoses were treated by *forcible* or *gradual divulsion*, but this dangerous practice has been abandoned except when the constriction is within three inches of the anus, because many deaths have followed rupturing the bowel above the peritoneal attachment.

The rational treatment of strictures consists in *dividing them under local anesthesia when low down, excising the diseased gut when higher up* and performing *colostomy* in inoperable cases.

Polyps.—Polyps which protrude are anesthetized with sterile water or eucaine, *ligated* and *cut off* or *excised* by the *clamp-and-cautery* operation. When situated high they are located through the proctoscope and *twisted off* (torsion) or *removed by placing a Gant valve clamp upon their pedicles*, which causes them to quickly slough off in a few days without causing pain.

When polyps are numerous and scattered throughout the colon and cause a foul discharge or obstruction, appendicostomy, cecostomy, colostomy, or excision of the diseased colon or rectum is indicated.

ANORECTAL CONSTIPATION.

Surgical constipation or *intestinal stasis* occurs more frequently than is believed. Occasionally it is induced by ptosis, pericolic membranes, chronic invagination, angulation, volvulus, adhesions, Lane's kink, ileocecal valve incompetence, or other abdominal lesion, but *infrequent* and *incomplete* evacuations responsible for intestinal autointoxication are located in the *rectum* three times as often as the abdomen.

Anorectal constipation may be induced by growths, strictures, or inflammatory conditions, but stasis here usually results from:

1. Narrowing of the anal canal.
2. Hypertrophy of the rectal (Houston's) valves.
3. Hypertrophy of the levator ani muscle.
4. Hypertrophy of the sphincter muscle.
5. Coccygeal deviation.
6. Hypertrophy of O'Beirne's sphincter.

1. Narrowing of the anal canal: This ailment, a frequent cause of painful defecation and constipation, can be corrected in five minutes by anesthetizing the posterior median rectal wall upward for two inches and painlessly splitting the canal with a probe-pointed bistoury under eucaine anesthesia.

2. Hypertrophy of the rectal (Houston's) valves.—Martin's cutting operation requires considerable time, is accompanied by hemorrhage, frequently followed by infection, and puts the patient in bed. The writer's valvotomy is not accompanied or followed by complications, can be performed in a moment, and permits the patient to return home. It consists in placing one of his clamps upon the valve which it divides by pressure necrosis in from three to five days, depending upon the amount of fibrous tissue in the submucosa.

3. Hypertrophy of the levator ani muscle.—Constipation from this source is usually characterized by fragmentary stools, frequent micturition, and uneasiness in the prostatic region. It is easily cured by dividing the muscle laterally or in the posterior median line. In either case the cut should be brought out through the anal skin and drained, otherwise infection may ensue.

4. Hypertrophy of the sphincter.—The anal muscle is painlessly divulsed with the fingers or divided under infiltration anesthesia, the latter being preferable because it permanently widens the anal outlet.

5. Deviation of the coccyx.—Where the coccygeal tip bends the rectum inward it induces constipation. The writer's operation for removing the bone is practically bloodless and requires but three minutes, a pair of heavy blunt-pointed scissors, a hook, Hagedorn needle, and catgut.

With the first cut the coccygeal tip is exposed and hooked up. Then the lateral attachments are severed and the bone removed by three successive cuts directed outward, after which the wound is closed by three chromicized stitches.

6. Hypertrophy of O'Beirne's sphincter.—This muscle, located at the narrowest part of the large intestine (rectosigmoidal juncture), is rarely mentioned though it frequently causes intestinal stasis. When the mucosa is irritable, inflamed, or ulcerated, rectocolonic irrigations of ichthyol or balsam of Peru (1 per cent.) are indicated, but better results are obtained when they are alternated with an oil combination containing bismuth poured into the sigmoid flexure through the proctoscope with the patient in the inverted posture.

When obstipation is almost complete or enterospasm is a complication, this treatment should be reinforced by hot fomentations and belladonna with an opiate which induces relaxation of the longitudinal and circular muscle fibers. Where the gut is strictured at O'Beirne's sphincter divulsion is unsafe, and it should be resected or excluded.

If the writer had time, an interesting description could be given of *appendicostomy, cecostomy, ileosigmoidostomy, colectomy, sigmoidopexy,* and other procedures successfully employed in the treatment of *myxorrhea membranacea* and *myxorrhea colica* and the manifold colonic lesions responsible for *chronic diarrhea* and *constipation*, which are often unsatisfactorily treated by dieting and internal medication.

RÉSUMÉ OF INTESTINAL STASIS.

We are indebted to Bouchard and Metchnikoff for emphasizing the frequency with which *constipation* is complicated by *intestinal autointoxication* and Lane for pointing out the frequency and *end-results* of intestinal stasis induced by *chronic bowel blocking* or *obstipation.*

Gastric or intestinal stasis may be *acute* or *chronic*, but the former is not serious because it is quickly corrected. Stasis of the alimentary tract is usually encountered in the intestine (the colon and first part of the ileum) and has generally been present a long time before it is discovered or cured.

Definition.—Chronic intestinal stasis is characterized by atony or bowel blocking wherein chyme and feces are intermittently or regularly delayed in

their downward passage, drainage is interfered with and *toxins* accumulate and enter the circulation in quantities greater than the emunctories can eliminate to cause toxemia.

Etiology.—The author believes that intestinal stasis may be induced by *constipation* (*atonic, spastic, or fragmentary*) or *obstipation* (*any mechanical obstruction of the bowel*) where the intestinal content is delayed and copremia ensues accompanied by the usual manifestations of chronic *intestinal autointoxication.* Lane holds that constipation does not cause intestinal stasis, but that bowel kinks, pericolic membranes, cecummobile, etc., do and are accompanied by diarrhea, which does not complicate constipation. On numerous occasions the writer has attended otherwise healthy neurotic and elderly patients suffering from atonic constipation who were annoyed by fluid movements when they failed to secure daily evacuations and feces were permitted to accumulate as large masses or irritating scybalæ. In such instances diarrhea ceased when the offending masses had been evacuated by laxatives and enemata.

Chronic fecal impaction from any cause excites an inflammation of the mucous membrane or leads to the formation of sensitive ulcers, stercoral diarrhea, and intestinal autointoxication. Some patients become *immune* to fecal retention and remain apparently well when the evacuations are from three days to weeks apart, while others suffer profoundly from intestinal autointoxication where the movements are delayed but a short time or the bowel is not completely emptied daily. Occasionally accumulated bacteria and their toxins resulting from costiveness act as stimulants and exhilarate the patient who feels worse following emptying of the bowel.

The upright posture is a predisposing cause of intestinal stasis because it puts a strain upon the gut or its mesentery and leads to the formation of adhesions that kink the bowel. In the majority of instances obstipation and intestinal stasis are caused by congenital defects, ptosis, angulations (kinks), volvulus, invagination, dilatation, diverticula, pericolic membranes, extraintestinal pressure, stricture, growths, hypertrophy of the rectal valves, sphincter ani or levator ani muscles, lesions which impede the fecal current.

Pathology.—The changes which take place in and adjacent to the bowel in chronic constipation, obstipation, and intestinal stasis (autointoxication) vary with the etiology and duration of the obstruction, but distortion of one or more of the intestinal segments is usually present and because of the degenerating effect of the accompanying toxemia structures adjacent to and remote from the intestine often undergo changes.

Symptoms, Complications and End-Results.—The symptoms of intestinal stasis which are those of constipation and obstipation plus autointoxication, are so many and varied that the writer will not attempt more than to enumerate and casually discuss them.

The chief manifestations of constipation or obstipation and intestinal stasis are infrequent stools, anorexia, headache, furred tongue, malaise, mental apathy, indifference to social or business duties, insomnia, bad dreams, foul smelling breath and perspiration, sallow or dirty complexion, dizziness, palpitation, despondency, loss of weight, nausea, neurotic disturbances, subnormal temperature, anemia, cold hands and feet, dyspepsia, flabby muscles, numbness, coryza, rheumatic pains, raised or lowered blood pressure, hyperchlorhydria, disturbances of the thyroid gland, degeneration of the breasts, ptotic organs (from loss of fat), abdominal, pelvic, or sacral discomfort and pain, weakened heart action, diarrhea, reflex disturbances causing gastric indigestion and pain in and distant to the intestine, uteric, tubal, appendiceal, ovarian, and vesicular complications (involvement by adhesions or disease).

Other and more serious *end-results* and *complications* caused by bacteria (infection) and toxic agents arising from *intestinal stasis* are degeneration of the bodily tissues, ulcerated gums, endocarditis, pyorrhea alveolaris, degeneration of the breasts, arthritis (rheumatism-gout), loss of hair, appendicitis, syphilis, cystitis, endometritis, salpingitis, cholecystitis, gallstones, peritonitis, affections of the thyroid gland, duodenal dilatation and ulcers, disease of the liver, and bone, abdominal, or pelvic abscess, pancreatitis, degenerative eye diseases and ptosis of the uterus, viscera, or rectum.

Chronic gastrointestinal autointoxication also predisposes the patient to *tuberculosis, cancer of the stomach, pancreas, intestine, breast, gall-bladder* and *ducts, Still's disease, skin lesions, ulcerative colitis,* and other complications, some of which were discovered by Lane.

It is not difficult to determine that a patient suffers from bowel blocking and intestinal stasis, but frequently it is impossible to diagnose the character of the obstruction before laparotomy though the history has been taken, the abdomen examined, the stools analyzed, the bowel studied by stereofluoroscopic inspection, and radiographs of the stomach and intestine have been made.

Treatment.—The treatment of chronic intestinal stasis may be *non-operative* or *surgical.*

The therapeutics of the *non-operative* treatment consists chiefly in regulating the diet, securing daily movements with the aid of laxatives and olive or mineral oil, having the patient rest in bed during painful attacks, exercise in the fresh air, wearing of a supporting binder, and resort to massage, electricity, vibration, hydrotherapy, and tonics to build up the system.

Surgical Treatment.—Largely through the teachings of Lane, many physicians are resorting to surgery much more frequently than is necessary and performing dangerous operations that leave serious sequelæ without benefiting the patient for *unimportant obstructing lesions* causing stasis that could be relieved by the less serious and more conservative procedures. The author believes less colon snatching and *short circuiting* should be done because the *former* often ends fatally and the *latter* frequently leaves the patient in a worse condition than before operation.

The indications for and technique of enterectomy, colectomy, sigmoidectomy, and proctectomy, intestinal exclusion (short-circuiting), colostomy, appendicostomy, cecostomy, and other operations indicated in the treatment of intestinal stasis have been described elsewhere by the writer and need not be considered here.

In closing his discussion of intestinal stasis, the author would urge surgical intervention as a last resort and not because a radiograph seems to show a mechanical intestinal defect.

In conclusion, the writer would urge his audience to study carefully *constipation, obstipation, and intestinal stasis* and to adopt modern methods of

diagnosing *rectal diseases, simplify office treatment,* and *perfect their technique* so that they can successfully operate upon fissures, hemorrhoids, fistulæ, and other minor diseases of the anorectal region without general anesthesia and other objectionable features. Should they do so, he prophesies that advertising *constipation* and *pile* doctors will soon be eliminated, which would be a blessing to the laity and profession.

471 Park Avenue.

THE DIAGNOSTIC VALUE OF BENCE-JONES ALBUMIN IN THE EARLY STAGES OF A CASE OF MULTIPLE MYELOMA.

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AND

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Bayonne, N. J.

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Mr. A. D. W., age forty-two; occupation, merchant; married; father of five healthy children.

Family History.—Mother died of pulmonary tuberculosis at the age of thirty-seven; father living at seventy in good health; two brothers living and well.

Previous History.—Had usual diseases of childhood. Since has had an attack of paratyphoid fever in 1910 with complete recovery. Had had financial and business reverses for a period of three years (1910-1913). During the month of December, 1913, had an attack of renal colic incapacitating him for two days.

Habits.—Excellent. No venereal history. Absolutely temperate.

Present History.—Patient had no occasion to consult a physician on account of his health until March 4, 1914, on which date he underwent an examination which was made necessary by the Employers' Liability Act of New York State. At this examination he was informed that his urine showed evidences of Bright's disease, and he was advised to consult his family physician. On physical examination at this time it was found that there was nothing unusual in his general appearance, the patient claiming that his general health had been good. He showed, however, most decided evidences of nervousness due to fright produced by having been told that he had Bright's disease.

Examination of his urine at this time showed the following: Color, milky, suggestive of albumin; sediment, plentiful and white in color; specific gravity, 1.010; reaction, acid; albumin, Bence-Jones; sugar, negative; indican, moderate amount; bile, negative. Microscopic examination, amorphous urates, acid phosphates; casts were not found in this specimen; few pus cells.

Subsequent examinations showed a persistence of the Bence-Jones body. In all twelve to fifteen specimens taken at different times were submitted. Our diagnosis rested among three conditions, viz., (1) multiple myeloma, with which this body is most frequently associated; (2) leukemias, with which blood conditions this body is sometimes found; (3) syphilis, with which this body is infrequently found.

Examination of the patient's blood showed the following: Hemoglobin, 85 per cent.; total erythrocytes per cu. mm., 3,140,000; total leucocytes per cu. mm., 8,000; color index, 1.0. Differential Count.—Polynuclear neutrophiles, 56 per cent.; lymphocites (large and small), 22½ per cent.; mononuclears and transitionals, 18 per cent.; eosinophiles, 3½ per cent.; basophiles, 0. Thus we were able to rule out leukemia.

A negative Wassermann in conjunction with the patient's past history of lack of luetic infection enabled us clearly to rule out syphilis.

Our only conclusion, therefore, could be tha tit was a case of multiple myeloma.

As a rule multiple myelomas are not diagnosed before the clinical picture of multiple fractures particularly of the thoracic skeleton are found. The symptoms in this case, however, were not typical. Subjectively there was present boring pain over the vertebræ, sacrum, ribs, and sternum. Objectively there was tenderness produced by pressure over these painful areas. The literature on multiple myeloma so far as we were able to discover deals almost entirely with advanced cases with the accompanying pathognomonic symptoms of this disease, namely, fractures of various bones, particularly the thoracic skeleton. The case to our minds was therefore, unusual in so much as the only marked characteristic was the presence of the Bence-Jones body in the urine.

Later in the disease the urine showed the same picture both chemically and microscopically with the occasional finding of casts of an apparently waxy consistency. This was by no means a constant finding.

The patient's general physical and nervous condition dating back to the time of his having been informed that he had a serious kidney lesion grew progressively and continuously worse. He continued to fill his position until April 3, 1914, when he had a severe attack of renal colic lasting for a period of twenty-four hours, during which time he was placed under the influence of morphine. He again resumed his occupation, filling his position up to the first of May, 1914, when he found he was no longer able to continue on account of a feeling of extreme exhaustion which had been gradually increasing during the past month. This, together with an ever-increasing nervous fear as to the final outcome of his condition, caused him to take to bed. At this time Dr. Harlow Brooks of New York was called in consultation, who, after examining the pathological reports, without hesitation confirmed our diagnosis, making the statement that he laid but little stress on what he found by physical examination inasmuch as at this early stage the diagnosis could be made in the laboratory only.

From May 17 until the time of his death, May 27, the patient was unable to retain any form, either solid or liquid, in his stomach. Every means to control his vomiting was futile. Rectal feeding was resorted to, but with no avail. The immediate cause of death was exhaustion, coupled with an ever-present and increasing belief that nothing could be done to prevent his death, even though he desired very much to live. This latter fact with the inability to retain food for a period of ten days seemed to hasten his end.

At the necropsy we looked for bone lesions and were not at all surprised to find that the ribs were severed by an ordinary scalpel with a moderate amount of force. The sternum was found so flexible as to be easily doubled upon itself in its long axis, and was almost as easily cut through with a scalpel as the ribs.

Lungs, normal; stomach and intestines, normal; spleen, normal; liver, some hydropic infiltration; heart, normal; kidneys, both were enlarged, pale in spots, capsule stripped easily. Microscopically.—Interstitial changes with round cell infiltration; tubules were dilated and filled with casts, exudate in capsular space with proliferation of Bowman's capsule; hyaline degeneration in glomeruli.

Adrenals showed marked granular degeneration and hydropic infiltration; no fibrosis seemed as yet to have taken place. Pancreas showed hydropic infiltration in islands of Langerhans. Sternum, very flexible; easily cut through with ordinary knife. Microscopically.—showed absorption of bone tissue. In most places bone trabeculæ were absorbed so that medullary canals were coalesced to form one large cavity. This type of cavity was filled with cells nearly all of one type, viz., myelocytic. They contained a large stippled nucleus, frequently eccentric and resembling very much the plasma cell; cytoplasm fairly large in amount staining faintly with eosin; in most places the whole microscopic field consisted of these cells alone arranged in mosaic; here and there a few normal marrow cells could be seen.

Ribs, soft, easily cut through and very flexible. Microscopically.—Showed cartilaginous replacement of an imperfect type; it looked very much like an attempt of nature to replace bone destroyed by the invading myeloma cells.

Most cases of multiple myeloma have an accompanying nephritis showing a small amount of serum albumin as well as the Bence-Jones body; so there is nothing unusual in its presence in this case excepting its severity. The glomerular changes were very marked. What is quite unexplainable is the only occasional findings of casts when the nephritis was so pronounced.

The ordinary tests for albumin are indeed sufficient if given the care such tests deserve. The urine in this case would show a tremendous flocculent precipitate before it even reached the boiling

point, which led to the conclusion by physicians who had previously examined this case, of nephritis. We regret to state also that this error is easily made not alone by general practitioners, but, in this case, by competent laboratory men as well.

Our observation of specimens showed the appearance of this cloud at 50° C., increasing up to 85° or 90° C., disappearing almost entirely at 100° C. On cooling it began to reappear at 70° C., increasing in density and remaining so.

In conclusion we wish to thank Drs. Arthur Mandel, John Mandel, Frank Schaible, and Alexander Frazer of New York, as well as Dr. George McLoughlin of Jersey City, both for corroboration of findings and assistance in the preparation of this case.

EXUDATES IN ARTIFICIAL PNEUMOTHORAX.*

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THE treatment of tuberculosis by the injection of nitrogen or air into the pleural spaces has now been given sufficient trial and the glamour incident to a rather novel, as well as a striking method of treatment having faded, we are able to examine sanely the results and to tabulate into rather accurate form the good and evil incident thereto. I believe there is little doubt in the minds of most tuberculosis workers that we have in artificial pneumothorax a sane procedure, if due thought and consideration are given the selection of cases. In that we are all agreed. On the other hand, that too many have operated without this due thought and consideration and in many cases with disastrous results admits of no argument.

However, it is not within the province of this paper to deal with phases of the question other than from the standpoint of exudates. Herein lies a complication that deserves more than passing notice, for in an experience covering over three years in this method or treatment no one complication has given the trouble and worry, both to physician and patient, as has the occurrence of effusion.

At the end of the first year of our work I was inclined to feel that the question of effusions was somewhat of a myth, and I even flattered myself that our technique was faultless and our knowledge of this form of operative interference was of necessity perfect. Otherwise why should we, as against so many others, fail to elicit fluid in the chests of our patients. Just, however, as I was riding on the crest of this wave of satisfaction our first case developed and, to be brief, many others followed until over 60 per cent. of cases treated a year or more showed varying amounts of fluid. From close observation I now feel confident in predicting that, given the proper amount of time, practically 90 to 100 per cent. of cases operated upon will show varying amounts of fluid. To cite an example, one patient had received gas for nineteen months with perfect results, when suddenly a moderate effusion occurred which went from serous to seropurulent, and finally became purulent, showing on culture and by microscopic examination the presence only of the tubercle bacillus.

*Read before the National Association for the Study and Prevention of Tuberculosis, Seattle, June 15, 1915.

The question as to the cause of exudates is a difficult one. Various opinions have been expressed and there may be reason in all. However, it may be very confidently stated that owing to the uniformity of their occurrence the causative factors must lie within the chest and not without; in other words, the factor of infection in refilling is very improbable. The fact that when a pneumothorax has been established, thus separating the pleural surfaces, an extension of the tuberculous deposits on this surface is easier, inasmuch as there is no opportunity to retard the spread of tubercle by a gluing together of the surfaces as is seen in the average pleura (von Muralt).

Then, too, we have the pleura in an unphysiological position, which, as Kaufmann has demonstrated in dogs, produces an anatomical change in the serosa, as is evidenced by the decreased ability of gas resorption. One has a right to expect that the infected pleura is particularly disposed to exudative inflammation under these changed relations. Forlanini observes that exudates occur after exposure of cold or from exertion, and mentions the fact that the transitional seasons, especially March and April, show the greatest number of such cases. In our experience we are able to bear this out to a certain extent, our greatest number developing in the change from our excellent fall climate to the winter.

In my opinion there is also an irritative effect of the gas pressure on the layers of the pleura, even though minimum pressure is produced. The very fact of a foreign element within the pleural cavity must of necessity cause inflammation with its attendant exudation. I see little, if any difference, in the effect upon the pleura of the different methods of operation, although I believe all Americans, at least, used the Forlanini procedure. This fact alone, when one considers the percentage of effusions abroad, where for a long time at least the Brauer open method was used, speaks little for the technique as a causative factor.

Exudates may be classified as serous, seropurulent, and purulent, the latter being divided into those showing no organism except the tubercle bacillus and those showing a mixed infection, usually the staphylococcus; the latter are relatively rare, in the work both here and abroad. In my classification I have grouped the seropurulent and purulent exudates under one head. It may be well to state at this time that in all our pus cases the specific gravity was high and a large albumin content was demonstrable, showing without question the fluid to be an exudate rather than a transudate. It would seem that there should be little question at least as to this distinction unless a hydrops could be demonstrated elsewhere in the body.

In all of our series of pus cases, as I will show later, we were able to demonstrate by cultural methods and microscopic examination tubercle bacilli alone in all but three, and two of these showed a staphylococcus, the other patient leaving before a specimen could be obtained; however, owing to the symptoms we supposed this case to be one of mixed infection. Another patient developed high fever, but we could not demonstrate the presence of fluid after repeated examination. Later he left for Colorado and his physician reported that a few days after arrival the presence of a pleural effusion was noticed. The journey, no doubt, was responsible for the formation of the fluid, since I feel reasonably sure that had it been there in an

appreciable amount we should have detected its presence.

The effect of effusions is open to discussion. Certain writers (von Muralt, Koniger) believe that they have demonstrated the presence of antibodies in the exudate and also in the blood stream, and attribute the beneficial effects noticed to this biochemical reaction. However, I fail to see why we should look further than the mechanical effects which, in my opinion, seem to explain everything. It is a conceded fact that in very unfavorable cases of tuberculosis antibodies can me demonstrated in the blood, but these same patients die of their disease, while in many favorable cases the presence of such bodies cannot be demonstrated, and yet those patients recover. Taking now the fundamental idea in the production of pneumothorax, we agree that it is the absolute rest of the lung by the application, so to speak, of a gas splint, to all intents and purposes the same as a plaster cast on a tuberculous knee that produces our results. Why then, when we substitute fluid for gas, should there be any difference in the outcome? As a matter of fact the presence of fluid slowly absorbed lengthens the intervals between the filling, which in itself is to be desired. However, we must admit that the complication is undesirable, highly disagreeable, even dangerous, and the slight advantages gained do not counterbalance the disadvantages.

Many authors mention the diminished absorption of nitrogen and a stiffening of the mediastinum, which, of course, would allow of the possibility of higher pressure without danger of a pushed-over mediastinum and a disagreeable downward pressure on the abdomen. These high pressures even under such conditions are, however, to be discouraged.

Added to this we have noticed in a few cases, after absorption of the fluid, a shrinkage of the affected side which is no doubt due to pleural thickening and the formation of adhesions, together with a certain amount of fibrous deposits on the exudate. The one possible advantage to be gained from this, I believe, is the ultimate tying down of the diseased lung for life; in other words, we have established a continuous compression even after the absorption of the gas.

Now relative to the treatment of these conditions. In the common serous exudates I believe interference is contraindicated so long as the effusion is producing no pressure effects or is showing no tendency to absorb and thus glue the pleural surfaces together; when if pneumothorax is to be continued sufficient gas should be given to insure separation of the surfaces. The danger of repeated tapping lies in the chance of possible infection. Here we have an excellent culture medium, and a single virulent organism carried in on the needle would be sufficient to produce an army of workers in a short space of time.

In the pleural effusions showing only tubercle bacilli it is our custom to aspirate as fast as a sufficient amount is formed, and if there is a tendency to thick pus we introduce a 2 per cent. formalin and glycerin solution. The number of aspirations varies in the different patients, so no hard and fast rule can be made, some forming very rapidly and other very slowly.

In the mixed infection cases we have tried aspiration with the introduction of formalin and glycerin solution and pursued a policy of watchful waiting, only to find that ultimately it became necessary to put in drainage and to leave a discharging sinus. In the majority of all exudates the positive pressure causes more annoyance than the same pressure before exudations take place. Usually, however, this symptom as well as the fever incident thereto can be controlled by keeping the pressure about neutral or slightly negative. The entire treatment can be summed up in the one word, conservatism, with the exception of the mixed infection where radical surgical interference is indicated.

The ultimate outcome of all fluid cases, except mixed infection, I consider good even though showing a purulent exudate containing only the tubercle bacillus. Of course the length of time and behavior of the patient differ. I have seen large exudates give absolutely no symptom and small ones cause great annoyance. I have seen pus develop to such an extent that the pleural cavity was half filled with a dirty green fluid, and the patient exhibited no fever or untoward symptoms of any kind. Then I have seen small amounts of pus call for frequent aspirations to relieve marked pressure symptoms and high fever. A certain percentage of patients after two or three aspirations develop no more fluid and have an uninterrupted recovery, while a few have been repeatedly aspirated for months with no apparent change in their condition. Some of our pus cases have recovered perfectly; others, although still under treatment, are giving no cause for apprehension, while the mixed infection cases have been drained, leaving a discharging sinus. One of these patients is running a normal temperature and going to meals, having gained her former weight and looking perfectly well, while the other is still confined to bed after four months with what I consider a grave prognosis. In all the cases we have had no fatality. I believe it is the consensus of opinion that many of these patients may be subject to exudates for varous periods up to three years, and yet when the temperature returns to normal they can enjoy a fair degree of health with the prospect of ultimate recovery.

Serious as this complication may be viewed from an unprejudiced standpoint we should not be deterred from the use of artificial pneumothorax where it seems to be indicated. On the other hand, conservative men, and I like to consider myself one, will hesitate to induce a pneumothorax until they have given a patient a fair trial on the usual sanatorium routine. To use the procedure in early cases I believe to be a grave error, unless the disease shows a progressive tendency. On the other hand, the percentage of pus cases showing the tubercle bacilli is so small, and the percentage showing mixed infection pus so much smaller, that we can consider the complication a negligible quantity where artificial pneumothorax is indicated.

I will now outline briefly in the following table the results of the work of Dr. A. G. Shortle and myself at the Albuquerque Sanatorium, covering a period from May, 1912, to May, 1915:

Total number of patients operated upon, 110.

Total number of fluids, 32.

Percentage of fluids, 29.09.

Total number of fluids becoming pus, 12.

Total number of pus cases showing tubercle bacilli, 8.

Total number of pus cases showing mixed infection, 4.

Percentage of pus cases, 10.9.

Percentage of pus showing tubercle alone, 7.27.

Percentage of pus showing mixed infection, 3.63.

Now taking out the one patient that left for Colorado Springs, mentioned above, and the patient who returned home before a culture could be obtained, we have but two, or a known percentage of 1.81 mixed infection exudates in our series, one of these being the result of a spontaneous pneumothorax from which, of course, the mixed infection was produced.

To be perfectly fair also with respect to serous exudates, I can say that six of these patients showed an effusion before an attempt was made to produce an artificial pneumothorax. That reduced the total number occurring after the production to 26, or a percentage of 23.63. However, if we take those patients who have been under treatment for a year or more, the percentage will run over 65, thus bearing out the report of other observers who have been working for some time, that the longer we have these patients under observation the more effusions we encounter.

In a careful search of foreign literature I find in a series of 700 cases purulent exudates in 56, or 8 per cent. Out of this number two showed mixed infection, or 0.28 per cent., leaving 54 with pus showing tubercle bacilli alone, or a percentage of 7.71.

In an endeavor to obtain an average of results of men working in America I wrote certain physicians whom I knew to be following this line of treatment. I received replies from nearly all, but in the majority of instances they were very indefinite. Some had kept no accurate record of patients treated, while a few saw the patients only for one or two fillings, then turning them over to the home physician for further treatment. However, as far as possible, I will tabulate the results of this inquiry.

	Number	Fluids	Pus	Mixed
G. B. Webb	103	13	4	0
Ethan A. Gray	135	18	2	0
Mose Collins	16	1	1	0
Silvio von Ruck	65	12	2	1
Earl H. Bruns	28	11	1	0
Herbert King	57	6	0	0
H. Schwatt	70	12	3	0
Ralph Matson	32	6	2	0
C. L. Minor	51	10	2	2
Total	557	89 or 16 per cent	16 or 3 per cent	3 or 0.54 per cent

Walter Holden and Mary Lapham give only the percentage of cases showing effusions. These are respectively 11.5 and 20. Holden cites one mixed infection due to spontaneous pneumothorax, while Lapham mentions empyemas as a complication in her series. It is interesting to note that Lapham's percentage is about the same as ours, and she has been using the method for five years. Our experience covers a period of over three years, while the majority of American reports are for much shorter periods, and this, I am convinced, accounts for the lesser number of effusions. Gray states that he believes all cases show some fluid, but reports only those in which it could be easily demonstrated. I know from experience that the *x*-ray will show many small effusions that would be overlooked in ordinary physical examination.

J. Woods Price states that in their series of over 100 cases they have had about 50 per cent. effusions, some becoming purulent but none showing mixed infection. From my own experience and from having closely followed the literature, I believe that the infections with pus organisms and with the tubercle bacillus must be looked for from within. That technique plays an important rôle there can be no question, but when one adheres closely to the technique for major operations it seems hardly possible that the fault could lie there. On the other hand, if this were so the effusions should, in the natural course of events, all become purulent, while we know that we encounter mixed infection only in a very small percentage of cases.

Bonny reports three instances of pyopneumothorax resulting from a spontaneous rupture, and states that he is convinced that the infection comes from within. This is also the opinion of Floyd of the Massachusetts General Hospital of Boston, and Bruns of the U. S. Army Sanatorium at Fort Bayard, N. M. Bruns further states that he believes that the infection is purely accidental and likely to happen to any operator, no matter how careful his technique. Webb believes that the infection can be from without or within, which, of course, must be granted until we have stronger proof than at present. Murphy and Kreuscher claim to have had no pleural effusions, and state that if they should occur they would be due to causes other than the pneumothorax treatment. This coming from a man who was one of the first to use this method sounds amazing, especially in view of the vast horde of workers in this special field of tuberculosis endeavor. I am at a loss to account for his phenomenal results and shall await an opportunity to learn how such a disagreeable complication is to be avoided.

Holden is convinced that the technique plays a very important rôle and is sure we would have fewer pus cases if we watched the administration of gas more closely, his criticism being that we are too prone to run high pressures. To offset this argument I can say that it is a rare occasion in which we ever bring the pressure to more than neutral, and yet we have had the average percentage of effusion cases.

Gray believes that nitrogen is a sufficient cause for the effusions, and he deplores the frequent aspirations of such fluids, never interfering unless to relieve an embarrassed heart or opposite lung. He mentions the use of a blunt needle for the first operation of the infected lung. There can be no doubt that this point is wisely taken, for one can easily see the grave possibility of infection after such puncture. Shortle believes in frequent aspiration of fluids and the refilling with gas in order to avoid a possible rapid absorption and gluing together of the pleural surfaces, thus prohibiting the further continuance of a pneumothorax. I believe there is a happy medium to follow and would advise that a careful watch be kept, interfering only when there seems to be absorption of the fluid taking place.

From the foregoing statements and tables it seems to be demonstrated first that, given sufficient time, fluids develop in the majority of patients.

Second, that a certain percentage of these fluids become purulent.

Third, that the majority of these purulent effusions are due only to the tubercle bacillus.

Fourth, that a certain small percentage show organisms other than the tubercle bacillus, constituting an empyema.

Fifth, that unless producing pressure symptoms

and high fever serous effusions and effusions showing tubercle bacilli should be left alone. One should aspirate as little as possible.

Sixth, that all mixed infection exudates should receive proper drainage and be treated by radical surgery.

Seventh, that the slight advantages occurring from exudates are offset by the many disadvantages.

Eighth, that as the percentage of pleural exudates is so small we can consider the complication a negligible factor where artificial pneumothorax is indicated.

RELATION OF NASAL SYMPTOMS TO ENDAMEBIC INFECTIONS OF NOSE AND MOUTH.

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A CERTAIN group of nasal symptoms has for a long time baffled all attempts to relieve them. The clinical picture is a composite of a distinct group of symptoms; sudden onset, sneezing, watery nasal discharge, stuffiness of nose, postnasal rawness and sense of chilliness. The attack may last a few minutes or an hour, and clear up as rapidly without sequelae. The subject of these attacks is usually depressed and rarely feels "fit," or in a condition to do efficient work. Between the attacks the nasal passages rarely feel clear and comfortable. These attacks are usually associated, by the subject, with an exposure to draughts. He feels that he is subject to "colds." He usually associates the shortness of the attack and its sudden and complete clearing up to some care or remedy he has learned to use.

For the sake of brevity in reporting the following cases, I have called these attacks paroxysmal or abortive coryza, as they simulate an acute nasal infection, but lack the prodromal and clearing up features. The onset promises an acute coryza, but always aborts. The frequency and length of these attacks are modified by intranasal conditions, but are not caused by deformities or chronic infections, as a large number of my cases had no intranasal defects, or the symptoms continued after the nasal defects had been corrected. In the first and second group of cases reported, the nasal conditions were good or were made good, and yet the attacks of abortive coryza continued. In the mouths of all the cases reported, a more or less entensive pyorrhea alveolaris existed. Endamebae were found in the pus pockets between the gums and teeth, and in some of the cases the endamebæ were also found in the nasal discharges or secretions. That they were not found oftener in the nares in the earlier cases was due to the failure to recognize that the endameba in the nose differs radically from the endameba *buccalis* of the mouth. The *Endameba nasalis* resembles the *Endameba histolytica* of the intestines. It differs, however, in being larger, more irregular in outline, and in other general characteristics. Apparently the habitat affects the appearance of the endameba. Again, it is often difficult to secure a specimen from the nose near the focus of infection; hence, it is possible that failure to find the endameba is due to a disintegration of the endameba before it comes within reach.

The following is a report of a number of typical cases, their treatment and the results:

CASE I.—Male, age 40; large, powerful, and robust. Gave a history of recurrent nasal attacks. The first attack occurred during an auto ride three years ago in Cuba. It was perfectly typical of every attack since and just as severe. While riding at night, he had the sensation of the onset of a sudden cold in the head. The attack was characterized by frequent and violent sneezing, free watery nasal discharge, and rapidly increasing intranasal pressure. The onset was so sudden and severe that he was obliged to turn about and slowly return to his hotel where he felt very ill for about three hours. Next morning he was entirely free from sequelæ. About a month later he had another attack. From then on, the attacks increased in frequency until they occurred several times a day. At the time of his first visit to me the attacks usually began soon after rising, or after breakfast, and occurred at irregular intervals, but never during sleep at night. They would last from a few minutes to an hour, and would incapacitate him from business, or from driving his auto. He said that he was subject to "colds," and had frequent chilly sensations. Although robust, he was constantly on the alert to protect himself from draughts or getting "chilled."

Examination showed a rather narrow nose, perfectly normal except that the mucous membrane seemed reddened or superficially irritated. There were no pressure areas, and no nasal discharge. Nasopharynx was normal. The symptoms suggested a recurrent, anaphylactic condition, and all animal proteins except milk and cheese were excluded from his diet.

I have used "anaphylactic" in a somewhat broad sense to express the quality of the symptoms, which do not tally with those of a definite poisoning by bacteria or their products; nor do they approximate the severe type shown in patients sensitized to horse serum. They suggest, rather, the condition known as "protein sensitive." But as this is too cumbersome an expression, "anaphylactic" as used hereafter must be understood to indicate, rather than describe, the effect of the unknown amebic poison.

There was no relief at the end of ten days. A nasal and mouth smear was then made. The mouth proved positive for entameba, but the nose was negative. Injections of emetine were begun, and he was referred to his dentist for surgical treatment. From the first the attacks diminished in frequency and severity. At the end of six weeks, they had ceased. Two months later he reports entire freedom from any attack, and from the physical depression that was almost constant.

CASE II.—Female, age 35; slender, not robust. For years had recurrent attacks of sneezing, nasal stuffiness, and watery discharge, slight chilly sensations, and pharyngeal rawness. These symptoms usually disappeared as suddenly as they came, and rarely lasted more than half an hour. Nasal examination showed no abnormality or discharge, except areas of superficial irritation in the mucous membrane. Endamebæ were present in the mouth, but not in the nasal smear. Two months' emetine treatment and the necessary dental surgery resulted in entire cessation of the attacks, and an increase in the feeling of well-being.

CASE III.—Male, physician, age 50; healthy except for a persistent tinnitus, a susceptibility to slight head colds, and short but sharp attacks of nasopharyngitis. Several nasal operations, some years previously, had put the nose in a good anatomical and functional condition except for a tendency to stuffiness in the left nasal passage. Recurrent attacks of paroxysmal coryza and nasopharyngitis aggravated the tinnitus. A condition of depression and of lack of initiative frequently existed. These abortive attacks of coryza were typical of those described above. Because of the increasing tinnitus, relief from the nasal condition was sought, but with only temporary success. The case was submitted to me without examination, and from the clinical picture alone a diagnosis of endamebic infection was made. Later examination of nasal and mouth smears showed endamebæ in both, although the teeth gave no evidence of pyorrhea.

Surgical treatment of the mouth and injections of emetine cleared up the nasal stuffiness, stopped the coryza attacks, lessened the tinnitus, and increased the sense of well-being and general efficiency in his professional work. The improved conditions continue to the present time of writing.

CASE IV.—Male, age 42; robust and vigorous. A submucous operation two years ago had greatly relieved a very bad nasal condition, but a sense of nasal discomfort with frequent recurrent, abortive attacks of

coryza, and a feeling of profound depression persisted. The anatomical relations resulting from the operation were all that could be desired, but the nasal stuffiness continued, although he seemed to have a normal amount of breathing space.

Nasal smears were negative. Mouth smears were positive, and the teeth in bad condition. The surgical treatment of the teeth and emetine injections rapidly and completely relieved the nasal attacks and symptoms. The depression and toxemia cleared up, and interest and efficiency in his business increased. At the date of writing he reports a radical change in both his mental and physical condition. The relief is absolute.

CASE V.—Male, age 45; neurotic and in a bad neurasthenic condition. Sense of suffocation prevented normal sleep for days. A badly deflected septum and hypertrophied turbinals occluded both nasal passages. Intranasal operations gave him fairly normal conditions, and yet his attacks of paroxymsal coryza, nasal stuffiness, susceptibility to colds, chilly sensations, and neurasthenic conditions did not clear up. A bad pyorrhea alveolaris existed. Smears for endamebæ were positive for both nose and mouth. All nasal and neurasthenic symptoms gradually cleared up under proper dental surgery and emetine treatment. The emetine was given by mouth.

CASE VI.—Female, age 32; came under my care for an acute infection of accessory sinuses. After the acute attack cleared up I learned she was subject to frequent abortive attacks of coryza, and was in a physical condition that handicapped her greatly in her work as a teacher. The nasal cavities were normal, and the postnares negative. The pyorrhea alveolaris was very advanced. Several teeth had virtually fallen out, and four were very loose. The gums were badly receded. Endamebæ were found in both nose and mouth. Under emetine treatment the nasal symptoms rapidly cleared up, and the general condition improved, but if the emetine treatment was stopped, she gradually reverted into her former condition. Under the dental treatment which she received, there was slight improvement in the condition of the mouth. The lack of skilled and intelligent dental treatment of the mouth accounted for the failure in this case.

Twenty-three cases of the above type were treated. All but three were entirely relieved of the nasal and general symptoms described, and have remained so to the present time. The three cases that slowly developed the former symptoms again after the emetine treatment was discontinued were all cases in which there was little or no improvement in the mouth. This in each instance was due to some fault with the dental surgery. The permanency of the results depends entirely upon the elimination of the pus pockets between the gums and the teeth. So long as they continue reinfection occurs, and the chain of symptoms gradually returns.

The following series are all cases of abortive or paroxysmal coryza, accompanying persistent chronic accessory sinus conditions that were not relieved by various sinus operations.

CASE VII.—Female, age 62. Had repeated attacks of endocarditis and polyarthritis since eighth year of age. Two years ago she came under my care for severe pain over right frontal sinus and profuse purulent discharge from the right nares. She had recently recovered from one of her many attacks of acute infective arthritis. Examination showed an extensive necrosis of the anterior ethmoidal cells and a profuse thick creamy discharge from the frontal sinus on the right side. This condition had existed eighteen years. A Mosher operation relieved the pain, but although excellent drainage from the frontal had resulted from the operation, the discharge continued profusely in spite of all treatment. This past winter she developed septic appendicitis, neuritis of the left arm, polyarthritis of severest type, and a severe toxemia. Four months ago we found both nasal discharge and mouth secretions filled with endamebae. The mouth conditions were very bad. Only roots surrounded by pus pockets remained. Her feeble condition and pain made dental surgery impossible. Under emetine injections alone the discharge from the frontal sinus rapidly diminished, and within a month the vault of the nares was practically dry. From that time to the present the nares have remained clean and dry, and the general condition has greatly improved. The general septic infections probably came from the pyorrhea alveolaris as well as the focus in the frontal sinus.

CASE VIII.—Male, age 35. Came to me for examination four years ago. Gave a history of having a pansinusitis on the right side for the preceding two years. The pain and toxemia incapacitated him for his work much of the time. The drainage resulting from several previous operations was very unsatisfactory, and the irrigations he received once or twice a week were very painful. He refused operation, and returned home to a distant city where the treatment was continued, and the infection extended to the left side. Two months ago he came to me again. He had frontal and occipital pain, and both nasal vaults contained polypi bathed in thick pus. He was septic, and mentally and physically depressed. Nasal and mouth smears were filled with endamebae. Ten days before a double operation for exenteration of ethmoids and drainage of frontal and sphenoids was performed, emetine treatment was instituted. Almost at once the quantity of pus and the intranasal pressure diminished, and the polypi shrank as they always do when discharge lessens. At the end of ten days the operative field was a very different proposition than before the emetine treatment. The postoperative discharge, local reaction, and polypoid condition were far less than is usually the case after similar operations. I regret that sufficient time has not elapsed to report the ultimate result, but the emetine treatment simplified the operation to such an extent that a report of the case is justified.

CASE IX.—Female, age 27. Has a punched-out ulcer on the inner side of the anterior end of the right inferior turbinate. She also has a curious skin lesion which, although it has existed for years, like the nasal ulcer, suggests a specific origin. Wassermann was returned negative. The ulcer has been under the care of a rhinologist for a year without healing. At the time of her visit to my office, the ulcer was 5/8 inch in diameter. Smears from ulcer and mouth both contained endamebae. A radical change in the appearance of the ulcer began at once after emetine injections, and healing progressed rapidly. Ulcer entirely healed in two weeks.

CASE X.—Female, age 76. Severe parietal pain two years ago. Relieved by exenteration of left ethmoids. Recovery uneventful, but a slight streak of pus appeared now and then in the left nasal vault. Pain has had a tendency to return several times the past year. No cause could be found. Nasal smear proved positive, mouth smear negative, probably due to lack of teeth. Nasal discharge and parietal pain rapidly cleared up under emetine by mouth and have remained so the past four months.

CASE XI.—Male, age 37. Came under my care for acute empyema of left antrum, and frontal. Operation rapidly cleared up the antrum, but the frontal continued to discharge freely, although free drainage had been established. Mouth smears positive of endamebae; nasal, negative. Emetine injections and dental surgery improved the mouth condition. The frontal discharge diminished about 50 per cent. He has recently developed a myocarditis, and the frontal still discharges moderately.

CASE XIII.—Female, age 28. Five years ago I exenterated the ethmoids, and opened the sphenoids, antrum and frontal on both sides to relieve the unbearable pain of an acute pansinusitis. The operation relieved the pain, but a more or less slight but constant nasal discharge continued. Repeated examination showed no explanation. Several times a year she contracted a severe grippe infection of the nares. These attacks made her very ill, and caused great local pain. She also had frequent attacks of abortive coryza. She was constantly miserable, depressed, and unable to assume any responsibility. She consulted me recently for another acute nasal infection. This cleared up under the usual treatment, but left her in the same unsatisfactory health. Nasal and mouth smears were thick with endamebae, although there was no evidence of pyorrhea. As she was within two weeks of her accouchement, it did not seem advisable to give the emetine treatment. The case is reported as it is typical of the persistence of nasal discharge in spite of good drainage when andamebae are present.

The above are part of a series of ten cases that have come under my care since I began to study the relation of endameba to the persistent discharge from the accessory sinuses in spite of excellent surgical treatment and excellent resultant drainage. Six cases cleared up rapidly under emetine treatment and remain so at the present time. Two cases gave unsatisfactory results for reasons I am unable to determine. Cases VIII and XII cannot be classified yet.

The following cases all had typical recurrent attacks of abortive coryza and general malaise that suggest endamebic infection of nose, mouth, or alimentary tracts. Besides these specific symptoms all suffered from some general condition that was relieved by the effort to clear up the nasal conditions.

Case XIII.—Female, age 21; slender, not robust. Referred to me latter part of 1914 for acute mastoiditis. Simple mastoid operation, followed by uneventful recovery. Referred to me again six weeks ago for a so-called neuralgia of upper and lower maxilla on both sides. The paroxysms of pain were so severe that sleep was impossible without an opiate. The efforts of her dentist and physician were without effect. The attack had lasted two weeks when I first saw her. Intranasal examination and transillumination gave negative findings. The teeth had no cavities. One lower and three upper teeth had small pus pockets under the gums. Smears were strongly positive. Endamebæ were the only etiological factor that could be found. The gums were perfectly normal except for these small pockets. It did not seem possible that the severe pain could be caused by this condition. For want of a better trail to follow, emetine injections were given and the paroxysms of pain at once began to lessen and to recur at longer intervals. Within a week the pain had entirely stopped and remained so.

Case XIV.—Male, age 67; Englishman. Frequent attacks of abortive or paroxysmal coryza, very nervous, depressed, apprehensive, heart and sternal constriction and general toxemia. Had a blood pressure of 217, and a mouth full of suppurating roots. Treatment to reduce blood pressure and stimulate renal excretion failed to clear up the chief symptoms. Nasal and mouth smears were strongly positive. Emetine treatment was added to his general treatment. The result was that the depression, the toxemia, and sternal and precordial sensation of constriction were emphatically relieved as well as the nasal condition.

Case XV.—Male, age 57. Two severe attacks of heart block, one a year and a half ago and the other about a year ago. Had specific nasal and general symptoms of endamebic infection. Consulted me for tendency to recurrent abortive colds in head. Nasal examination showed left posterior exostosis without much pressure, and a superficially irritated mucous membrane. The mouth showed an advanced pyorrhea alveolaris. Pus pockets were frequent. Two of the roots of one molar were free in the mouth. Three other teeth were very movable. He had also had severe precordial distress and digestive disturbance almost constantly since his last attack of heart block. Nose and mouth smears were positive. Under emetine and dental surgery the tendency to colds in the head, precordial distress and fear to eat disappeared.

Eight other cases of which the above are typical have come under my observation where persistent general conditions have cleared up under the emetine treatment given for relief of nasal conditions.

The exact relation of endamebic invasion of the nose, mouth, or alimentary tract to local and general symptoms is difficult to determine. That there is an etiological relation I am positive. Are the symptoms due to the toxemia from the bacteria that feed upon the material eroded by the endamebæ or to an anaphylaxis from the endamebic excreta? If the symptoms were due to bacteria, emetine would not clear them up so rapidly. The fact that there is such a radical and rapid relief of the symptoms would indicate the excreta of the endamebae are the cause rather than the proteins of dead endamebæ. Otherwise, the rapid destruction of the endamebæ by emetine would intensify rather than immediately relieve the symptoms. If the symptoms were due to endamebic excreta they would be anaphylactic rather than toxic.

The nasal symptoms of abortive coryza simulate the anaphylactic symptoms of pollinosis, and the accompanying physical depression and lack of feeling "fit" are distinctly anaphylactic. The sternal constriction and precordial distress as seen in several cases are frequently seen in severe anaphylaxis.

In pyorrhea alveolaris the endamebæ erode off the blood-vessels, the lymphatic spaces, and, when the disease progresses far enough, the bony edge of the alveolar process. This opens up direct communication with the lymphatic and vascular circulation as well as the bone channels. A tooth rests on an elastic cushion at the bottom of its socket. A pressure of 200 to 400 pounds is exerted on the molars during mastication. This forces onward the fluids in the lymphatics and vessels in the cushion. With the release of the pressure the vessels fill again, and the same process takes place. By this means bacteria could be forced into the lymphatic or vascular circulation. The endamebic excreta could be absorbed in the same way and cause anaphylactic symptoms as easily as the proteins of pollen are absorbed through the mucous membrane of the nose and, in sensitized subjects, produce pollinosis.

The cases reported represent about 20 per cent. of the cases found to have endamebic invasion of the mouth. The reported cases all had characteristic abortive or paroxysmal attacks of coryza as well as anaphylactic symptoms. That the rest were free from these symptoms is due probably to the fact that they had not become sensitized. All people inhale pollen, but only those sensitized develop pollinosis.

Summary.—A characteristic group of symptoms, for brevity of reporting cases, called paroxysmal or abortive coryza, is frequently associated with the presence of endamebæ in the mouth or nose or both.

The chronicity of certain nasal symptoms and sinus discharge is frequently maintained by the presence of endamebæ at the source of the irritation or discharge.

The nasal symptoms and some coexisting general symptoms are due to a toxemia, or to an anaphylaxis caused by absorption of the proteins from the endamebæ.

The specific action of emetine on the endamebæ makes it possible to relieve a very large proportion of cases sensitized to their proteins.

For the laboratory work in connection with this study, I am indebted to Dr. S. J. Wilson.

40 South Oxford Street.

Homogenized Olive Oil and Fat-Free Milk.—Maynard Ladd states that in general, the results obtained in the use of homogenized olive oil as a substitute for cow's fat in cases of difficult feeding are such as to warrant the hope that it will prove a safe and valuable means of administering fat in the so-called cases of "fat intolerance." Its use will not, however, relieve the physician of the necessity of intelligent application of the principles of modification and adaptation of the food to the individual requirements of the infant.—*Archives of Pediatrics.*

OBSERVATIONS ON THE USE OF PITUITARY EXTRACT.*

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A WONDERFUL gland is the hypophysis. From earliest infancy it is intimately associated with the growth and development of the body, producing variations from the state of a dwarf to the stature of a giant. Its relation to the genital tract is most important. After adolescence it may produce acromegaly or that peculiar state in women known as dystrophia adioposogenitalis. Its most startling and specific relationship is to be found in the influence which the posterior lobe has on labor.

Why labor occurs at the tenth lunar month, usually within an accurate range of time, we do not know. We do know that in all probability this posterior lobe of the hypophysis through its secretion stimulates and influences uterine contractions. We know the changes which are produced in the hypophysis cerebri during pregnancy, changes which never entirely disappear, but do not yet know what initiates the activity of the secretion of the posterior lobe.

When an extract of the pituitary gland is injected during labor it stimulates uterine contractions, increasing all the various powers of the uterus to such a degree that we have a perfect right to say that the secretion of this gland is responsible for labor. This secretion, injected before labor has begun, has little influence except to produce a painless contraction. What new relation between the various glands occurs just before labor or what inhibitory influence is released, or what new secretion is introduced is as yet not definitely known.

When we inject pituitary extract, we are injecting a secretion normal to the body. When we inject it during labor, let us take it for granted that we are simply increasing the amount of this secretion, and hence simply bringing its activity up to the maximum that is advisable. The most that it does is to make the uterus behave as it does in the most typically normal forms of labor. It makes the uterine contractions effective. The patient has pain, the usual amount of pain is often increased, but the patient has genuinely valuable uterine activity. There is no toxic effect. There is no injurious influence on the patient's general systemic state.

The drug is put up in ampules. A hypodermic of a complete ampule produces a too forcible uterine contraction. A third or half an ampule is sufficient at any one time. The effect wears off at the end of a half an hour. If a patient in the preliminary stages has regular or irregular pains or discomforts, and is actually in the first stage of labor, even though it be extremely sluggish, injections of pituitary extract prove them to be real labor preliminaries by changing them to regular forceful rhythmic contractions.

Now with these facts before us it is a very simple thing to decide as to the value of pituitary extract, when it should be used, and how it should be used. I may put the statement in a few words. Whenever at any stage of labor, progress is slow (when conditions are normal), whenever labor pains are ineffectual (when conditions are normal), whenever labor pains become sluggish, or cease, or uterine atony supervenes (when conditions are normal), pituitary extract, in single or frequently repeated doses, makes the case behave like a normally progressing labor.

Now, what is meant by the statement, "when conditions are normal"? By this is meant that the position and the presentation and the relation between the fetal parts and the bony pelvis are such that a live baby may be expected with a fair degree of certainty.

In the first stage in primiparæ the head must be firmly engaged in and through the brim, and the head must be well molded. If the first stage proceeds too slowly under such conditions pituitary extract is indicated. After the cervix is completely dilated and the membranes are ruptured, and the well-molded head is through the brim, pituitary extract may and should be given when progress is slow. These observations are directed particularly to the labor in a primigravida. In the third stage pituitary extract aids in the expulsion of the placenta, although for this purpose I am accustomed to use ergotole and the Credé method.

In discussing the first stages of labor, the attention of most men is fixed upon the elements of dilation of the cervix. Very little stress is laid upon the fact that the head *must be firmly engaged in the brim and must be gradually molded so that it* may make its way through the bony inlet. If the head is molded, after being firmly engaged, as labor pains continue, the element of dilation of the cervix itself can more readily be controlled than if the reverse were the case. We are here confronted with a condition very much like that in dry labor, where the molding of the head and its gradual propulsion by the uterine contractions serves to dilate the cervix even if more slowly than were the membranes still intact. Hence, an all-important factor in the use of pituitary extract is that we must be sure of our proportions. We must be sure that the head is fixed and molded, and can pass through the brim without very great effort. If this is the case, and if then the cervix dilates slowly, or the further propulsion of the head goes on too slowly, the use of pituitrin in small doses will exert the most marked hastening effect upon the progress of the labor.

Pituitrin is very much the same as gasoline to an automobile. The more steadily we feed the automobile with the least amount essential to each speed, the greater is the effect. Pituitary extract, granted that all other conditions are normal, will aid the first stage, and will benefit markedly the propulsion of the second stage in primigravidæ. In multiparæ the effect is most remarkable in many cases, even when the head is not engaged in the brim, when the previous history shows that labor had progressed normally, and when there is no disproportion between head and pelvis bones. Labor is not infrequently completed; that means dilatation of the cervix, rupture of the membranes, expulsion of the child, in fifteen minutes after the first or second injection of pituitary extract.

In women who have already had children and in whom there are no bony malformations I use pituitary extract as soon as well recognized labor pains are present, and if the pains are irregular and not definitely diagnosed as true labor pains, pituitary extract is used to make this diagnosis. My experience has been that in multiparæ, with

*Read before the Hartford Academy of Medicine, June 7, 1915.

the aid of pituitary extract, the average duration of labor is two hours after I have reached the bedside.

Now, what has pituitary extract done for the obstetrician who uses it in the way I have mentioned above?

It has given him the opportunity of determining whether the so-called false labor pains are false or true ones, and they are often true ones. It has enabled him to shorten the duration of labor in primigravidæ and in multiparæ to a most decided degree. It has cut down the need for the application of forceps to such a degree that their use is scarcely ever indicated except in emergencies. It has almost entirely removed from the field of consideration long and protracted labors due to uterine inertia (emphasis on "due to uterine inertia"). It has given a much greater degree of certainty against the probable or possible occurrence of postpartum hemorrhage.

Let me say a few words about cesarean section. As soon as the incision in the abdominal wall is begun the patient receives a hypodermic of pituitary extract, one ampule. As a result, as soon as the fetus and placenta and membranes are delivered the uterus contracts so decidedly that the sewing is readily accomplished, the loss of blood from the wound surfaces is absolutely nil, and the bleeding from the uterine lining is remarkably slight. I repeat these hypodermics in similar doses for several days after the operation.

In abortions and miscarriages pituitary extract has no wonderful action in contracting the uterus, and I do not rely upon it entirely, using it and ergotole alternately during the curettage or the emptying of the uterus. I use both alternately to secure a proper involution after emptying of the uterus. With the ovum still intact, I rely on the packing of the uterus and vagina, and then use pituitary extract and ergotole alternately.

Of what value is pituitary extract to the gynecologist?

I have used this drug in a large number of cases of menorrhagia and metrorrhagia not dependent on growths or overgrowths in the uterus. I have given one ampule daily, or on alternate days for weeks at a time, and have rarely failed to benefit the patient.

The Dührssen operation is not infrequently followed by a tendency to menorrhagia, due in all probability to congestion. These patients are almost of a certainty relieved of their annoyance by the aforementioned use of pituitary extract.

There is no form of uterine bleeding, except that due to carcinoma, in which the continued use of this medication for six or eight weeks can in any way be productive of harm.

Pituitary extract is supposedly a powerful stimulator of peristalsis, and I have many, many times seen it work wonderfully in postoperative and postpartum cases. In two instances where catheterization was needed at intervals in patients not in the postoperative or postpartum stage the repeated daily use of pituitary extract has aided markedly in the restoration to the normal.

Some patients are a little sensitive to this drug, a slight pallor of the face and a little coldness of the extremities resulting which wears off at the end of fifteen minutes; their occurrence is by no means the rule, but rather the exception. In the obstetric cases I have never seen even this annoyance.

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AN UNUSUAL CASE OF MASTURBATION.

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The object of this brief report is to put on record a case which seems sufficiently striking to justify its being reported. The following history was obtained from his parents.

D. H——, a boy 10 years of age, has masturbated ever since he was two and a half years old. At this age it was a definitely established habit though the history extends back even farther than that—"practically to birth"—as one parent expressed it. At the age of five he was a physical wreck due to the peculiar method of masturbating. Resting on his head and feet forming an arch of the body with the abdomen downwards, by a peculiar longitudinal rocking motion of the body he obtained his satisfaction. The hands were not used at all. This rhythmical motion so shook the bed and room that it would wake the parents. At the completion of the process he would be more or less exhausted and covered with a profuse perspiration. He has been known to accomplish the act as often as twelve times in one night. His indulgence is not confined to the night but he resorts to his habit as often as opportunity will permit during the day. At the age of five he learned to accomplish the act by lying on his back and using the hand to rub the parts. From that time he gained in physical strength and though he was 3½ inches under normal height and 13 lbs. under normal weight for his age he looked rather well and rugged. At four years of age he committed rape upon a little girl of about his own age on a country road. At the age of 9 he did the same to a little girl slightly older than himself. At this time he took her back into some bushes to accomplish the act. After questioning the boy, with caution not to give him any knowledge of anatomy that he did not already have, I could not convince myself that there was real sexual intercourse. He is not strictly truthful regarding things relative to his habit and he may have intentionally misled me, but his answers seemed to indicate that he did not have full knowledge of the difference of sex. I purposely avoided any questions or remarks which might reveal to the boy the true method of sexual intercourse provided he were still ignorant of it. He did on one occasion, however, make the proper distinction and used the vagina of a bitch for sexual gratification. It has been impossible for the family to keep any pet animals. Cats, dogs, and his small brother two and one half years old were all used for the gratification of his habit whenever opportunity allowed. He could not be left in the presence of his brother for a moment without rubbing him till the parts were all inflamed. On one occasion he was found on the back of a fierce bull-dog in the neighborhood that everybody was afraid of. Shortly before he came under my observation the mother sent him four blocks away to mail a letter; as he remained longer than necessary she went to hunt him and found him behind a woodshed with a little girl. An incensed neighborhood had made it expedient for them to move several times within the year previous to their coming to me.

He has had only a year and a half schooling because he could not be kept in school on account of the fact that he spread the habit right and left among the children. During earlier years he showed no signs of shame whatever, indulging his habit in the presence of his parents without hesitancy. Of later years he sought privacy though he still discussed it apparently unabashed. At one time in my office I asked him to show me how he did it. Without shame or hesitancy he proceeded to a demonstration which I stopped. His mother was unable to keep any pockets in his pants for he worked holes in them through which to reach the penis and would perform the act in this way without the unsuspecting observer detecting him in it.

All methods the parents and various physicians could devise had been tried without avail. Even tying him down to the bed so that he could not move arms or legs did not prevent him from wriggling the body sufficiently to accomplish his end. The only way to prevent him was by constant watch day and night. For a year they sent him to the country to try absolute seclusion from suggestive surroundings such as the city with its children might afford. While there he indulged his

habit as before, even appropriating the chickens to the accomplishment of his end. The usual medical treatment gave no results. Suggestion failed. Detention in a private sanitarium in Santa Clara, Cal., brought no improvement. The superintendent of the insane asylum at Agnew, Cal., tried various preventive mechanical appliances and local irritants to stop the habit. The superintendent of the State School at Whittier, Cal., advised circumcision and resection of the vas deferens. A Seattle physician also tried various mechanical devises without success. The boy merely used the apparatus to rub against and accomplish his end. Kindness, punishment, including severe corporal punishment, rewards, etc., have been entirely without effect.

The Oregon State School for Feebleminded refused to take him unless he were circumcised and castrated. The father says the boy is a thoroughly good child and obeys in every particular except in reference to this fixed habit. He will not even promise not to do it any more. His only answer to such a request is "I do not know."

In their extremity the parents appealed to the Juvenile Court for advice and help. The court having no means of dealing with the boy referred him to the Society for Charities and Corrections, and they brought him to me. The boy was well nourished and yet underdeveloped, as stated above. He was nervous. Finger nails were bitten off close to the flesh. The foreskin was long and non-adherent. The parents testified to his being bright but he would not play as a child should. If told to build a block house he would build it mechanically in obedience to commands but manifested no interest in building it, tearing it down and rebuilding it. If told to ride his tricycle he would ride it mechanically till allowed to stop. He was polite and refined and showed every evidence of a good home and surroundings.

Circumcision was advised and performed by me on Feb. 22, 1911, not with the expectation of a cure but as a palliative measure. The second day after the operation he indulged his habit as before, protecting the head of the penis in the hollow of his hand and applying friction with the fingers and thumb at the root of the penis. If anything, he seemed to be worse after the circumcision than before, the local irritation probably serving as a stimulus to draw his attention to the parts. The parents had requested both circumcision and castration at the original operation and now urged castration both for the sake of the boy and the protection of the public. They were convinced that as soon as the parts reached development to the point of producing spermatazoa he would impregnate some girl. As yet there was no orgasm. The testicles were still undeveloped. The request for castration presented a problem and accompanying responsibility of no mean degree. I hesitated long, but finally became convinced that it ought to be done both for the good of the boy and the public.

It was not thought that castration would remove entirely the desire for the habit, for it would seem that the difficulty must be central, but on the same principle that castrated kittens, colts, pups, etc., lose almost entirely the sexual instinct if castrated when young the supposition seemed likely that, being castrated at his present age before development of the sexual organs was complete, the habit in the boy might at least be abated to a marked degree and thus protect his nervous system from the ruin which the existing amount of indulgence would seem to make inevitable. Furthermore, the public has rights which should be considered in such a case. This element played no small part in the decision reached.

Not satisfied with my own conclusions on so important an affair, I consulted a number of physicians and a large majority advised that it be done. Realizing that it is easy to give an opinion when the subject under consideration is not one's own personal affair to deal with, I did not rest entirely on the opinion of physicians alone, but appealed to three judges of the courts, the county physician, officers of the Society for Charities and Corrections, and they all felt that it ought to be done. Though the task was an unpleasant one, I finally consented to castrate the boy on the written request of the parents. While in the wash room preparing for the operation the history of the case was presented to two other physicians who were present. These two men raised such a vigorous protest against it that I finally postponed the operation in order to give time for further consideration. During the discussion at this time the father was present and was so affected that he turned pale and prompt removal to the open air barely prevented syncope. For two weeks after the ordeal which was evidently trying to him, he suffered with pains over the heart and was unable to lie on that side.

The case was then submitted to the Portland Academy of Medicine. There was only one dissenting voice. He, a genitourinary specialist, simply said, "I have no opinion to offer, but I have profound respect for a man's testicles."

Dr. S. A. Robinson, who took great interest in the case, took the history of it to the Governor of the State. In his opinion the State had no place to care for such a case, and he strongly advised castration. I then operated on March 20, 1911, and castrated the boy. The small incisions through which the testicles were removed, as well as the scrotum and a large portion of the penis were covered with a flexible collodion dressing to prevent him from infecting the wound should he continue his habit in spite of it. This dressing put him to some inconvenience, but he continued the habit immediately after the operation. During the night of March 24, four days after the operation, he masturbated six times, and during the morning following he accomplished the act seven times before coming to my office. He said that he usually could and did do it oftener in the afternoon than in the morning. The operation seemed to have no immediate effect on the boy. The incisions healed by first intention. While he still continued the habit the father reported on April 15 that more effort was required on the part of the boy to obtain satisfaction in the act. Shortly after this the mother reported that he had gone back to his boyhood method, viz., with his head and feet on the bed or sofa, he formed an arch of the body with the abdomen downwards and then by a forward and backward rocking of the body he obtained his gratification. The hands were not used at all except to steady the body while they rested on the sofa. At one time at my request he proceeded without shame or embarrassment to a demonstration of the method which I interrupted. In rocking the body forward the head was flexed under the chest to such an incredible degree that the impact of the movement brought the occiput of the head against the sofa with such force that he was bald at that point. One really felt that he was in danger of breaking his neck in the process. This method had so developed the posterior muscles of the neck that when he stood upright and let the head drop on the chest they stood out in a marked curve. His general physical condition suffered from the excessive strain. For a while he lost in weight but by November, 1912, examination showed that he was about normal so far as the respective physical functions were concerned. At home it was necessary to keep him a close prisoner for the protection of his younger brother and the community at large. The brother seemed to be perfectly normal. He is a half-brother to D. H——, the father having married the second time.

Continued difficulty in dealing with the boy at home seemed to make it advisable to renew previous efforts to have him taken care of in some institution. The crowded condition of the School for Feeble-minded prevented his admission for a time, but space for him was finally made and he was transferred to that institution. Up to the time of his admission to the institution the habit was still sufficiently strong to make it necessary to keep him practically a prisoner in his own home in order to protect his brother.

About two years after his admission to the institution the Child Welfare Commission, in going through the institution, ran across D. H——. Inquiry developed the fact that he had not had the habit since the change of Superintendents. Close watch night and day failed to catch him in the indulgence of his habit. The nurse who had him in charge immediately after his admission reported that he had the habit when he was admitted but that it had gradually disappeared.

During a recent visit to the institution on January 25, 1915, I was able to see the boy again. He is now thirteen years of age, rugged in appearance, and liked very much by the officers in the institution. The superintendent says, however, that he is not perfectly normal mentally. While he is of opinion that the boy is slightly feebleminded, yet he is so far above the average class of boys of his age in the school that it is really not the proper place for him.

As can well be imagined, criticism for castrating the boy was both severe and disconcerting, but the

severity and final outcome of the case have certainly justified the procedure. The problem presented many points for consideration which made responsibility heavy. The case is closed with a certain degree of satisfaction—certainly without regret for having treated the case as it was treated.

THE EFFECT OF INTRAVENOUS INJECTIONS OF RADIUM ON A PERSISTENT POSITIVE WASSERMANN REACTION.

By WINFIELD AYRES, M.D.,

NEW YORK.

NEARLY every physician has been at least annoyed by his inability to obtain a negative Wassermann in a certain proportion of his cases of syphilis. The writer, being no exception, wondered what effect radium would have on this condition. The histories of the following cases seem worthy of report in this connection.

CASE I.—W. Y. came under my observation in 1904. He had at that time a typical chancer and later developed secondary lesions. He was treated for four years by injections, inunctions, and internal medication and then, as there had been no evidence of disease in three years, was pronounced cured. He consulted me on January 9, 1915, because his teeth were loosening, his dentist having ascribed the condition to either medicine or syphilis. The patient had shown no signs of syphilis in ten years and had considered himself cured. His blood was taken for a Wassermann more as a matter of curiosity than because syphilis was suspected. The reaction was four plus. He was given five intravenous injections of 50 micrograms of radium at two-day intervals. On January 28 he reported that he "hadn't felt so well in years," but the Wassermann was still four plus. He was then given a 50 and at two-day intervals three injections of 100 micrograms. On February 26 his Wassermann was negative. He did not report again until May 6 when he stated he was feeling remarkably well, but the Wassermann reaction was returned four plus. He was given three injections of 100 micrograms each and on June 1 his Wassermann was again four plus. Two more injections of 25 micrograms and on June 15 the Wassermann was returned negative. Since that time he has been receiving weekly injections of 10 micrograms of radium combined with 10 milligrams of vanadium and his Wassermann has remained negative.

CASE II.—J. L. contracted syphilis in 1901 and was treated about six months with mercury pills and then received some form of intravenous injection. He was pronounced cured in 1904. He came to me in September, 1913, because he had had a Wassermann taken in June and it had been returned positive. There was no sign of syphilis, but the Wassermann was four plus. He absolutely refused to take mercury in any form and he was given neosalvarsan injections—five courses of three injections of 0.9 were given at three months intervals, but this had absolutely no effect on the Wassermann reaction. On November 27, 1914, he was given 50 micrograms of radium intravenously, but owing to an accident he was unable to report again until January 20, 1915, when he was given 50 micrograms of radium. This dose was repeated on the 22d and on the 24th. On February 10 his Wassermann reaction was four plus. Three injections of 100 micrograms each were given and on March 11 his Wassermann was negative. On May 15 his Wassermann was two plus. Three more injections of 100 micrograms were given and on June 15 the reaction was negative. Since that time he has been receiving weekly injections of 25 micrograms and his Wassermann reaction has remained negative.

CASE III.—C. W. contracted syphilis in 1908 and was treated for two years with mercury pills. He was referred to me on October 17, 1910. He showed no sign of syphilis and a Wassermann reaction was negative. I advised a second test and four months later it was returned four plus. I referred him to a physician in his own town for treatment, recommending mercury and neosalvarsan. He was treated for three years, but every test showed two or three plus. Beginning on January 27, 1915, I gave him intravenous injections of 50 micrograms of radium at two-day intervals until 250 micrograms had been injected. On February 27 his Wassermann was negative and has remained so since without further treatment, unless the local use of radium in his mouth for leucoplakia may have some influence on the reaction. This is extremely doubtful.

CASE IV.—C. L. developed a chancer which was followed by secondaries in 1902. He took mercury pills for nine months and from that time had no sign of the disease until shortly before he was brought to me in February, 1913. At that time he presented all the signs of cerebral syphilis. His Wassermann was four plus. He was given five courses of neosalvarsan (0.9), and an attempt was made to supplement this with injections of mercury, but this had to be discontinued. The patient made a complete clinical recovery, but his Wassermann reaction was one plus or stronger on every test. On March 27, 1915, his Wassermann reaction was one plus. He was given one injection of 100 micrograms of radium and this was followed by two injections of 50 micrograms each at two-day intervals. On April 12 his Wassermann reaction was four plus. He was then given a 150, 200 and a 250 micrograms injection with the result that on May 3 a negative Wassermann was returned. Since then the patient has been in perfect health, and on every occasion his Wassermann has been negative.

In conjunction with these four cases, one case of acute syphilis and one of subacute syphilis were treated by intravenous injections of radium. Neither was in the least benefited clinically in spite of the fact that enormous doses were given.

These four cases have demonstrated that radium by intravenous injection can change a persistent positive Wassermann to a negative. The first thought which comes to mind is that the change in reaction might be due to radium inhibiting the action of the reagents in a manner somewhat similar to alcohol, but a careful study of the cases proves this not to be the case. There seems to be some direct action on the disease. In Case IV the small dosage of radium had a provocative effect exactly like a small dosage of salvarsan. Yet neither case of subacute or acute syphilis was benefited by radium alone.

The next problem raised by these few experiments is whether the cause of the change in reaction was not due to radium activating antisyphilitic medicine which had been given before radium was used. But Case I had taken no medicine of any kind in seven years and it seems hardly probable that mercury could have remained in his system for that length of time.

It will require a large number of cases treated over a number of years to reach an absolute conclusion as to the benefit of producing a negative Wassermann by this method.

In these cases a solution of radium bromide was used. The dosage refers to radium element and not to the salt.

On account of the expense of treatment only private cases were treated and only those on whom I could rely absolutely to go through with the experimentation.

616 MADISON AVENUE.

Observations on Wet-Nurses.—C. Brodsky studied the effects on the mammary gland of the application of more than one child to the breasts of a single wet nurse. He found that the increased energy of sucking increased the flow of milk. In some cases the quantity of milk was doubled. In a 25-year-old primipara the largest quantity of milk given was 5,400 grams after nursing five children. The duration of lactation, provided that the proper stimulation of sucking or of the use of the breast pump is employed, is practically unlimited. Hottentots and Malays have nursed children even after becoming grandmothers.—*Archiv für Kinderheilkunde.*

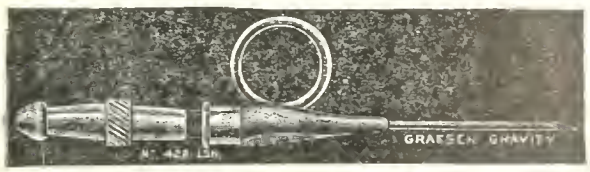
A SIMPLE PRACTICAL NEEDLE FOR INTRAVENOUS INJECTIONS.

By HERMAN R. A. GRAESER, M.D.,

NEW YORK.

ATTENDING UROLOGIST AND CHIEF OF CLINIC, GERMAN HOSPITAL AND DISPENSARY.

SINCE intravenous medication has increased considerably, and blood transfusions and saline infusions made by the gravity method, it has become necessary to devise a needle which could be held securely and passed into the veins with precision. Such a needle should be straight to allow proper cleansing and the easy passage of a wire to preserve its lumen, and short to minimize the coagulation of



Needle for use in transfusion or infusion by the gravity method.

blood within it, and give better control in entering the vein. It should be made in various sizes so that a very fine needle could be used for very small veins, and for the direct injection of small quantities of thin fluids.

This would apply to concentrated solutions of neosalvarsan, the various solutions put up in ampoules, serums, and phylacogens. The coarse needles would be used for blood and salvarsan infusions where the gravity method is employed.

In small or hard veins in old persons a 22-gauge needle may enter easily where it would be impossible to inject with an 18-gauge. The illustration herewith shows the needle and adapter made for me by Becton, Dickinson & Company, of Rutherford, N. J. It consists of a flat hub with a ring attached, which rests on the arm parallel with the vein, the opening in the needle pointing upward. If one has a steady hand this needle may be connected directly with the Luer syringe which it fits, or if preferred, a small piece of rubber tubing with a male and female adapter may be interposed. In gravity work the male hub may be connected with the tubing of the apparatus.

The needle is only two inches long, including the hub, and is made in three gauges, Nos. 18, 20, 22.

118 WEST ONE HUNDRED AND ELEVENTH STREET.

Medicolegal Notes.

Liability of Charitable Hospital for Servant's Negligence Causing Injuries to Paying Patient.—In a suit in the Alabama courts against a charitable hospital for damages alleged to have been sustained by being scalded with boiling water both internally and externally as a result of the negligence of a nurse, the defense was that having exercised due care in the selection and retention of the nurse, the defendant was exempt from all liability to the plaintiff, because of the fact that it is an institution not for profit, but for charitable purposes. "The question presented," said the court, "is one of much interest, and a subject upon which much appears to have been written in recent years. It must be conceded at the outset that the great weight of authority in this country, certainly from a numerical standpoint, lies with the defendant in this case. It appears, however, to be conceded by counsel, and we have found nothing to the contrary, that the question is an open one in this State, leaving us free to act without any constraint of the law of stare decisis, and in accordance with what we deem to be the law. . . . While it must be conceded that the great weight of authority in this country is in favor of exemption to an institution engaged in charitable work from liability for the torts of its servants or agents, yet here is some contrariety of opinion as to the principles on which this result is rested, and varied reasons are given not at all consistent the one with the other. For the purposes of this case these authorities may be grouped into three classes. One line of decisions would rest exemption from liability upon what might be termed 'the trust-fund theory,' that is, that all funds of such institutions are held in trust for the particular charitable purpose, and that it is a breach of trust to apply them to any other purpose, and that the payment of damages due to the negligence of the servants of the institution is not a purpose contemplated by the trust, and that therefore their funds cannot be diverted to the payment thereof. Other authorities rest their conclusions, it seems, upon the theory that the rule of respondeat superior does not apply to such institutions for the reason that the servants in the exercise of their duties are not engaged in the work which is for the benefit or profit of the master, and that such is essential to call for the application of this rule. Still other authorities base their conclusion upon what might be termed an 'implied-assent theory'; that is, that one who accepts the benefit of a charity must be taken impliedly to have assumed the risk of negligent injuries caused to him by servants who have been properly employed or retained in its service, or to have waived liability of a charitable institution for injuries so received."

The court rejected the first, or "trust-fund theory" because, followed to its logical conclusion, it considered that this theory would result in absolute immunity from damages of any character being recovered against such institutions, which would exempt them from liability of the servant to the patient, and to a third person, and indeed it would seem to also exempt them from damages from the breach of an expressed contract. It was also of opinion that exemption from liability could not be rested upon the theory that the rule of respondeat superior had no application.. The theory of "implied assent" was that upon which the more recent and best-considered cases seemed to the court to rest. Conceding, without deciding, that this principle was logical and well founded, it considered that it could not be given application in this case. The complaint alleged that the plaintiff agreed to pay a reasonable compensation. She depended upon no charity, she sought none, but was to pay a reasonable price for what she received. Had she been a dependent upon another's bounty, to either a great or small degree, there might have been some plausibility in the argument that it would not lie in her mouth to say that the institution should be held to strict accountability for the negligent acts of its servants, in administering the charity which she herself had sought.

The court was of the opinion that there could be no valid reason why a patient paying full price and without regard to the nature of the institution from which she received her service, dealing as she did at arm's length with the hospital, should not stand in as favorable a position as the stranger, and yet many of the cases grant relief to the latter and refuse it to the former. The court held that the principle, if held to be sound, must rest upon the fact that it is the giving and receiving of charity that creates the exemption, and not the nature of the institution administering it. The court passed by the question of liability for injury to one who in fact accepts charity in an institution of this character, as such a case was not before it. Judgment for the defendant was reversed and the cause remanded.—Tucker vs. Mobile Infirmary Assn., Alabama Supreme Court, 68 So. 4.

Implied Promise to Pay for Medical Services to Niece.—In an action for medical services it appeared that the defendant requested the plaintiff, a physician, to attend and treat the defendant's niece, who was a member of his household, her parents having been divorced. He did not inform the plaintiff that the patient was not his daughter or that he did not expect to pay for the services. The plaintiff supposed until after his second visit to the patient that she was the defendant's daughter, but then learned that she was his niece. The defendant paid a bill for drugs and one for the services of a nurse. It was held that under the circumstances the trial court was justified in finding an implied promise by the defendant to pay for the plaintiff's services.—Bigelow vs. Hill, Minnesota Supreme Court, 152 N. W., 763.

MEDICAL RECORD.

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THE PREVALENCE OF SYPHILIS IN THE ARMY AND IN CIVIL LIFE.

SYPHILIS is a disease which is, perhaps, more frequent in armies than in civil life. In the army, too, it can be studied under favorable circumstances and consequently Bulletin No. 3, issued from the office of the Surgeon General of the U. S. Army, compiled by Captain E. B. Vedder, of the medical corps, should prove especially instructive and interesting. Seeing that the Wassermann reaction has been used continuously as an aid to the diagnosis of syphilis in the army since 1909 with the result that much information has been obtained with regard to both the technique and the interpretation of the reaction, it occurred to the writer that it would be instructive to apply this test for the acquisition of the information as to the prevalence of syphilis in the army. A large number of medical officers have cooperated in the performance of this task and the outcome has been a quite remarkable résumé of the subject. The subject was approached by studying groups, which may be classified as follows: (1) Those just entering the service. (2) Those who have been in the service some time. (3) Those who have recently left the service. In order to avoid fallacies inherent in the consideration of a small number of cases it was intended that each group should consist of 1,000 men. This was a convenient number large enough to avoid error, and not too large to become a matter of burdensome and useless accumulation of statistics. As a matter of fact, while 1,000 men was thus always the unit sought for, in a few cases more than a thousand men were obtained, while in other cases, for various reasons, 1,000 could not be obtained.

For the determination of the amount of syphilis in the groups studied, the Wassermann surveys have been chiefly depended on, although whenever possible these surveys have been reinforced by the clinical examination. The following conclusions were drawn from a consideration of the working of the Wassermann tests: (1) That antigens consisting of cholesterinized extracts of human heart do not give more false positives than any other antigens when used with the proper technique; (2) that the Wassermann reaction as it is performed in the army laboratory is sufficiently exact to give trustworthy results in survey work and that, therefore, the statistics presented in the bulletin may be considered reliable.

As for the prevalence of syphilis among men just entering the service, it seems fair to estimate that the percentage of the disease among the men originally presenting themselves to the recruiting officer is the same as the percentage found by the Wassermann survey on accepted recruits, plus the estimated 2.3 per cent. of rejections for syphilis. This makes a total of 19.07 per cent. of syphilis for all applicants for enlistment, or about one out of every five applicants. It may be therefore concluded that among the young men in civil life between the ages of twenty and thirty, and of the general class belonging to the occupations mentioned, the prevalence of syphilis may be estimated at at least 16.77 per cent., and there is good reason for believing that it is fully 20 per cent. The general opinion seems to be that there is a gradual and steadily increasing amount of syphilis in the army as the years of service increase, but a closer analysis of the figures demonstrates clearly that there is certainly no more syphilis among the enlisted men of the army than is to be found among recruits, and this in spite of the fact that a considerable amount of syphilis is undoubtedly contracted by these men during their period of service in the army. In fact, the investigations under discussion appear to show that so far as venereal diseases are concerned, conditions are better in the army than in civil life. A study of the tables collated, both for whites and blacks, indicates that age is the real factor governing the prevalence of syphilis and that service in the army has probably little to do with the prevalence of infections, except that to all intents and purposes they are not so numerous in the service as they would be outside.

The most important conclusions to be drawn from the work done in the army with regard to the prevalence of syphilis therein are briefly: (1) A very large number of recruits, estimated at 16.77 per cent., are already syphilitic when they enter the service. (2) Since there are only 3.44 per cent, of white enlisted men on the sick report for syphilis, it is certain that the majority of these syphilitic recruits are never diagnosed. (3) Many of these undiagnosed cases of syphilis are admitted to sick report under other diagnosis, and a certain but at present unknown amount of expense is thereby incurred by the Government. (4) From 2 to 5 per cent. of the commissioned personnel of the army are already infected with syphilis at the time they enter the service. (5) The percentage of syphilis among white enlisted men of the army, estimated at 16.08 per cent., is slightly lower than the estimated percentage of infected accepted recruits. (6) Since there are about 3 per cent. of fresh infections annually among these troops, it follows that syphilitics are leaving the service in some way faster than new cases are being acquired. (7) Study of the syphilitic registers of completed cases confirms this belief, because the rates for discharge for disability are twice as great for syphilitics as for all enlisted men. (8) Wassermann

surveys of military pensioners, insane soldiers, tuberculous soldiers, and inmates of the Soldiers' Home also confirm this belief, because they all indicate a prevalence of syphilis considerably higher than that obtaining among enlisted men. (9) Syphilis is much more common among negro troops than white troops, and is acquired at a much earlier age in the case of negroes, so that it may be expected that a very large percentage of colored men are already syphilitic at the time they enter the service. (10) The highest rate for syphilis encountered in these surveys is among the soldiers of the Porto Rico regiment of infantry. (11) About 13 per cent. of insanity in the service may be directly attributed to syphilis. (12) There is a distinct tendency in any group of men for syphilitic infections to accumulate with advancing years, so that the older the group the higher the percentage of syphilis. (13) The percentage of syphilitic infections is lower among men in the army than among similar men in civil life.

With reference to the civil population: (1) It may be estimated that about 20 per cent. of the young adult male population of the class from which the army is recruited are infected with syphilis. (2) It may be estimated that about 5 per cent. of the young men in college are syphilitic. (3) The study confirms observations that have been published already indicating that syphilis is so prevalent among negroes that it is possibly the greatest single factor in the production of disability and high mortality rates among the race. (4) The high percentage of syphilis among Porto Rican soldiers indicates that syphilis may be one of the important causes of disability among native Porto Ricans. (5) Since syphilitic infection is so common, is productive of so much disability, and has so far entirely evaded sanitary control, it is believed that syphilis is a greater menace to public health than any other single infectious disease, not even excepting tuberculosis.

The conclusions arrived at by the U. S. Army investigators are extremely valuable and give occasion for thought. It is probable, indeed more than probable, that syphilis is the greatest menace to public health, and the problem of how best to abate the scourge—for it is hopeless to imagine that it can be entirely stamped out—should be grappled with more strenuously than it has been up to the present time. No sentiments of prudishness or of false delicacy should be allowed to stand in the way of the consummation of this object.

THE URINARY AND BLOOD FERMENTS IN NEPHRITIS.

THE possible diagnostic significance of the urinary and blood ferments is a subject that has appealed to a number of investigators during the past few years. An elaborate research into the clinical value of determinations of the ferment content of the urine and blood in cases of nephritis has been undertaken by Anchise Lorenzini, who reports his results in *Il Policlinico*, Sezione Medica, August 1, 1915. He finds that amylose is present in the normal as well as pathological urine, but in a minimal quantity, demonstratable only in fresh urine and not in urine twenty-four hours old. Its disappearance is accounted for partly by the changing temperatures and partly by the action of other substances present in the urine. In the blood serum of nephritis the amylose is diminished, and this diminution is pronounced if the type of nephritis is severe. Lipase is constantly present in normal and pathological urine. In the former the content is slightly less than that of the blood. It is diminished in the urine of nephritis, and to a greater extent in the chronic than in the acute type of the disease. The lipolytic power of a given specimen of urine is, therefore, a reliable index of the degree of renal impairment. There can be no question as to the pathological significance of an albuminuria if this is associated with a diminution of the lipase content of the urine. The lipolytic power of the blood serum of nephritics is above normal, and is below normal in the agonal stage.

Pepsin may be demonstrated in a distinct quantity in the urine, with diurnal variations, being a minimum during fasting and a maximum several hours after meals. It is greatly increased if the urine contains a large number of white blood cells. It is scant in cases of chronic nephritis. The urine also contains a minute quantity of a proteolytic ferment that is active in an alkaline medium. The quantity is greater in normal than in pathological urine, and tends to vanish as the content of the urine in white blood cells tends to increase.

The reducing power of the urine varies during the day, being greater during fasting than after the ingestion of meals; it is also greater in urine twenty-four hours old than in fresh urine. In the urine of nephritics it is less than normal, and in the blood serum of these patients it is greater than in the urine. The antitryptic power of the blood serum in nephritis is greater than normal and tends to diminish as the type of the disease becomes more severe. If the urine contains a notable quantity of albumin the antitryptic power of the urine disappears.

The presence of catalase may be constantly demonstrated in the urine of acute nephritis but not constantly in that of chronic nephritis. The degree of catalytic power is nevertheless a good index of the degree of renal impairment. The blood serum contains more catalase than the urine, which fact suggests that the catalase in the urine is derived in part from that in the blood, and traverses the renal epithelium in nephritis in the same manner as does albumin.

In summing up the results of his investigations, Lorenzini states that the ferments normally present in the urine undergo a diminution in nephritis and to a greater degree in severe cases of chronic nephritis. The same ferments are present to a greater extent in the blood than in the urine, which fact would favor the hypothesis that the urinary ferments are derived, at any rate in part, from those of the blood. The proteolytic ferments alone may be regarded as derived directly from the renal epithelium.

THE "INSANITY DODGE."

THE insanity expert has become a commonplace of the comic papers through, we believe, no fault of his own, but because of the confusion between medical and legal concepts of insanity. What is the layman to think who hears three or four physicians of unimpeachable standing and impressive demeanor testify that the prisoner at the bar is insane and then hears a like number of physicians equally imposing and betitled give their opinion that he is sane? Or when several experts pronounce a criminal of unsound mind and he afterwards confesses that he was feigning? We can hardly blame the man on the street for being inclined to poke fun at the whole system of expert testimony and to refuse to be guided by anything save his own conviction in the matter. Hence has arisen the joke about the insanity dodge in murder trials which in many forms is seen in the daily press.

And yet whether or not there is such a thing as real malingering of mental disease, that is to say, the systematic and continued feigning of psychotic symptoms by a person absolutely normal mentally, is an open question. A great many physicians, especially those who have never seen a case of so-called malingering of mental symptoms, would unhesitatingly answer the above question in the affirmative. But the more a physician has to do with the criminal, the less is he apt to be dogmatic on the subject. Thus we find in a clinical study of the malingerer by Dr. Bernard Glueck in the September issue of the *International Clinics* a serious doubt raised as to whether any of these supposed malingerers are actually normal. Glueck quotes many interesting and illustrative cases gathered during his five years' study of the criminal insane and his conclusions are well worth recording.

He thinks that malingering is often coexistent with actual mental disorder so that the detection by confession or otherwise of shamming does not necessarily exclude insanity, though of perhaps an entirely different type from the feigned symptoms suggested. Malingering he says is *par excellence* the weapon of the constitutional psychopath and is the manner in which he dodges an issue. Together with pathological lying, malingering is a manifestation of the subconscious and hence when it acquires sufficient potentiality to dominate an individual's conduct for a length of time must be regarded as pathological. In conclusion Dr. Glueck warns us that the differentiation between malingering and actual mental disorder, especially when the latter is somewhat atypical in its manifestations, is often extremely difficult and we should proceed with the utmost care. Having made up our minds that we are dealing with a case of malingering, we should suspect some grave biological defect.

ETHYLHYDROCUPREIN AND THE PNEUMOCOCCUS.

IT is now four years since the introduction of ethylhydrocuprein, a derivative of hydroquinine, in the treatment of experimental pneumococcic infection. Unfortunately it, at that time, received a brief and enthusiastic attention from the newspapers which was the cause of a marked reaction when it was realized that its discoverers did not advise its use in the treatment of pneumonia in man. Since that time it has been the subject of a few bacteriological investigations, but that is about all.

The success of Cole and Dochez and Gillespie in classifying the pneumococci into four groups which could be divided serologically and which produced pneumonias of different severities, made it worth while to determine the effect of this drug upon the different strains of the organism. This is the work which Moore has done (*Jour. Exper. Med.*, 1915, xxii, 269). He found that in very high dilutions (50,000-1,000,000) the drug inhibited the growth of, and in eighteen hours, killed representatives of all four groups of pneumococci *in vitro*. There was no constant or considerable difference in the action on the four groups. Its effect upon other organisms was so much less that he suggests the possibility of its use as a test in the identification of the true pneumococcus. Quinine hydrochloride also kills the pneumococcus *in vitro*, but only in much stronger concentrations than is the case with ethylhydrocuprein. This drug also has a well marked protective action against experimental pneumococcal infection in mice in the case of type strains of all four groups of pneumococci, and this action may be efficient against as much as 1000 minimal lethal doses of the organisms. Of eighty-five mice infected with 100 minimal lethal doses or less and treated, 56, or 66.8 per cent. survived, while all the controls died. The disquieting factor in Moore's results lies in the fact that thirteen mice (15.2 per cent.) died as a result of the toxicity of the drug or from some obscure cause, the heart's blood being sterile at autopsy.

This would militate strongly against the use of this agent in the treatment of pneumonia in man, but it should prove a strong stimulus to the synthetic chemists who might be able to eliminate the toxic portion of the molecule while retaining its bacteriotropic action. Its affinity for the pneumococcus is so strong that this might be done without greatly weakening its protective action. Certainly we need some such method for the treatment of this disease. Sera and vaccines have been given rather extensive trials without striking results, and it now seems necessary to return for aid to the chemical laboratory, which, according to many possibly somewhat optimistic clinicians, has already given us some fairly efficient remedies for this so-called self-limited disease.

A RETURN TO STUDY.

DURING the past week most of the medical colleges opened and by this time the students are well into the routine of the work. While their new year is distinctly separated from the past year by a vacation, and marked in most colleges by a formal opening with eloquent addresses by leaders in medicine or prominent educators, the practising physician, though well harnessed to a daily routine, also feels the beginning of a new year and turns again to serious reading and study. The student in medical

schools has the advantage of an inspiring teacher, but the physician has the advantage of the habit of study. No physician by his efforts alone can keep abreast of the times in his profession. He, like the student in the medical college, has his helpers; he is debtor to his profession through the medical books and periodicals with their contributors and corps of workers who gather, sift, and bring to him in condensed form what it would be impossible for him to lay hold of through his own personal efforts.

To-day there is great need of study and patient, sympathetic evaluation of the facts in medicine so as not to be stampeded into casting aside a well tried for a new and acclaimed theory or to be determined to cling to an old theory in face of newly discovered facts. There should be no condemnation because facts are not understood or do not accord with some present day accepted theory nor should they be thrown aside because the theories explaining them have to be rejected. The practice of medicine never demanded more study than it does today, nor has the study ever been more interesting or more profitable.

Autopsy Finds in Army Typhoid.

The malignancy of a disease can best be understood through the post-mortem appearances, and these, as is well known, teach us the general perniciousness of mixed or superinfection which determines the complications which lead to the fatal results. At a military medical evening held recently at Metz (*Deutsche madizinische Wochenschrift*, June 3) Merkel related numerous autopsy finds in soldiers dead of typhoid. While true dysentery was found but once in association with the latter a dysenteriform condition, due, perhaps, to mixed infection, was not uncommon, and this was true also of a diphtheroid affection of the colon. The intestinal lesions were never absent and usually severe, extending even into the rectum; hence the peculiar clinical forms of colitis. The bronchial and pulmonary complications were very common and severe. There was a disseminated pneumonia, often hemorrhagic. Ulceration and necrosis of the larynx were also common. Abscesses were found in the kidneys, spleen, salivary glands, muscles, and skin. One patient injured while ill of typhoid died of tetanus. Amyloid degeneration of muscles was very common, especially in the recti abdominis. Evidence of fatal relapse was noted. The pulmonary complications appeared to cause the most deaths and cardiac failure came next. Perforative peritonitis was very rare and fatal hemorrhage was not even mentioned.

A New Treatment of Chronic Synovitis.

Having come to the conclusion that chronic joint hydrops, occurring as it does from time to time without traceable causal infection, was surgically a question of drainage, and that its persistence depended upon a loss of absorbtive power in the synovial membrane rather than upon any persistent oversecretion, F. J. Cotton (*Surg. Gyn. and Obst.*, July, 1915) conceived the idea of dealing with this condition by means of subcutaneous joint drainage. As he says, an opening into a joint is ordinarily closed in early, the epithelial layer grows over the gap, and we are where we started. In order to secure permanent drainage a gap must be made in the periphery of the capsule that cannot be covered with synovial membrane; or, as he says, a permeable scar open to the joint. Cotton's technique in securing permanent subcutaneous drainage is as follows: A long curved incision is made high up on the inner side of the knee, exposing a considerable mass of vastus internus muscle, which is split in the direction of its fibers. Beneath this lies a firm layer of fibrous capsule; still farther beneath, and well differentiated, lies the synovial lining—thin, pale and abnormally tough in consistency. An incision is made through the fibrous capsule and synovial membrane and the contained fluid is allowed to escape. The edges of the synovial membrane are then pulled well out through the gap in the fibrous capsule, rolled back over the edges of this capsule and sutured with catgut to its outer surface, so as to leave no exposed edge of synovial membrane. The joint is then washed out with saline solution and left half full. The vastus internus is brought together over the gap in the synovial membrane by lightly drawn catgut mattress sutures, the skin is sutured, dressings are applied, and the knee is bandaged down on to a straight ham splint. This scheme worked out successfully in the three cases in which Cotton has had an opportunity to test it; and we should say, with him, that the operation is worthy of further trial.

News of the Week.

Shortage in the American Ambulance Service in France.—Efforts to enlist young men in the service of the American Ambulance in France are being made in this country, owing to the fact that the reopening of American colleges and universities has caused many volunteer workers to return, and this at the very time when all the ambulances and hospitals are overworked by reason of the great number of wounded resulting from the increased activity at the front.

German Hospitals in Belgium.—According to the *Telegraaf* of Amsterdam the Germans are preparing to establish great hospitals for their wounded in Belgium. Municipal and other buildings at Louvain and other places have been inspected recently by German physicians and officers to see if they could be made into hospitals, and equipment for them has been ordered from Germany.

Dr. Hermann Fischer of this city, who headed a party of surgeons and nurses sailing from New York on September 9, was detained at Kirkwall by the British authorities because he had neglected to take his naturalization papers to show that he was no longer a German. The necessary papers having been received, however, he was released the end of September and has reached Copenhagen.

Serbia Honors Americans.—It is reported from Nish that Crown Prince Alexander has decorated forty-three American physicians and sanitary engineers, in recognition of their services in stopping the epidemics which broke out in Serbia after the war began. The Americans decorated were those sent out by the American Red Cross and the Rockefeller Foundation.

More Cholera in Galicia.—A despatch from Amsterdam says cholera still is raging in Galicia, and according to the home office 300 cases have been reported.

Health of the Canal Zone.—The report of Dr.

Charles F. Mason, chief health officer of the Canal Zone for July, states that the number of deaths among the employees for the month was 17, of which 10 were from disease, giving a rate of 3.34 per 1,000, as compared with 3.61 for June and 4.12 for July, 1914. Among the civil population of the Zone, numbering 30,057, there was a total of 37 deaths; of these, 29 deaths were from disease, giving a rate of 11.58 per thousand, as compared with 13.15 for the preceding month, and 14.64 for the corresponding month of last year.

Death Rate in New York.—During the week ended September 25 there were in this city 1,236 deaths, giving a rate of 11.11 per 1,000 persons, as against 1,323 deaths and a rate of 12.36 for the similar week last year. The death rate for the first thirty-nine weeks of 1915 was 13.43, as compared with a rate of 13.90 for the corresponding period of last year.

Death Rate in Chicago.—During the week ended September 25 there were 487 deaths in Chicago, giving a rate of 10.4, as compared with 660 deaths and a rate of 14.1 for the preceding week, and 569 deaths and a rate of 12.4 for the corresponding week in 1914.

Beriberi in Labrador.—Dr. Joseph A. Andrews, stationed at Indian Harbor, Labrador, for the Grenfell Mission, who returned recently, is reported to have found the natives of that place suffering from beriberi as a consequence of living chiefly on white bread. When they substituted brown or black bread the epidemic ceased.

Foot-and-Mouth Disease in Illinois.—The United States Agricultural Department has quarantined three counties in Illinois against the foot-and-mouth disease. This action was taken owing to the discovery of the disease in two herds in La Salle County. One of these herds, containing sixty-five cattle, was found on a community pasture and the fact that the herd belonged to twelve different owners led the authorities to quarantine the adjoining counties with a view to checking its further spread.

Dr. Heiser Mentioned for Health Commissioner.—It is reported that Dr. Victor G. Heiser of the U. S. Public Health Service, formerly director of health in the Philippines, has been invited to become health commissioner of New York City to succeed Dr. Goldwater, who has resigned and is only waiting until his successor is appointed. The success of Dr. Heiser in stamping out the plague, cholera, smallpox, and beriberi in the Philippines was phenomenal and has placed him in the front rank of the world's sanitarians.

Medical Department of Columbia University.—The opening exercises of the College of Physicians and Surgeons of this city, the medical department of Columbia University, were held on September 29. The address of welcome was delivered by President Butler and this was followed by the opening address by Dr. Francis Carter Wood, director of the Crocker Cancer Research Fund.

The Long Island College Hospital opened its fifty-seventh session in the auditorium of the Polhemus Clinic September 28 with an address by Dr. Horace D. Arnold, dean of the Graduate School of Medicine in Harvard University.

Harvey Society Lectures.—The first lecture of the eleventh course of the Harvey Society will be delivered at the Academy of Medicine, New York, on October 16, at 8.30. The lecture, entitled "Recent Studies on School Children, with Special Reference to Hookworm Disease and Sanitation," will be delivered by Prof. C. W. Stiles of the Hygienic Laboratory, Washington.

Conference of Charities and Corrections.—The first annual Westchester County (N. Y.) Conference of Charities and Corrections will be held October 21 in Yonkers. Among the objects of the conference are: To afford workers an opportunity to hear their problems discussed by experts, to exchange opinions and experiences about activities along their various lines, to secure better co-operation between agencies, and to inform the public about the numerous welfare activities carried on throughout the county. It is expected that a permanent organization will be effected and that a similar conference will be held each year henceforth.

The Volunteer Hospital.—The directors of the Volunteer Hospital in New York City have begun a campaign to raise enough money to complete the new building at Beekman and Water streets in accordance with the plans which were made when the old hospital was abandoned. At that time it was decided that a seven-story structure should be built, but sufficient funds were lacking, and only three stories were erected. The hospital takes all emergency cases on the lower East Side from Catharine street to the Battery and from Broadway and Park Row to the East River.

Dr. Allan McLane Hamilton has returned from Europe and has resumed practice at 43 East Twenty-fifth street, New York.

Dr. Richard P. Strong, who directed the anti-typhus campaign of the American Red Cross Sanitary Commission in Serbia, has returned. Shortly before leaving Serbia Dr. Strong was decorated with the order of San Sava.

Dr. Mary M. Crawford of Brooklyn, who has been connected with the American Ambulance Hospital at Neuilly, Paris, for a year, returned recently.

Dr. Wilbur A. Sawyer, director of the State Hygienic Laboratory and lecturer in hygiene and preventive medicine in the University of California, has been appointed a member of the California State Board of Health and secretary of the board.

Dr. William C. Hollopeter has resigned from the chair of pediatrics in the Medico-Chirurgical College of Philadelphia, after an occupancy of fifteen years. He had formerly held the Chair of Clinical Professor of Pediatrics from 1892.

Dr. James Craig Neal has been appointed instructor in obstetrics and gynecology in the medical department of the University of California.

Dr. Alexander Spingarn has been appointed assistant pediatrist at the Methodist Episcopal Hospital, Brooklyn, N. Y.

Dr. D. A. Carmichael of the United States Public Health Service, recently in charge of the Marine Hospital at Vineyard Haven, will be retired at the end of November, having reached the age limit. Dr. Carmichael has been in the service for nearly thirty-five years.

Dr. Thomas B. Shea has been appointed chief of the medical division of the Department of Health of Boston.

Dr. R. G. Pearce has been made assistant professor of physiology in the medical department of the University of Illinois.

Dr. H. Mullany has been appointed deputy health commissioner of Boston.

Dr. Bernard W. Carey has been elected city physician of Fitchburg, Mass.

Dr. George W. Beatty has been appointed assistant pediatrist at the Methodist Episcopal Hospital, Brooklyn, N. Y.

Dr. Eugene M. McCampbell has been appointed professor of preventive medicine and head of the newly created department of public health at the Ohio State University, Columbus.

Removals.—Dr. R. J. E. SCOTT has removed to 307 W. 79th street.

Dr. PAUL E. BECHET has removed to 531 Madison avenue.

Bust of Dr. Weir Mitchell.—A bronze bust of the late Dr. S. Weir Mitchell has been presented by Mr. and Mrs. Walter D. Ladd to the Jesup Memorial Library in Bar Harbor.

The Clinical Congress of Surgeons of North America will meet in Boston on October 25-28. As usual the days will be devoted to clinics, the evenings to the reading and discussion of papers. The president of the Congress is Dr. John B. Murphy, the president-elect Dr. Charles H. Mayo, and the secretary Dr. Franklin H. Martin of Chicago.

Medical Society Elections.—THE AMERICAN ELECTRO-THERAPEUTIC ASSOCIATION, at its meeting in Atlantic City on September 14-16, elected the following officers: *President*, Dr. Jefferson A. Gibson, Denver; *Vice-Presidents*, Drs. J. Willard Travell, New York, Frank B. Granger, Boston, William L. Clark, Philadelphia, Sidney A. Twinch, Newark, N. J., and William Martin, Atlantic City; *Treasurer*, Dr. Emil Henck, New York; *Secretary*, Dr. Byron Sprague Price, New York; *Registrar*, Dr. Frederick M. Law, New York.

THE SOUTHWEST TEXAS DISTRICT MEDICAL SOCIETY held its annual meeting at Corpus Christi on September 14 and 15, electing the following officers: *President*, Dr. E. H. Lauvignet of Laredo; *Vice-President*, Dr. C. P. Yeager of Corpus Christi; *Secretary-Treasurer*, Dr. L. J. Manhoff of Aransas Pass.

THE WASHINGTON COUNTY (VT.) MEDICAL ASSOCIATION, at its annual meeting at Barre on September 14, elected the following officers: *President*, Dr. J. P. Gifford of Randolph; *Vice-President*, Dr. G. S. Bidwell of Waterbury; *Secretary-Treasurer*, Dr. C. H. Burr of Montpelier.

THE KENTUCKY STATE MEDICAL ASSOCIATION, at its annual meeting in Louisville, September 21-23, elected the following officers: *President*, Dr. Ap Morgan Vance, Louisville; *Vice-Presidents*, Dr. M. F. Hoag of Quicksand, Amos Davis of Eastington, and J. B. Mason of London; *Secretary*, Dr. A. T. McCormack of Bowling Green; *Delegates to the American Medical Association*, Drs. W. W. Richmond of Trenton and Carl Louis Wheeler of Lexington.

THE FAIRFAX COUNTY (VA.) MEDICAL SOCIETY, at its annual meeting in August, elected the following officers: *President*, Dr. Llewellyn Powell, Alexandria; *Vice-Presidents*, Drs. T. F. Dodd, Theological Seminary, and D. C. Cline, Dumfries; *Recording Secretary*, Dr. T. C. Quick, Falls Church; *Corresponding Secretary*, Dr. W. P. Caton, Accotink; *Treasurer*, Dr. E. L. Detwiler, Herndon.

Obituary Notes.—Dr. KENNETH FRANK JUNOR of Brooklyn, N. Y., a graduate of the New York University Medical College in 1886, a clergyman and lecturer of note, and a member of the American Medical Association, the New York State and Kings County Medical Societies, and the New York Academy of Sciences, and formerly a missionary in China and in the Island of Formosa, died in Toronto, Canada, on September 26, aged 69 years.

Dr. BENJAMIN S. LUCAS, formerly of Hartsville, S. C., died at Walhalla on September 5 at the age of 82 years. He was a graduate of the Charleston Medical College in 1856 and began practice in Keshaw County. He served in the Confederate army during the Civil War and at its close began practice again in Hartsdale. He retired about two years ago.

Dr. ANDRES VICTOR JOVA of Newburgh, N. Y., a graduate of the College of Physicians and Surgeons, New York, in 1883, a member of the American Medical Association, the New York State and Orange County Medical Societies, and the Newburgh Medical Society, and visiting physician to St. Luke's Hospital, Newburgh, died at his home on September 20, aged 54 years.

Dr. ARCHIBALD FOWLER ALEXANDER of Paterson, N. J., a graduate of the College of Physicians and Surgeons, New York, in 1895, a member of the American Medical Association, the Medical Society of New Jersey, and the Passaic County Medical Society, physician to the General Hospital Dispensary, Paterson, for three terms a member of the Board of Education of Paterson, and a former Police and Fire Commissioner of that city, died at his home on September 23, aged 42 years.

Dr. PHILANDER F. WELLMAN, formerly of Coffeyville, Kan., and a pioneer physician of that State, died at the home of his son in Kansas City, on September 16, aged 77 years.

Dr. ALPHONSE JOSEPH PIERRE GARNEAU of Fall River, Mass., a graduate of Laval University, Medical Department, Quebec, in 1893, and a member of the Fall River Medical Society, died at his home from heart disease, on September 10, aged 48 years.

Dr. CHESTER E. COULTER of Ogden, Utah, a graduate of the University of Michigan, Department of Medicine and Surgery, Ann Arbor, in 1883, died recently at his home, aged 60 years.

Dr. FREDERICK D. BICKFORD of Salt Lake City, Utah, a graduate of the University of Michigan, Department of Medicine and Surgery, Ann Arbor, in 1882, died at Fillmore, Utah, on September 9, after a long illness, aged 54 years.

Dr. JOHN LESTER SIVERT died at Waynesburg, Pa., on September 12, at the age of 33 years. He was graduated from the University of Nashville, Tenn., in the class of 1909. He formerly resided at Nuss, W. Va.

Dr. JOHN W. WADE died at Millville, N. J., on September 14 at the age of 60 years. He was graduated from Jefferson Medical College in the class of 1884. He was president of the Millville Board of Health and of the Cumberland County Mosquito Extermination Commission. He was a member of the Cumberland County Medical Society, and of the New Jersey State Medical Society, and a Fellow of the American Medical Association.

Dr. FREDERICK FILLMORE BURTIS of New York, a graduate of the Albany Medical College in 1898, a member of the Schenectady Medical Association, and surgeon on the SS. *Advance* of the Panama Railroad and Steamship Company, died on board his vessel on September 6, aged 38 years.

Dr. AMELIA E. BURROUGHS of Boston, Mass., a graduate of Cleveland University of Medicine and Surgery, Cleveland, O., in 1881, and a member of the American Institute of Homeopathy and the Massachusetts Homeopathic Medical Society, died at her home on September 25.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

MILITARY HOSPITALS—FROST-BITE AND MINOR EFFECTS OF COLD—SALE OF OPIUM—OBITUARY.

London, Sept. 17, 1915.

THE administration of our military hospitals has lately adopted some enterprising if rather unexpected methods, one of them being women's work with the object of releasing men for the front. The Royal Victoria Asylum for the orphans of soldiers and sailors has been transformed into a completely equipped institution for the reception of 1,500 military patients under Lt.-Col. Bruce Porter, as commandant. About 180 acres of open ground was placed at his disposal and he has established an extensive system of hut-wards, each forming a separate home for twenty patients in charge of a sister. The dining hall has been furnished as an art gallery and the meals are taken in the several homes. The commandant, considering that many of the inmates will seek an open-air life after the war, aims at making the hospital an Imperial recruiting ground; he has not laid down a strict set of rules, but trusted the men and found their behavior exemplary. Women's work has also been introduced in various departments, and the reports of their ability, self-sacrifice and skill, although untrained in nursing, show that they have given most useful aid in attending to various requirements of patients, both by day and night, and diminishing the number of orderlies needed.

Princess Christian on Saturday opened and handed over to the War Office a new military hospital on the outskirts of Windsor Park, with accommodations for 120 patients. The British Red Cross contributed £10,000 and the further sum necessary was collected by the Princess herself. The construction of the building is on the lines of the Red Cross Hospital at Netley. The floor of each ward projects eight feet beyond the outside wall so that through doors the beds can be wheeled out and left for a time in the air under cover of canvas. Sir Wm. Taylor, late Director-General, Army Medical Service, is the commandant, and Major Buckley, assistant. Gas radiators and slow combustion stoves are used for heating and the light is provided by electricity. There are six pavilions with twenty beds each for patients arranged in a semicircle facing the south. The nurses and resident staff are accommodated in the other general buildings, which contain also an up-to-date operating theater, dispensary, mess-rooms, stores, sitting-rooms, etc., for medical officers, kitchen and everything necessary for a complete hospital.

Another hospital has been acquired and extended by the London County Council and handed over to the War Office as a hospital in connection with the Avery Hill Training College. It will accommodate 250 or more wounded, and a considerable number are already under treatment. Spacious grounds adjoin the open space of the college, and the institution is staffed by members of the Greenwich and Woolwich division of the Red Cross societies working in shifts. The beds have been mostly manned by those endowing them in honor of heroes of the war.

During the last winter many soldiers in the trenches suffered from the effects of the cold on their feet—not exactly frost-bite, but a lesser effect spoken of as "trench frost-bite," a condition known in previous campaigns. Necrosis is very rare in the milder affection, thought common in the severe. A number of cases received into the military hospitals in Edinburgh from the war field have been under Profs. Lorain Smith and James Ritchie, together with Dr. James Dawson of the Royal College of Physicians' Laboratory. They have further recorded some experiments on rabbits' feet subjected to intense cold. Their investigation was promoted by the Medical Research Committee, and their experiments show, as those of previous observers do, that the slighter stages of true frost-bite are essentially the same as those of the milder disease. In this an exudative inflammation attacks the parts directly exposed to the cold, the effect of which is more intense when combined with moisture, *e.g.* if due to wet earth as compared with dry. The swelling of the feet of rabbits subsided much more rapidly than that of men. The condition is one of damage to tissues, from which recovery can only occur after a prolonged process of regeneration. Consequently the main effort of the medical man must be directed toward prevention. The considerations for prevention offered by these investigators are that soldiers should massage their feet before going into the trenches, there being some evidence that this has succeeded to a considerable extent. To shorten the time in the trenches would be the best preventive, since as a rule the symptoms begin after forty-eight hours' exposure. Men who have been exposed without being attacked should persistently massage their feet when resting between their turns in the trenches. Constriction of blood vessels should be avoided; boots, leggings, socks, puttees are specially to be considered in this respect. Maintenance of good circulation in the feet is important—clothing of legs and thighs is concerned as to this. Slight swelling after a turn in the trench should have attention before taking another turn. Rest is of the first importance when disablement is threatened. On the march, as soon as billets are reached measures should be taken for resting the feet as much as possible. But it is better not to warm them in any way that may cause congestion, the return to normal circulation should be delayed rather than hurried.

At the late meeting of committee of the General Medical Council the question of the sale of laudanum was considered in view of a correspondence that has recently taken place between the city coroner, the pharmaceutical society and the Lord President of the Privy Council. The last-named questioned whether the society's policy, as stated by its Law Committee, is to be defended. That policy is that when "laudanum" is asked for the 1914 preparation should be served and the poison-book signed, but when the 1898 preparation is demanded great care should be taken to label it as such, the purchaser's attention being called to the fact. In one way it looks as if the recommendation were designed to facilitate the sale to the public of this dangerous drug instead of restricting it. That there is a large sale is certain—so large that no authority less than Parliament could put an end to it, and there is no prospect of any such action. Since the B. P. raised the strength of *Tinct. opii* we have had two preparations passing under the English synonym—a constant danger to which attention is every now and then directed afresh. The official drug was increased in strength by the last B. P. in order to make it the same as that of the

international agreement, which was entered into for the safety of the public in all countries. As it seems impossible to prevent the public obtaining opiates in various forms, it is certainly an advantage for any preparation known by the same name in different countries to be of the same strength in all.

Dr. T. Glover Lyon, many years physician to the City of London Hospital for Diseases of the Chest, died on Aug. 31, at the age of 60. He was a Cambridge Wrangler and the originator of the Glover-Lyon system of ventilation, a subject on which he took the greatest interest. He contributed to societies and journals on various subjects connected with hygiene.

Dr. F. W. Saunders, who died at Hythe, aged 52, a Cambridge graduate, had been medical superintendent of Luxor Hospital and author of "Stepping Stones to Health on the Nile."

Progress of Medical Science.

Boston Medical and Surgical Journal.

September 23, 1915.

1. Localizing Needle Fragments in the Tissues of the Body by Means of Magnetism. Demonstration. G. H. Monks.
2. Acute Perforation of Ulcers of the Stomach and Duodenum. I. J. Walker.
3. Concerning Traumatic Rupture of the Duodenum and Duodenal Fistula. With the Report of a Case. D. Cheever.
4. Cholelithiasis. An Argument for Early Operation. J. C. Hubbard.
5. A Brief Consideration of Acute Pancreatitis. With Case Reports. C. E. Durant.
6. A Proper Classification of Borderline Mental Cases Among Offenders. V. V. Anderson.
7. The Relation Between the Genetic Factors and the Age of Onset in 157 Cases of Hereditary Epilepsy. D. A. Thom.
8. Study of a Case of Epidemic Typhus Fever Imported Into Central New York. I. H. Levy and J. L. Kantor.
9. Blood Pressure. C. Phipps.

2. Acute Perforation of Ulcers of Stomach and Duodenum.—I. J. Walker states that the history of disturbance of the stomach or duodenum should always be sought for in cases of suspected perforation. Sudden, severe epigastric pain is the most constant symptom in the diagnosis of this condition. Shock is an inconstant symptom. The value of the absence of liver dulness as a sign of perforation of the stomach or duodenum has probably been overestimated. Simple closure of the perforation, with drainage of the peritoneal cavity is the safest procedure in the majority of cases. The mortality can be diminished by greater care in the diagnosis and in the treatment of chronic lesions referable to the stomach and duodenum, so that but few are allowed to reach the stage of perforation, and even these should be given the benefit of surgical measures while the chances of recovery from operation are still good.

3. Traumatic Rupture of Duodenum.—D. Cheever points out that local pain, muscle spasm, tenderness, increasing pulse rate, later vomiting, perhaps shifting dulness in the flanks, and leucocytosis unless the toxemia be overwhelming, constitute the familiar picture of a severe abdominal lesion. A word of warning is uttered, however. If the rupture be retroperitoneal, the condition may at first be masked, but soon a tender tumor, not shifting, in the right hypochondrium and umbilical region, with evidence of physical shock, will give the clue. If intraperitoneal, the effusion may cause pain not so marked at the point of rupture as in the more dependent portions of the abdomen,—the iliac fossæ or the pelvis, due apparently to the intense irritation of the peritoneum by the gravitated contents. In the author's case this was the cause of an ill-placed primary incision and loss of time. Absence of liver dulness, a sign handed down from text-book to text-book as pathognomonic of rupture of a hollow viscus, is in reality a hollow mockery. It is very rarely demonstrable in the early and curable stages of a perforative peritonitis, and when it is found it simply gives assurance of the correctness of the diagnosis and of the hopelessness of intervention.

5. Acute Pancreatitis.—C. E. Durant alludes to the urgency of this condition, particularly in relation to the rapidity with which necrosis occurs in some cases, and to the overwhelming toxemia as a factor of great importance in the same connection. Even in instances in which the onset is less severe and in which more or less localized suppuration follows, such serious and probably fatal complications as subphrenic abscess, extensive suppuration in the peripancreatic fat, or general peritonitis may be looked for. The danger of hemorrhage in cases of persistent sinus is not to be forgotten. The author emphasizes the great importance of early diagnosis and prompt operation in acute pancreatitis.

7. Genetic Factors and Age of Onset in Hereditary Epilepsy.—D. A. Thom concludes from his investigations as follows: Named in the order of their potency in the production of an early onset of the epilepsy in the offspring, feeblemindedness came first, followed by migraine, epilepsy, alcohol, and insanity. With the exception of alcoholism all the maternal defective factors were manifested in the offspring at an earlier date in the form of epilepsy than those factors transmitted by the father. When both parents had the same defect the onset was at an earlier date than in those cases in which only one parent was defective. There was practically no difference between the average age at onset in those cases inheriting two or three defects and in those cases in which the family history revealed but one. Those cases with direct heredity averaged an earlier onset than those cases with collateral heredity. The average age at onset in one hundred and fifty-seven cases with heredity was a little over eight years younger than two hundred and five cases computed without reference to heredity. Thirty-nine per cent. of the entire group had more than one hereditary defect in the family history. Eighty per cent. of the cases had direct heredity, and fifty-eight per cent. of the entire group gave a history of epilepsy in some member of the family. Eleven cases, the offspring of epileptic parents and the parents of an epileptic offspring were free from mental defects themselves.

9. Blood Pressure.—C. Phipps finds a difference of 5 or 10 mm. in the blood-pressure reading may be observed, depending on whether the pressure be determined by palpation or auscultation, but neither method can be said to be the more accurate. The blood-pressure reading may vary in the same individual between the right and the left arms, thighs, or calves, or between arm and thigh and calf; this variation is in no way uniform. The variations are apparently as great in young individuals as in old, and in cases showing healthy arterial walls as in cases in which there is arteriosclerosis. The location of the artery, especially in its relation to other structures such as bone and muscle, is probably of much greater importance in determining the blood-pressure reading than is thickness of the overlying tissues. A difference between the right and left brachial pressures is by no means diagnostic of aortic aneurysm. The presence of a higher pressure in the leg than in the arm is not diagnostic of aortic insufficiency, although this has been stated by previous observers. Blood-pressure in the vessels of the leg and that in the vessels of the arm are by no means "practically the same."

New York Medical Journal.

September 25, 1915.

1. Microorganismal Cardiovascular Toxins. Robert N. Willson.
2. Prostatic Calculus. Francis Huber.
3. High Blood Pressure; Treatment by Means of Muscular Relaxation. M. Grossman.
4. An Improved Method for the Repair of the Lacerated Perineum. H. A. Bernstein.
5. A Two Way Stopcock for Intravenous and Intraspinal Injections and as an Aspirating Syringe. J. Roby.
6. Recent Progress in Ether Administration. W. O. Weiskotten.
7. Gallbladder Disease. M. C. Wohl.
8. Erythremia. R. R. Mellon.
9. Blood Urea in Renal Conditions. A. J. Underhill.
10. Cancrum Oris Treated with Neosalvarsan. A. C. De Sanctis.
11. Harrison and Boylan Laws. M. Zagat.

1. Cardiovascular Toxins.—R. N. Willson describes the lesions recognized in the hearts of patients dying during the course of or from the acute infectious diseases. Each represents a type. Cloudy swelling; edema; vacuolization of the nuclei and cells; atrophy of the fibers; pigmentary, fibroid, and fatty degeneration; and fragmentation, are the important muscle lesions, common at some time to all. Typhoid fever presents Zenker's hyaline degeneration of the fibers. The cardiac nerve lesions, noticed so little and their significance even less clearly understood (as in influenza, diphtheria, etc.), may all be comprehended in the different phases of fatty degeneration. The nerve changes begin usually in the myelin sheath, and the axis cylinder often takes on a swollen and beaded appearance. The degenerative lesions in the cardiac ganglia have not, as yet, been thoroughly studied. The point given special emphasis is the fact that in every case of infectious disease all the cardiac structures are injured. Some require time and rest for their rehabilitation. The greater portion of the cardiac damage can never be repaired.

3. Muscular Relaxation in Treatment of High Blood Pressure.—M. Grossman describes a system of relaxation exercises which he finds of considerable value in the treatment of high blood pressure. He finds that one does not by relaxation remove the primary causes, such as nephritis, arteriosclerosis, etc., but one does markedly influence the mental state accompanying these conditions, thereby reducing the increased tension in the blood vessels due to this factor, and also minimizing the dangers which accompany this state. In employing this method of maintaining blood pressure at a lower level, there is provided not only a constant safeguard but also a greater control of the blood-pressure regulating mechanism. The results obtained in the cases of high blood pressure treated by muscular relaxation are said to be better and more permanent than those obtained by medicinal or any other measures.

6. Ether Administration.—W. O. Weiskotten in detailing the advantages of this type of anesthesia states that ether inhalation should be used unless contraindicated or unless the administrator has had sufficient experience with the other methods of administration. The open drop method is in common use and is preferable to the closed douche method. Artificially warmed vapor with a suitable inhaler is preferable to cold vapor for all inhalation anesthesias. Nasal, pharyngeal, or endotracheal insufflation of warmed ether vapor possesses great advantages and should be used when specially indicated. Rectal etherization when indicated is comparatively simple and a safe method when the proper technique is employed.

8. Erythremia.—R. R. Mellon reports a case which he regards as typically one of erythremia, and clinically as the well known cardio-vascular nephritic complex, plus the polycythemia and mild splenomegaly. Benzol in the usual doses given did not produce any change in the patient's condition. Although the number of red cells has been reduced to normal in some instances through the use of this agent, such a procedure appears to the author as of questionable value for two reasons: first, because of the sudden deaths occurring in cases of leucemia in which apparently only good had resulted from the drug's use; and, second, according to the findings of von Jaksch, because its administration would seem to be illogical. If, as he shows, the corpuscles are of lessened physiological worth, then the increase in number would seem to be compensatory. A destruction of this excess would then react only in a deleterious manner. Since the few symptoms that the author's patient complained of were readily alleviated by nitroglycerin, the author did not think it justifiable to resort to drastic measures merely to reduce the number of red cells.

9. Blood Urea in Renal Conditions.—A. J. Underhill concludes from his investigations that the retention of urea is positive evidence of kidney incapacity. The functional capacity of a large proportion of the kidney substance may be impaired without the retention of blood urea. As long as what remains of the kidney tissue is sufficient for the physiological needs of the body, under normal conditions retention does not result. Retention is evidence of overwork on the part of the remaining functioning kidney cells. In many instances the diet can be so regulated that the impaired kidney cells work well within their capacity. The destruction of tissue protein with an impaired kidney capacity may lead to urea retention, as much so as the ingestion of too much nitrogenous food. Diuretics and an active eliminative treatment are contraindicated when there is retention. The estimation of the urea content of the blood is the most practical method of following the course of a patient with impaired kidneys. It is more useful than the color or other tests in that it is an index of the actual condition of the patient. It can be used as a guide in the treatment of patients with impaired kidney capacity in preparation for operation. A blood urea above 0.6 gram to the liter is an indication for caution before operation when this is contemplated. A blood urea above one gram to the liter contraindicates operation.

Journal of the American Medical Association.

September 25, 1915.

1. Gastric Ulcer. W. J. Mayo.
2. The Relation Between Gastric Ulcer and Cancer. A. J. Ochsner.
3. The Decomposition Food Products as Cardiovascular Poisons. R. N. Willson.
4. Hospitals and Esthetics. The Architectural Problem, with Particular Reference to Esthetics and the Art of Architecture. G. Atterbury.
5. The Casualties of Modern Naval Warfare. F. E. McCullough.
6. The Rôle of the Nose, Throat and Accessory Sinuses in the Etiology of Chronic Infectious Arthritis. R. Hammond.
7. The Clinical Type of Arthritis Originating About the Teeth. T. F. Hartell.
8. The Application of the Various Theories in the Management of Peritonitis. W. D. Haggard.
9. Post-Mortem Reflexes. J. H. Catton.
10. The Elimination of Potassium Iodide in the Urine. An Experimental Comparative Study of Its Administration by Mouth or Rectum. W. A. Wovschin.
11. Quinine and Urea Injections in Hyperthyroidism. L. F. Watson.
12. The Practical Use of Copper Sulphate in Swimming Pools. S. J. Thomas.
13. Ruptured Aneurysm of the Right Vertebral Artery. F. D. Weidman.
14. Treatment of Syphilis of the Brain. A Preliminary Report of the Use of Mercuric Chloride Intradurally. G. O'N. Ireland and C. S. Wilson.

1. Gastric Ulcer.—By W. J. Mayo. (See MEDICAL RECORD, June 26, 1915, page 1092.)

2. Relation Between Gastric Ulcer and Cancer.—By A. J. Ochsner. (See MEDICAL RECORD, June 26, 1915, page 1092.)

3. Decomposition Food Products as Cardiovascular

Poisons.—R. N. Willson points out that these toxic substances act in one or all of three ways: (1) through a chemical toxemia and a direct poisoning of the body tissues; (2) through a bacteriemia, as in the frequent colon bacillus infections, and (3) by the formation of poisonous gases, which not only are in some measure absorbed, but also, by mechanically displacing and discommoding, embarrass organs above and below the diaphragm through gastrointestinal distention. In all three of these forms of food influence, the first recognizable effect is on the cardiovascular system. The author has experimented on laboratory animals and on himself, and has questioned very carefully patients in his care with a view to gaining light on this point. From all three sources he states that he has obtained ample evidence that the heart and vasomotor system experience very early the influences of a food toxemia of whatever nature. Usually there is a marked quickening of the cardiac action, often a distinct palpitation; almost always in the acute stages (before collapse) there is a marked elevation of both the systolic and diastolic pressures. Later, as the heart begins to tire, the systolic pressure may fall and the rhythm become irregular. Not infrequently the author has seen distinct signs of cardiac dilatation in the entire absence of abdominal distention. It would seem, therefore, as though the clinical symptoms suggesting a toxemia, especially as reflected in the cardiovascular system, are to be ascribed in the main to poisons elaborated in the intestine, but not from any one group of foodstuffs. The only requisite would seem to be that a given food substance or one of its constituents or end-products shall prove toxic for its individual host. The summer heat of the bowel, the retention decomposition of masses of undigested and often indigestible food, the presence even of food substances that are innocuous and tissue builders in other individuals, only provided they are toxic for the given one—provide all the conditions favorable to the production of acute cardiovascular crises, which, if repeated often and persistently enough, will result in cardiovascular disease.

5. **Casualties of Modern Naval Warfare.**—By F. E. McCullough. (See MEDICAL RECORD, July 3, 1915, page 41.)

8. **Management of Peritonitis.**—W. D. Haggard states that the most essential treatment of this condition, with or without operation, is an absolute prohibition of anything whatsoever by mouth, with immediate preparation for operative relief when possible. When for any reason this cannot be done the continuance of this principle with the addition of deep morphinization is the most dependable method. After operation drainage by the glass tube suprapubically and the employment of the upright posture and proctoclysis are well-nigh routine.

9. **Post-Mortem Reflexes.**—J. H. Catton concludes from his observations that the tendon and superficial reflexes disappear at death. Muscular irritability to mechanical stimulation is increased immediately following death, and continues to increase to a maximum and then to decrease, disappearing at about sixty minutes post-mortem. Since a similar increase in muscular irritability is observed in certain organic diseases of the nervous system, these reflex studies and similar studies of the electrical reactions of muscle and nerve following death should lead to new aids in the diagnosis of nervous disease. In eliciting tendon reflexes, one must be careful to tap only muscle-free tendon. The instrument must be made to stroke and not dig into the sole in eliciting the plantar reflex. The persistence post-mortem of many reflexes about the wrist cautions one not to confuse them with the periosteal reflexes in life.

10. **Elimination of Potassium Iodide in the Urine.**—W. A. Wovschin notes that the major portion of the eliminated potassium iodide is excreted in the first twenty-four hours, from 5 to 10 per cent. is given off in the second twenty-four hours, and by the third day only a trace of or no potassium iodide is excreted. As is to be expected, the amount of potassium iodide recovered never equals or even approximates the amount introduced, indicating that other avenues of elimination (skin, saliva, etc.) excrete a considerable portion, and perhaps part may be utilized in thyroid-protein moleculization. Patients who expectorate a great deal excrete less potassium iodide in the urine. The total elimination of potassium iodide in nephritic cases, as compared with other diseases, is the lowest and serves as a hint of poor renal function. When the potassium iodide is given per rectum in the nephritic cases there is a more notable elimination, due probably to slower absorption and the proctoclysis acting as a renal stimulus.

11. **Quinine and Urea Injections in Hyperthyroidism.**—L. F. Watson presents the results of a study of the quinine and urea treatment in fifty cases of goiter in which it was used. The method is recommended only for the control of the symptoms of hyperthyroidism in cases of toxic goiter, and is not recommended for the removal of the tumor in atoxic (simple) goiter for cosmetic reasons alone. The injection does not relieve the symptoms of advanced toxic goiter when the vascular and nervous systems have been permanently damaged. Much depends on a proper selection of cases; the necessity of preventing pain from any injection, by the use of local anesthesia, is of vital importance; if acute attacks of hyperthyroidism are to be prevented, the use of preliminary injections into the most prominent portion of the goiter, of a few minims of sterile salt solution given at one to three day intervals, followed by injections of sterile water, are found indispensable; the result of the quinine and urea injection depends on the amount of tissue destroyed. The quinine and urea injection in experienced hands is a harmless procedure; it is almost painless, and there is no post-injection discomfort. It is suitable for use only in a hospital by men skilled in goiter work. The gradual improvement of the exophthalmos in certain patients following the quinine and urea treatment points to a control exerted by the thyroid on the exophthalmos, through the sympathetic nervous system, as first suggested by Landström. The author believes the greatest field of usefulness for the injection is to be found in those cases of beginning hyperthyroidism not severe enough to justify operative treatment, and as a preparatory measure to partial thyroidectomy in chronic cases of toxic goiter in which the patient is too ill to warrant any form of immediate operative procedure.

14. **Treatment of Syphilis of the Brain.**—G. O'N. Ireland and C. S. Wilson find that the injections of 1 50 grain of mercuric chloride intradurally, by the method of Byrnes, is apparently safe. Autogenous serum is much preferable to pooled serum. The reactions are a little more severe than those following the Swift and Ellis method in which 40 per cent. salvarsanized serum is used. A clinical improvement usually appears after about five treatments; 75 per cent. of the authors' cases showed this improvement. A tendency to relapse to their former condition was observed in about 40 per cent. of those at first improved. The clinical improvement is more marked and rapid than the serological. How permanent the improvement will be the authors are unable to state, as the time of observation is too short. The colloidal gold test is the most resistant to change. It is possible to have clinical general paralysis with a negative Wassermann reaction in blood serum and spinal

fluid, but in the above series the colloidal gold test was uniformly positive.

The Lancet.

September 11, 1915.

1. The Common Aims of Science and Humanity. A. Schuster.
2. On the Pathology of Trench Frostbite. J. L. Smith, J. Ritchie and J. Dawson.
3. Phenoliation in the Treatment of Gas Gangrene. L. Menicière.
4. Plastic Operation for Closing Certain Unhealed Gunshot Wounds of the Head. C. W. G. Bryan.
5. The Value of Prolonged Rest in the Treatment of Heart Disease in the Young. Five Years' Results of a Cottage Home for the Treatment of Valvular Disease in Boys. G. D. Barton.
6. Succus Allii in the Control of Suppuration in Wounds. A. D. Serrell Cooke and V. Gabriel.
7. The Strength of Picric Acid as an Antiseptic. H. L. Tidy.

2. Trench Frostbite.—J. L. Smith, J. Ritchie and J. Dawson summarize their conclusions as follows: The soldiers should practise massage on their feet before going to the trenches. A study of the cases shows that the symptoms begin to be felt, as a rule, after 48 hours' exposure. It is clear, therefore, that to shorten the time in the trenches would be the most essential measure of prevention. While men who have been exposed to the conditions causing frostbite without having been affected are resting between their turns of trench duty, they should persistently practice massage of their feet twice daily. Careful attention should be given to anything which may constrict the blood vessels. Constriction by boots and puttees should be avoided. Loose moleskin leggings would probably be found more suitable than puttees, as they would provide warmth without constriction. The advantage of leggings is that they provide the protection of an ample cushion of air and they drain more readily than compact wrappings, the existence of a non-conducting air cushion being thus reestablished. The soldiers wear boots of a large size, but they have a practice of putting on two pairs of stocks, and this probably tends to a certain amount of constriction. It was observed that the excoriations were situated on the outer and inner borders of the feet, and this fact suggests that some degree of constriction existed. It is significant that the parts most liable to trench frost-bite are the parts where under ordinary circumstances callosities and corns are most frequent. The question arises whether the upper leather of the boots could be made more pliable without diminishing the stability of the sole or of the boot generally. The soldiers very commonly cover their feet with oil and derive benefit from this. There may be several advantages in this. Among other effects it will act as a bad conductor of heat; it may minimize the effect of the wet; it may keep the leather of the boots more pliable and its application may be the occasion of a thorough massaging of the feet. In order to obtain the full effect the oil should be of high boiling-point and be used in considerable quantity; semi-solid oils such as vaseline would probably give the best results. To maintain the circulation in the feet it would be helpful to increase the clothing of the legs. This might be done by using leggings reaching the thigh or by wearing two pairs of pants. It is found that the onset of the symptoms was gradual as a rule. A soldier would at the end of a turn in the trench suffer from slight swelling. During the resting period he recovered, but on the next occasion the symptoms became so severe that he was disabled. Such cases should be investigated by the medical staff and tested before they are allowed to return to trench duty. When the condition has become so severe as to disable the soldier he should not be allowed to walk or march more than is absolutely necessary when he leaves the trench. As soon as possible he should be conveyed to a resting-place. In many cases the records tell of disabled men having to walk back to billets some miles behind the line of the trenches. Wherever possible in such circumstances transport should be taken advantage of. When the billets are reached measures should be directed to giving the feet as much rest as possible. The feet should not be warmed in any way that causes congestion, and the return of the normal circulation should be delayed rather than hastened.

6. Succus Allii in the Control of Suppuration in Wounds.—A. D. S. Cooke and V. Gabriel have found that with lotions prepared from garlic juice and distilled water it has invariably been found, that after washing out the wound twice daily, and at the same time establishing drainage, a noticeable improvement occurs within 24 hours, and a very marked and decided improvement within 48 hours. Not only has the purulent discharge become markedly diminished, but where there has been pain this has either been much relieved or has disappeared in the same period of time, while no injury to the tissues has been apparent. The reason for employing succus allii in suppurating wounds is given as follows: One of the authors, following Minchin, had for some considerable time employed garlic juice in an inhalation for the treatment of active mixed infections in pulmonary tuberculosis with results which were often successful in overcoming mixed infection caused by the ordinary pyogenic organisms. From this it was argued that a lotion containing succus allii, if brought into direct contact with organisms within a wound, should inhibit bacterial growth and check pus formation. As previous experience had shown that a freshly prepared lotion of succus allii 1 part to distilled water 3 or 4 parts, when employed in tuberculous sinuses, did not injure tissues, it was decided to use lotions in the above strengths, washing out the wounds twice daily and maintaining where possible free drainage. The first case, the details in which the lotion, succus allii 1 part and distilled water 4 parts, was tried was a case of empyema from which a large quantity of very offensive, greenish-yellow pus was evacuated after the resection of a rib. The subsequent discharge was copious and foul-smelling, but after 48 hours it was noticed that the purulent discharge was free from odor and rapidly diminishing in amount. This was regarded as extraordinary, and it was decided to try the effects of the garlic juice lotion in other cases. The results were equally good.

7. Picric Acid as an Antiseptic.—H. L. Tidy concludes that a 0.165 per cent. solution of picric acid has the same bactericidal powers toward a culture of typhoid bacteria as has the standard 1 per cent. solution of carbolic acid. Thus the Rideal-Walker carbolic acid coefficient of picric acid is exactly 6.

British Medical Journal.

September 11, 1915.

1. Observations Upon Acidosis in Diabetes Mellitus. A. P. Beddard, M. S. Pembrey and E. I. Spriggs.
2. The Significance of Alveolar Carbon Dioxide Determinations in the Treatment and Prognosis of Diabetes. E. P. Poulton.
3. Paroxysmal Hemoglobinuria. E. Emrys-Roberts.
4. Congenital Dislocation of Right Foot with Almost Complete Absence of Right Fibula. E. M. Sympson.

1. Acidosis in Diabetes Mellitus.—A. P. Beddard, M. S. Pembrey, and E. I. Spriggs report the results of the investigations carried on during the past twelve years at Guy's Hospital. The chief practical result of this work has been the demonstration that analyses of the carbon dioxide in the alveolar air of the lungs afford an index of the degree of acidosis as a guide in treatment and prognosis. In cases of diabetes there is a relation between the alkalinity of the serum and the amount of carbon dioxide in the venous blood; the

two rise and fall together without being actually parallel.

2. **Alveolar Carbon Dioxide Determinations in Diabetes.**—E. P. Poulton states that the object of alveolar CO_2 determinations is to measure severity of acidosis. Hence it is useless to apply the method when the urine, in a case of diabetes, gives a negative result with the nitroprusside test. Under these circumstances the alveolar CO_2 pressure will always fall within normal limits. However, when the urine contains acetone bodies, it is usually impossible, from the nitroprusside or ferric-chloride tests alone, to say how severe the acidosis is. In any of these cases the alveolar CO_2 pressure is a sure guide. By its means cases can readily be divided into two categories: (1) The mild cases, in which the alveolar CO_2 pressure falls within normal limits; in these cases the prognosis with regard to coma is relatively good. (2) The severe cases, in which the alveolar CO_2 is definitely lower than normal; here the utmost care must be taken to prevent the onset of coma. All the time the CO_2 is below normal the patient is, as it were, on the edge of a precipice, and any disturbance, such as sudden excitement or worry, or the administration of too rigid a diet, may push him over the edge. In these cases the actual CO_2 pressure observed will give the measure of the danger. A value of 2 per cent. means that coma may supervene within twenty-four hours. A value of 3 per cent. or 4 per cent. is less dangerous; in the worst event, coma will not come on for at least two or three days. A sudden drop in the alveolar CO_2 is also of significance; it means that acidosis is increasing, and, though the immediate danger may not be great, there is always the possibility of a further increase until coma sets in. This sudden drop in the CO_2 pressure may be unaccompanied by symptoms, such as drowsiness, abdominal pain, or air-hunger; for these only appear when the CO_2 reaches a very low value—that is, about 2 per cent. Hence the alveolar CO_2 gives by far the earliest warning of approaching danger. Again, it is possible to be misled if reliance is placed on symptoms alone, without determining the alveolar CO_2, because it not infrequently happens that the rapid onset of coma may be suspected from symptoms, even when the alveolar CO_2 still remains relatively high. Of course, it does not necessarily follow that the chance of averting coma is hopeless because a very low CO_2 pressure is obtained. It may be kept off for a considerable time by judicious treatment.

Berliner klinische Wochenschrift.

August 16, 1915.

Clinical and Experimental Experience with Tetanus.—Pribram, representing v. Eiselsberg's clinic, first calls attention to the relative increase of the disease in the present war. In the Crimean war but 1.5 per thousand wounded developed tetanus; in the American Civil War the corresponding figure was 2.0, in the Franco-Prussian war 3.5, while in the present conflict, in the XV German Army Corps the ratio has been 6.6 per thousand wounded. This increased frequency is set down to the vast extent of trench warfare, although infection of the soil does not extend below 30 cm. depth. The permeation of hose with dirt, the nearly frozen condition of the feet, predispose to infection of the lower extremities, in which mild as well as extensive injuries became the staring point of the disease. The conditions of peace tetanus were often inverted, as when severe cases developed after long incubation, milder ones after brief incubation. Treatment has led to most problematic results. Brilliant percentages of recovery rank side by side with highest mortality percentages. Magnesium has enemies as well as friends. Baccelli's carbolic acid treatment has been found by some quite inert. All these contradictions can mean but one thing—there is tetanus and tetanus. A unicistic view is unscientific. Statistics cannot show what remedies are good or inert. Some attempt must be made to give a status to mild tetanus, *i.e.* tetanus with fair prognosis. Every fatal case must be autopsied. Prodromes, so often present and characteristic, may often be quite absent. The disease proper begins with trismus and epigastric pain, the latter a forerunner of spasm of the diaphragm. This symptom is by no means constant, but when present is invariably of grave prognostic significance, despite the relative mildness of other symptoms. Death may even follow in a few hours. Conversely absence of this is a distinctly favorable prognostic. When present the epigastric pain is an indication for pushing narcotics. Contractions of the diaphragm are of especially grave significance when associated with spasms of the glottis, and spasms of the pharynx make up a triad of symptoms which have far more significance than trismus and opisthotonus. Thismus is practically never absent. Convulsions, when severe and universal, in the realm of voluntary muscles, naturally give a grave prognosis. In severe cases sweating may be enormous, and hyperidrosis ranks with trismus as a symptom never absent. Fulminating tetanus, with its very brief incubation period is a rather simple disease picture. Often the patient appears to succumb to toxemia, the active manifestations being relatively mild although succeeding one another rapidly. The cases with short incubation and those with the diaphragm-glottis-pharynx spasms would comprise the two types of grave or hopeless prognosis were it not for the fact that pulmonary complications cause many deaths irrespective of disease type (whether patients die from or simply with pneumonia is often a question). So common is pneumonia in tetanus cases that some authors believe in the existence of a specific tetanus pneumonia. The deadly effects of convulsions of the diaphragm appear to reside in the circulatory organs and not in pulmonary disturbances. In other words the vena cava inferior is violently compressed and stagnation results in the greater circulation. To this may be added the acute edema of the lungs which may follow spasm of the glottis. Weichselbaum has in nearly all autopsies on tetanus subjects found evidences of the status thymico-lymphaticus. Doubtless these subjects find great difficulty in the manufacture of antitoxin. This fact will do much to alter our theories of the disease. Either soldiers with this status must be kept from battle or given large doses of antitoxin before fighting.

The Limitations of Salvarsan in Syphilis.—G. Inouye and S. Hamanishi report their experience in the treatment of 1,780 cases of syphilis during the past five years. They find that whereas the conjoint use of salvarsan and mercury in early cases of syphilis was satisfactory, nevertheless 30 per cent. of these were incompletely cured or show a recurrence. In the early cases treated only with salvarsan intravenously there were 70 per cent. of recurrences and incomplete cures. In early cases treated with the subcutaneous injection of only 0.6 gram of salvarsan the results for the following three years were far better than with intravenous injection; but in advanced syphilis the results were just the reverse, recurrences taking place more frequently with subcutaneous than with intravenous injection.—*Sei-i-Kwai Medical Journal.*

Insurance Medicine.

The Influence of Height and Weight on the Mortality of Insured Persons.—Dr. A. Rabagliati says that in the large number of new facts regarding the influence of height and weight on longevity and therefore of their value in life insurance, different views may be taken and different significance seen. An important consideration seems to be that sound conclusions seem to have been drawn often from comparatively small numbers of facts, although no doubt we should be ready always to consider new facts and their bearing on the conclusions to which we ought to come.

The conclusions we have to consider regarding the influence of height and weight on mortality are based on the records of 812,221 policies on the lives of men of North America, but it was deemed advisable to eliminate the cases at the extremes of height and of ages at entry. The committee was a joint one, chosen from among the members of the Association of Life Insurance Medical Directors and the Actuarial Society of America. The policies dealt with were those of men whose ages at entry were from 20 to 62 years inclusive, and whose heights ranged from 5 feet 3 inches to 6 feet 2 inches, representing 744,672 cases, or 92 per cent. of the data submitted.

First, it is of interest to observe that out of the 744,672 men in question, only 24,525 were of average height at date of entry. This investigation showed that the average height of the men examined and accepted by the United States and Canadian life insurance offices was 5 feet 8½ inches; while that of women was 5 feet 4¼ inches. This averages about 1 in 30, and seems to show that abnormalities are very numerous. Next, no fewer than 396,034, or more than half of the cases, were at entry from 20 pounds below to 20 pounds above the average weight. Thirdly, covering the whole number of insured persons, while the expected deaths were 38,038, the actual deaths were 41,717, or 10 per cent. above the expectation. A fourth fact of much interest is that underweight appears to have far graver influences on health in early life than it does in later life. In fact, it seems to be an advantage in the latter stage of life. Thus of those entering at 20 to 24 years of age, 25 to 45 pounds underweight, the mortality actually experienced bore to that expected a ratio of 134 to 100. That is, 134 deaths occurred where only 100 were expected. On those entering at 50 to 56 years of age and from 25 to 45 pounds underweight, the actual mortality was only 91 per cent. of the expected, and among those entering at 57 to 62 it was only 81 per cent.

The influences of overweight were found to be different. A great excess of weight of from 50 to 80 pounds had a bad effect at all ages of entry, but less at early ages than at later ones. Thus this amount of overweight at entry, 20 to 24, only resulted in a ratio of 103 to 100 expected; but at ages of entry, 40 to 44, the ratio rose to 175, and at 57 to 62 it was 138 per cent. Overweight, according to the rulings of the committee, to a moderate degree, is not a serious impairment in the young at entry, but has a material effect at the middle ages. For example, in the age group, 20 to 24, the mortality among those from 50 to 10 pounds overweight was 3 per cent. in excess of the standard; while in the age group, 40 to 44, it was 75 per cent. At higher ages the effects are less serious.

The influences of height, apart from weight, are not so apparent. At 20 to 29 years at entry, men of 5 feet 3 inches to 5 feet 6 inches, showed a ratio of 96 per cent. actual deaths to 100 expected; at from 5 feet 11 inches to 6 feet 2 inches the ratio was 122 per cent. At 40 to 49 men of the same three heights showed mortality ratios of 110, 109, and 120 per cent.; at age of entry, 50 to 59, the ratios of actual to expected deaths were 108, 109, and 101 per cent. The committee conclude that at the younger ages tall men have proved less desirable risks than short men; at the older ages the short and medium-sized men have been slightly worse risks than tall men.

Dr. Rabagliati concludes by saying that if any criticism could be made on the excellent work done by the committee, it would be to the effect that the effects of height and weight on the mortality of insured persons are rather weakened so long as "vital capacity" or chest expansion is overlooked. The inculcation of deep and full respiration being one of the most important of health functions, the play of the chest in ordinary respiration comes to be an important factor and closely related to height and weight.—The Assurance Medical Society, London, March 3, 1915.

Cooperation of Medical Director and Local Examiner.—Dr. B. L. Jenkins in a paper read before the Medical Life Insurance Section of the Texas State Medical Association, says that life insurance is of dual nature—economic and spiritual, for it is found in Holy Writ that "he who provideth not for his own household is worse than an infidel" and again "out of the mouth of two witnesses all things shall be affirmed."

With these two biblical truths before us; one the strongest injunction to insure and the greatest incentive for insurance the world has ever heard; and the other a direct admonition and promise, it behooves the medical director and local examiner, each to cooperate with the other that a fair and just conclusion may be reached as to merits of the risk.

The duty of each is not alone to the company, but to the applicant as well; for so accurately have actuary and mortality statistics been calculated that the expectant period of life has been reduced mathematically, to hours. Such being true nearly all men are entitled to some kind of insurance at some rate.

It, therefore, is the duty and should ever be the practice of the local examiner to furnish to the medical director a perfect pen picture of the applicant, and it is the duty and should be the invariable rule of the medical director to study this picture as an art critic from its every angle before rendering his decision, and he should not do so then if there be any matter of doubt in his mind as to conditions or findings by local examiner, or if he does not concur in recommendations therein made, until he has again conferred with the local examiner in effort to elucidate, or obtain more light on a mooted question. And if he be inclined not to concur in recommendations he should specifically state to the local examiner his reasons for such nonconcurrence, whether they are favorable or otherwise to the applicant.

Such zealousness is owing both to the company and to the applicant and his dependents. Such cooperation is essential, for each should and does prove a check to the other; each has his function, but inseparably connected, and each is indispensable to the insurance company's success.—*Texas Medical News.*

Book Reviews.

CYSTOSCOPY AND URETHROSCOPY FOR GENERAL PRACTITIONERS. By BRANSFORD LEWIS, B.S., M.D., F.A.C.S., Professor of Genito-Urinary Surgery, Medical Department of St. Louis University, St. Louis, Mo.; Genito-Urinary Surgeon to St. John's Hospital, etc., and ERNEST G. MARK, A.B., M.D., F.A.C.S., Professor of Genito-Urinary and Venereal Diseases in the University Medical College, Kansas City, Mo., etc. With a chapter by WILLIAM F. BRAASCH, M.D., Attending Physician to the Mayo Clinic, Rochester, Minn. Two hundred and thirty-eight pages with 113 illustrations, twenty-three of which are printed in colors. Price, cloth, $4.50 net. Philadelphia: P. Blakiston's Son & Co., 1915.

As the authors state in the preface, since developments in these fields have been so rapid there has been ample room and need for the several excellent text-books on cystoscopy and urethroscopy that have appeared in recent years, and a similar demand has impelled the production of the present volume. This book gives an interesting presentation of the subject of the development and practical application of the cystoscope and urethroscope and contains much valuable information. However, it seems to us that the third and fourth chapters, entitled, respectively, "Operative Technique" and "Ureteral Catheterization," will bear expanding. The average beginner requires most explicit instruction upon points in technique and the interpretation of findings; and we also believe that more emphasis should be placed upon the difficulties and dangers of cystoscopy and the sources of error under varying conditions. These things are of vital importance to the novice, for whose enlightenment this book was principally intended.

Those sections dealing with diseased conditions of the bladder and urethra are well written and the authors are to be congratulated for having condensed a great deal of practical importance into a comparatively narrow compass. As would be expected, the chapter on ureteropyclography, by Braasch, gives a delightful summary of this phase of the subject. The authors have given a good general view of their subjects, the book is profusely illustrated and the presswork leaves nothing to be desired. All things considered it should form a useful addition to the list of books devoted to this fertile field.

THE TREATMENT OF FRACTURES. With notes upon a few common dislocations. By CHARLES LOCKE SCUDDER, M.D.; Surgeon to the Massachusetts General Hospital; Associate in Surgery at the Harvard Medical School; Fellow American Surgical Association; Member of the American Urological Association, and of the American Society of Clinical Surgery. Eighth Edition, revised with 1057 illustrations. Price, $6.00 net and $7.50 net. Philadelphia and London: W. B. Saunders Company, 1915.

THIS book maintains the high standard it has already reached in the seven previous editions that followed each other rapidly since the work first appeared fifteen years ago. One perceives the same effort to make the presentation of the subject matter helpful to the general practitioner, the illustrations being numerous and clear and showing particularly the different stages in the application of dressings. Many new illustrations appear in this edition. The text contains also a description of the use of autogeneous bone grafts in cases of delayed union and of non-union; and new material upon fractures of the jaw, the acetabulum, the greater tuberosity of the humerus, and upon separation of the lower epiphysis of the femur. The author rightly maintains the conservative attitude that operative treatment is not to be undertaken lightly.

EVOLUTION AND DISEASE. By J. T. C. NASH, Captain, R.A.M.C., T.F., S.S.; Diplomate in Public Health, University of Cambridge; Doctor of Medicine, University of Edinburgh, etc., etc. "Nec scire fas est omnia." Price $1.40 net. New York: William Wood and Company, 1915.

THIS book is based upon the three Chadwick lectures delivered by the author in 1913. The subject matter is divided into sixteen chapters the first three of which deal with the history of medieval epidemics and the remainder with the evolution of epidemic disease. The Chapter headings are as follows: Famine and Pestilence in the Middle Ages; Medieval Psychopathic Epidemics; Medieval Plague—The Black Death; Evolution of Pathology; The Sweating Sickness and Influenza; Measles and Smallpox; Malignant Fevers; Insanitation an Evolutionary Factor; General Remarks on Specificity and Evolution in Disease; Science and Philosophy as Applied to Evolution; Heredity and Disease; The Declension of Phthisis; Present-Day Evidences of Evolution; Further Bacteriological Evidence of Evolution; The Evolution of Disease and Disease Germs; The Evolution of Sanitation; War as a Factor in the Evolution of Epidemics. The last chapter has a special interest at the present time. The book is an interesting and scholarly excursion into the history and philosophy of medicine.

DIE OPERATIONSFREIHEIT IM LICHTE FORTSCHREITENDER STRAFRECHTSREFORM. Eine kritische Betrachtung zum Entwurfe eines Deutschen Strafgesetzbuchs von Dr. HANS LIESKE. Preis 60 pfg. Berlin: August Hirschwald, 1915.

THE right of the surgeon to operate on minors without the consent of the parents or guardians is naturally of vital importance to the operator because if the patient dies without operation the surgeon may be accused of negligence. The same holds good for operations on the insane and adults temporarily irresponsible. The author sums up the entire question in this brochure in a few words. If a physician treat professionally a patient over the age of 18 years against his consent, the law should punish him. If the age of 18 years has not been reached, the consent of the patient's legal representative must be obtained. This representative should also have a voice in the appointment of a custodian for an insane or feeble minded person, provided the latter possesses sufficient intelligence to form a judgment on his status.

THE OPERATIVE TREATMENT OF CHRONIC INTESTINAL STASIS. By Sir W. ARBUTHNOT LANE, Bart., M.S., F.R.C.S., Senior Surgeon to Guy's Hospital, and Emeritus Surgeon to the Hospital for Sick Children, Great Ormond Street. Third edition. Pp. 201, with 102 illustrations. Price, cloth, $4.00. London: James Nisbet & Co., Limited, 1915. Chicago Medical Book Company, American agents.

IN the two preceding editions the title "Chronic Constipation" was employed instead of "Chronic Intestinal Stasis" because, as the author says, the delay in the large bowel is the primary or causal factor of the condition, and the title "Chronic Constipation" at that time called for less explanation than that which he has now rendered familiar to the profession. While for many years intestinal stasis, by one name or another, has been recognized as a potent factor in the causation of many ailments, Mr. Lane long ago became imbued with the idea that this was a far more common etiological factor than the profession at large realized. Whether or not one agrees with Mr. Lane, either in his views as to the origin and development of the various factors which ultimately bring about intestinal stasis, or the extent of damage which it is capable of inflicting upon the individual, or in the drastic operative procedures which he recommends, one must admire him for his dogged persistence in enunciating his views in the face of initial scepticism and much subsequent adverse, and sometimes none too friendly, criticism. He has certainly shown that he has the courage of his convictions; and it cannot be denied that the intensive study of intestinal conditions, which was stimulated by the exposition of his theories and made possible by improvements in *x*-ray technique and greater skill, born of experience, in interpretation of *x*-ray findings, has resulted in a broadening of our knowledge and a much better appreciation of the potentialities for good or evil of the intestinal tract..

In this book we have a clear exposition of the studies, impressions, deductions, which led Mr. Lane to the formulation of a working theory, and a recital of experiences which finally led to the adoption of his present views on intestinal stasis and convinced him of the necessity for the surgical measures which he recommends. This material is comprised in the first, fifth and sixth chapters, covering about 175 of the 201 pages, and much of it is of absorbing interest. The other three short chapters are: "The Investigation of Chronic Intestinal Stasis by the *X*-rays," by Alfred C. Jordan, M.D., M.R.C.P.; "The Bacterio-Chemistry of the Small Intestine," by Dr. Nathan Mutch, and "*X*-Disease: An Extract from 'Diseases of the Heart.'" by Dr. James Mackenzie.

All who are interested in getting accurate, first-hand knowledge of Lane's ideas on the subject of chronic intestinal stasis will do well to read this book.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON OBSTETRICS AND GYNECOLOGY.

Stated Meeting, Held February 23, 1915.

THE SECRETARY, DR. GEORGE W. KOSMAK, IN THE CHAIR.

THE program of this meeting was contributed by the members of the staff of Mt. Sinai Hospital.

Report of Three Cases of Fibroids Complicated by Carcinoma of the Intestine; Resection; Recovery.—Dr. JOSEPH BRETTAUER reported these cases. He said the first case was one of fibroid of the uterus complicated by adenocarcinoma of the sigmoid. The latter condition was accidentally discovered during the operation for fibroid. The sigmoid was resected to the extent of about four inches. The proximal end was pulled through the remaining part of the rectum and fastened at the anus. The pelvic peritoneum was closed entirely. The patient made an uninterrupted recovery, with full control of the sphincter ani, and three years after the operation was perfectly well. The second case had been reported in the *American Journal of Obstetrics*, 1909, Vol. 60, "Transactions of the New York Obstetrical Society." This patient was operated on for suspected malignant ovarian neoplasm. On opening the abdomen the mass proved to be a solid growth originating from the meso-sigmoid close to its attachment to the gut; down along the sigmoid two more nodules were felt. After a supravaginal amputation of the fibroid uterus, the sigmoid was resected, the proximal end being drawn through the rectal end and fastened at the anal orifice. A stormy convalescence followed due to difficulties encountered in overcoming the strictured portion of the anastomosis. In view of the pathologist's report of round cell sarcoma of the mesentery and metastases in the mesentery and in the intestinal wall, steps for radical relief were not considered. The operation was performed in December, 1912, and on February 15, 1915, the patient's condition was excellent. There was a metastatic swelling the size of an egg in the tenth intercostal space, the nature of which was somewhat suspicious. Excision was not thought of, as, if this was a metastasis, there were undoubtedly others situated elsewhere. The third patient, 41 years of age, sought relief because of retroflexed uterus and enlarged, adherent, and tender appendages, the left of which apparently contained fluid. On opening the abdomen the sigmoid flexure was found covered with dense adhesions which formed a tumor-like mass about five inches in length. This proved to be a well shut off abscess cavity caused by the perforation of an adenocarcinomatous ulceration in the lower sigmoid. This was freed, resected, and an end-to-end anastomosis established with a Murphy button. The right ovary was found tightly adherent and carcinomatous. The entire posterior surface of the uterus was covered with necrotic masses, and here and there small metastases were noted. The left appendages presented the appearance of a tuboovarian cyst which was tightly adherent. There were indurated areas in the pelvis which were beyond the possibility of removal. This patient improved for a time, but four months after the operation began to show symptoms of stricture of the rectum, which necessitated the establishment of an artificial anus a few weeks later. The benefit of the artificial anus was only temporary; the patient died within two months from the time of the second operation. These cases were reported because of the absence in all of them of any symptoms pointing to intestinal disease. In all three cases this complication was found in operating for another cause. A study of the histories, even after the actual state of affairs was known, elicited no symptoms pointing to the true condition. As to the methods of establishing intestinal anastomosis, time was of importance in all three cases; the method employed in the first two required the least time. In the third case he used the Murphy button, which could also have been used in the others.

Dr. TAYLOR recalled that some years ago when he assisted Dr. Tuttle they frequently found these conditions of the sigmoid and sometimes they treated them in unusual ways. In one such case in which they did not wish to lose time the choice lay between an artificial anus or joining the portion of the sigmoid to the top of the vagina. The latter procedure was chosen. The patient made a good recovery. She had one movement daily, after which the vagina was washed out. She had no trouble whatever from the movement passing through the vagina.

Vaginal Subtotal Hysterectomy for Procidentia and Large Cystorectocele Associated with Chronic Fibrosis Uteri.—Dr. HIRAM N. VINEBERG reported this case which he operated upon after a method somewhat different from that usually employed in such cases. He stated that it was well established that vaginal fixation, or the more recent term, interposition, fulfilled the object in view in most cases of procidentia and large cystorectocele, when the climateric was near at hand, or when the woman had already borne a good sized family and further pregnancy might be eliminated. But the operation called for a fairly normal uterus. If the uterus was very large because of the existence of fibroid nodules or diffuse fibrosis, or was exceedingly small through senile atrophy, it was contraindicated. The same applied to the uterus, which, though normal in size, was the subject of uncontrollable hemorrhage. After speaking somewhat in detail of the operations at present in vogue for the correction of procidentia and large cystorectocele, he described a vaginal method which he had been employing for over three years. This method consisted in amputating the body of the uterus fairly high up and utilizing the cervical stump as a pelotte to hold up the bladder. When the woman was still comparatively young, and the creation of an artificial menopause might seem undesirable, the amputation might be done so high up as to leave, together with the adnexa, the lower segment of the uterus with a corresponding area of endometrium. Not infrequently a difficulty presented itself in that the vaginal portion was very much hypertrophied and elongated, or badly lacerated with considerable eversion of the cervical mucosa. Where such conditions were present it had been his custom to amputate the lower portion of the cervix, leaving only a comparatively short cervical stump, extending from the vaginal vault to the lower uterine segment, and using this to support the bladder. After the redundant vaginal flaps were resected to the extent that the individual case required, the cervical stump was sutured to the subpubic fascia and to the anterior vaginal wall. The bladder was then forced to take a position within the abdomen and its prolapse was prevented by the firmly fixed cervical stump. The operation was completed by doing the necessary operation upon the posterior vaginal wall and the perineum. Dr. Vineberg said that thus far he had performed this operation ten times. Two of the operations had been done during the past two months and therefore had to be excluded for the present so far as results were concerned. Of the other eight cases, one had been under observation for three years and three months; two for twelve months; two for fifteen months, and three had been lost sight of. The results in all the observed cases were excellent from the anatomical standpoint, except in one. This patient continued to complain of a bearing down feeling and frequent micturition, though there was no recurrence of the cystocele, but the vaginal portion of the cervix came down to the introitus. In this instance it would have been wise to have done a partial amputation of the cervix, as had been done in some of the other cases with long and hypertrophied vaginal portions. Dr. Vineberg reported the following case as an illustration of the value of this procedure. The patient, 23 years of age, had had an abdominal supravaginal hysterectomy done in an out-of-town hospital sixteen months before she was admitted to Mt. Sinai Hospital. A few months after this operation everything came down as before. At the time of admission to the hospital the long cervix with bladder and rectum protruded from the vagina. At operation the anterior vaginal wall was incised from the urethral meatus to near the cervical os; the bladder was dissected away from the cervix and broad ligaments. On opening the peritoneal cavity a long fibrous band was found stretching from the cervical stump to the abdominal wall. This was severed. The redundant vaginal flaps were excised and after the cervical stump was shortened by a liberal excision of its lower part, it was sutured to the subpubic fascia and to the vaginal wall as described above. The operation was completed by a suitable posterior colporrhaphy. Seven months after the operation the result was simply perfect. The cervical stump was high in the vaginal vault, both vaginal walls were in apposition, and when the patient bore down there was little protrusion of the anterior vaginal wall.

Dr. J. RIDDLE GOFFE said he had had no experience with the method described by Dr. Vineberg, but he would like to ask him what he did about controlling the blood supply, and how he disposed of the bladder. Did he put it on top of the cervical stump and leave it to take care of itself, or did he stitch it in some definite position? One should not deceive himself into believing that the cervix held up the bladder. The cervix in this instance was simply the insertion of the cardinal ligaments. It was the ligaments that afforded the cardinal support. It seemed to him that it was preferable to get rid of the old infected cervix and utilize the ligaments exclusively for this support as in the operation for cystocle which he had devised and which was known by his name.

Dr. VINEBERG, in reply to Dr. Goffe, said that he left a cervical stump and a sufficient blood supply. He had not mentioned the blood vessels because he took for granted that they understood that vessels were ligated as was usually done. Dr. Goffe implied that the nutrition of the cervical stump would suffer. There was no need for such fear as the technique was similar to that of an abdominal supravaginal hysterectomy, the only difference being that this operation was done through the vagina. The bladder was disposed of in the same way as in the interposition operation. All could not perform Dr. Goffe's operation as successfully as he could. For himself, he had some hesitancy in suturing the bases of the broad ligaments. Looking at the field from above after a panhysterectomy one could see that to suture the lower part of the broad ligaments together would bring about considerable tension and this was not desirable. Where the cervix was hypertrophied or deeply lacerated, he amputated the lower portion, leaving only a short stump extending from the vaginal vault to the lower uterine segment, and he used this to support the bladder.

Dr. ARNOLD STURMDORF said that when gynecologists of Dr. Vineberg's experience found it necessary to devise new methods for the cure of cystecele, it became evident that prevailing methods were unsatisfactory in results. Just so long as operaters continued to center their conceptions and precedures upon supporting elements and ignored the mechanism of displacing factors, so long would they fail to cure many cases of bladder prolapse. The bladder had no true ligamentous support; its fascial and ligamentous equipment was only one element in the perfect mechanism that counteracted the expulsive force of intraabdominal pressure, not by textural resistance, but by deflecting the direction of intraabdominal pressure toward the normal pelvic outlets. The musculature of the pelvic floor and the mobile uterus presented a complicated deflecting mechanism and in order to restore and maintain pelvic topography these elements must be restored to normal position and function. Any attempt to anchor the bladder in abnormal positions was unsurgical, unanatomical and futile. In the so-called interposition operation, the bladder, fortunately for the operator, often slipped back into its normal position and when it did not failure ensued; its permanent fixation above and behind the fundus was a physiological impossibility. Dr. Goffe's operation fixed the bladder in its normal position and hence it was superior to and in advance of other methods.

Dr. HENRY DAWSON FURNISS expressed the opinion that, if most of the patients with prolapse and big hypertrophied cervices and uteri were put to bed and given douches for three weeks to a month, it would not be necessary to amputate the cervices and fundi of the uteri before doing an interposition operation. By such treatment the edema of the surrounding structures would disappear and the operation would be technically much easier. He called attention to bladder trouble subsequent to these operations, and said he had known of instances of the infection extending to the kidneys, and of one death due to such a cause. He disagreed with Dr. Sturmdorf as to the position of the bladder. In examining many such cases after operation he had always found the fundus uteri under the trigonum, lifting it up. The ureters opened on either side of this elevation.

Dr. TAYLOR said that Dr. Vineberg had brought out one point and that was that in attempting to do an interpositien operation, where the uterus was too large, there were three ways of meeting the difficulty. It was of practical importance to leave organs in their anatomical relatien and to endeavor to cure symptoms; to this end it might be satisfactory instead of interposing the entire uterus to fasten the anterior surface of the fundus to the vaginal wall and follow that by ventral fixatien. He assumed that the abdominal wall would support the uterus and had attached it to that with good results.

Dr. VINEBERG, in closing the discussion, said that according to Dr. Sturmdorf's theories no good results ought to be expected from this procedure which he had described, but that good results did occur nevertheless. With regard to keeping the patients in bed for a while before they were operated upon, in the wards of hospitals this could be done better than with private patients. It might be pointed out, however, that the involution spoken of did not take place in cases of fibroids or fibrosis. In all cases the method of treatment was a matter of selection. One should not leave an organ that gave rise to nervous symptoms and there was no pelvic condition more fruitful of manifold nervous disturbances than a uterus in a state of chronic metritis or fibrosis. With the operation he had described he had secured perfect anatomical results and relief from symptoms.

Intraperitoneal Hemorrhage of Unknown Origin.—Dr. ROBERT T. FRANK presented this report. He stated that this was the third case which he had encountered in which, on opening the abdomen, a large intraperitoneal hemorrhage was found, the source of which was never determined. The patient was 23 years of age and single. Her menstrual history had been normal until about a year ago when dysmenorrhea and menorrhagia developed. Three days before admission to the hospital there was an acute attack of abdominal pain and faintness. The bowels were constipated and urination painful and frequent. At the time of admission the patient looked very ill. The temperature was 105° F. and pulse 120. A large hard tumor was felt in the right hypochendrium, reaching to the umbilicus. The uterus could not be outlined. A diagnosis of ovarian cyst with twisted pedicle was made. A laparotomy was performed immediately and a large amount of fluid and cletted blood evacuated. The tumor proved to be a firm fibroid of the uterus. The adnexa were normal. A thorough inspection of all the viscera revealed nothing abnormal except some jelly-like deposits on the intestines. Rapid supravaginal hysterectomy was performed together with the removal of the right adnexa. The specimen removed shewed a hard fibroid with tuberculosis of the endometrium and ovary. A pin point opening on one of the veins of the fibroid which was supposed to be the source of the hemorrhage was found to be traumatic, that was made at the time of operation.

Dermoid Cyst of the Ovary with Carcinomatous Change.—Dr. ROBERT T. FRANK reported this case. He stated that only about 40 cases of this nature had been reported in the literature. The patient, 50 years of age, had been told nineteen years before that she had a tumor. The menepause had occurred six years before. She had had no children, but two abortions. The abdomen was prominent, lax, and contained a tumor in the median line, extending to half way between the xiphoid and the umbilicus. A diagnosis of ovarian cyst was made. At laparotomy a right ovarian cyst the size of an adult head was removed. This cyst contained hair and sebaceous matter. At one pole was a thickened area, gelatinous in consistency, with putty-like inclusions. Microscopical examination by Dr. F. S. Mandlebaum showed carcinomatous areas in the dermoid. Some months later the patient was readmitted to the hospital with symptoms pointing to lung and vertebral involvement (confirmed by *x*-ray). No response to recent inquiries could be obtained.

Cesarean Section Necessitated by Large Gartner Cysts.—Dr. ROBERT T. FRANK reported this case. This patient presented herself in August, 1913, when she was seven and one-half months pregnant, because of a large protrusion from the right buttock and a feeling of fullness in the vagina. Examination showed a large cystic mass which caused the right buttock to protrude three inches beyond the left and encreach greatly on the pelvic cavity. Above the large cyst was another the size of an orange, extending to the premontory. As labor through the natural passages was not possible the child was delivered by cesarean section at term, and five months later the mother presented herself for the removal of the cysts. A large cystic mass the size of a small grape fruit was found in the buttock, pushing the right and posterior vaginal walls inward. Above this was a cyst the size of a walnut. The tumors were smaller than during pregnancy and veins in the vagina which were distended and varicose

had disappeared. The patient was later readmitted because of complete prolapse, and on examination a cystic mass the size of a lemon was discovered behind and to the right of the vagina. Either a small cyst had been overlooked or this had grown in the interval. The cyst intimately adherent to the right lateral and posterior rectal walls was removed after the fibers of the right levator ani were cut across. The dissection had to be carried up to the peritoneal reflection, and the lower four inches of the rectum had to be mobilized as for a resection of the rectum. The operation was completed by a large Hegar denudation and a typical colpoperineorrhaphy. The patient had since remained cured. Dr. F. S. Mandlebaum had reported that the cysts were composed of fibromuscular wall, lacked definite epithelial lining, and probably originated from Gartner's ducts. Cysts of this nature did not ordinarily attain sufficient size to obstruct labor or to cause technical difficulties in their removal.

Dr. GEORGE W. KOSMAK asked if there was any possibility that the hemorrhage had come from a corpus luteum. A case had been reported at a recent meeting in which, after a prolonged search, a corpus luteum was found to be the source of hemorrhage.

Dr. FRANK replied that the bleeding had not come from a corpus luteum; they had searched every viscus, even the pancreas, and failed to find the bleeding point. It seemed that every possible source of hemorrhage had been excluded. He recalled a somewhat similar case in which the source of the hemorrhage could not be located. At autopsy colored solution was run through the circulation and even then nothing could be found.

As to dermoid cysts becoming carcinomatous, it had been stated that 1 per cent. of dermoids became malignant. These cases should not be looked upon as benign, even though the cancer was within the cyst, since there was danger that metastasis might occur.

Large Hydrosalpinx. — Dr. SOLOMON WIENER presented this specimen of hydrosalpinx which before operation had been diagnosed as an ovarian cyst. He said that the specimen showed why the mistake in diagnosis had been made.

Ampullar Pregnancy.—Dr. WIENER presented this report. He stated that the patient was 26 years of age, married five years, the mother of three children, the last born one year ago. Menstruation began at the age of 14 years and was of the four-week type lasting from six to seven days and painful. Seven weeks ago the patient had had a normal menstrual period, but instead of stopping there had been spotting for four weeks. She had suffered only slight pain. She had been curetted four weeks ago but continued to flow. She had had some pain in the left side for two weeks after the curettage, but this had subsided. She had never had chills or fever. The bowels and urination were normal. Physical examination showed the pulse 88 and temperature 100° F. The abdomen was soft, the uterus slightly enlarged, and a small soft mass to the left of the uterus. A diagnosis of ectopic gestation was made. At operation, twenty-four hours after admission to the hospital, the uterus was first explored and found empty. An anterior vaginal celiotomy was done, the left tube and ovary being delivered into the vagina and resected. The tube was adherent at its fimbricated end to the wall of the pelvis and contained a small ampullar pregnancy. The ovary was the site of a cyst the size of a large plum. This was ruptured in delivery. The right adnexa were normal. The wound was closed without drainage and recovery was uneventful. The points of interest were the ovarian mass which was taken for an ectopic pregnancy, whereas the actual ampullar pregnancy had not been palpated; the sealing off of the end of the tube against the pelvic wall which prevented tubal abortion; the absence of amenorrhea and the slight amount of pain. In referring to the limitations of the vaginal route, Dr. Wiener said that in this type of case in which there was only a slight enlargement of the tube the vaginal operation was the ideal procedure. He had done a vaginal salpingectomy for ectopic gestation in a number of cases; the patients showed no more reaction than after a simple curretage and were spared the discomforts following laparotomy, as well as the shock of that procedure. Whether more advanced cases of ectopic, or cases with extensive bleeding, should be operated *per vaginam* was a question which he felt must be answered in the negative. In reply to Dr. Vineberg's question as to why the ovary was removed in the second case, Dr. Wiener said that the ovary was not normal and contained a cyst the size of a plum; it was enlarged. The other ovary was normal and that was conserved.

A Case of Foreign Body in the Uterus; Infected Abortion.—Dr. WIENER also reported this case and presented the foreign body, which was a tightly wound and compressed cylinder of cotton three and one-half inches in length and about a quarter of an inch in thickness when removed. The patient, believing herself pregnant, had been taking "ergot apiol," but denied all instrumental interference by herself or anyone else. On the day upon which Dr. Wiener was called in consultation she had a temperature of 105.4° F. and a pulse of 120. In spite of this high temperature she did not appear gravely ill. The uterus, enlarged to a two months' pregnancy, was dilated without anesthesia and its cavity gently cleaned out with the curette. The first thing brought away was this foreign body and then a foul necrotic ovum. No attempt was made to curette the uterine cavity thoroughly or remove the entire decidua because of the danger of opening lymphatics and spreading infection. A hot intrauterine irrigation was given and the vagina only loosely packed with gauze. The patient made a rapid recovery. Evidently the high temperature was due to sapremia and not to a virulent spreading infection. When confronted with the foreign body the patient admitted having introduced it herself four days previously when it accidentally slipped from her grasp.

Tubal Gestation Complicated by Pernicious Vomiting.—Dr. S. H. GEIST presented this report which was of interest because of the unusual clinical history and the course of the disease. He stated that he had been unable to find any mention in the literature of pernicious vomiting and jaundice in an unruptured living tubal pregnancy. This patient, 32 years of age, was admitted to the service of Dr. Brettauer, October 15, 1914. Three years before she had had a left salpingectomy for tubal pregnancy. The last regular menstrual period was two months before. Four weeks before admission to the hospital she began to vomit, at first only in the morning, but gradually with increasing frequency until she was vomiting from ten to fifteen times daily. For the past two weeks she had had some irregular uterine bleeding. Local examination showed a softened cervix and a slightly enlarged, movable uterus with a soft mass the size of a lemon at the left cornu; to the right and high up an indefinite cystic mass was felt. A week after her admission the patient was operated upon. The uterus was found empty, but at the left cornu an intramural fibroid was found. The cystic mass of the right proved to be an unruptured, living, eight weeks, tubal gestation. The tube was removed, the myoma enucleated, and the patient promptly stopped vomiting. She made a rapid recovery except for a mild femoral phlebitis. Examination of the urine showed an excess of nitrogen, indicating an intense acidosis. It was also shown that there was disturbance of the liver function. Starvation was probably responsible for both the acidosis and the liver condition. It was the consensus of opinion that pernicious vomiting of pregnancy was due to a toxic substance elaborated by the fetal metabolism. One could feel certain that in this case the theories implicating the uterus, such as overdistention, malposition, laceration, etc., did not find confirmation.

Chorioepithelioma.—Dr. S. H. GEIST presented this report of chorioepithelioma of the uterus occurring three and a quarter years after the last pregnancy. Various cases had been reported in which a relatively long period of latency had existed, in fact one case had been reported in which eighteen years after the last pregnancy chorionic villi were found in the vein. These tumors varied greatly in malignancy, but as up to the present time they were unable to say which type would prove malignant and which benign, and for the sake of safety, every case definitely diagnosed should be operated upon. Dr. Geist said that this patient, 46 years of age, had menstruated regularly until a year ago, when the flow became irregular and rather profuse. Her last child had been born three and one-quarter years ago, and she had had a miscarriage eleven years before. She had been curetted without relief. At the time of admission to the hospital she was bleeding. The uterus was enlarged and irregular with a distinct nodule the size of a pigeon's egg at the left cornu. A diagnosis of fibromyoma of the submucous variety was made and a vaginal hysterectomy performed. The specimen showed the uterus 8.5 cm. in length, the cavity somewhat dilated and a reddish polypoid growth about the size of a grape fruit in the left cornu. The tumor was friable, non-encapsulated, and hemorrhagic in char-

acter. Histological examination showed it to be a chorioepithelioma. The convalescence was uneventful and up to the present time, fifteen months after the operation, there had been no recurrence.

Dr. STRONG said that Dr. Geist's last case was interesting histologically as having some bearing on malignancy. There were cases in which secundines were retained for many years after a miscarriage, and it might be that villi or wandering cells would, after a long time, give rise to chorioepithelioma which became malignant.

Dr. ABRAHAM RONGY said that in the first case the toxemia must have arisen from the products of conception since there was no disturbance of the uterus from pregnancy in the tubes. The kidney disturbance was a secondary manifestation. If they supposed that they had an ectopic pregnancy, would this case not have reacted to the Abderhalden test? As to the case of epithelioma, he had discovered three cases of chorioepithelioma accidentally while operating for other conditions. If, after a woman had miscarried, there was sudden hemorrhage, atypical in character, it was well to bear in mind the possibility of chorioepithelioma.

Dr. VINEBERG asked why in the case of pernicious vomiting they had waited a week before interfering. These cases of pernicious vomiting were very treacherous and one ought not to go on waiting, but should empty the uterus promptly as soon as the conclusion was reached that one was dealing with that complication. As to chorioepithelioma, he had had ten cases. This condition developed more frequently after hydatid mole than after anything else. A profuse hemorrhage after a miscarriage or a hydatid mole should arouse suspicion of chorioepithelioma. At times the clinical history and the local findings were sufficient to justify a diagnosis of chorioepithelioma, and were more reliable than the microscopic findings.

Dr. S. H. GEIST, in closing the discussion, said that he agreed with Dr. Strong as to the difficulties in making a positive diagnosis of chorioepithelioma from curettings, and that in borderline cases in which a placental polyp had existed the microscope often could not make an absolutely correct diagnosis. In the case reported there was an infiltrating tumor present which involved the entire thickness of the uterine wall. The patient had not been curetted and was not suspected of having chorioepithelioma. The speaker considered the Abderhalden test unreliable as he had worked with it for a year and a half in conjunction with Dr. Epstein. They had diagnosed pregnancy in this patient so the test could not have added any information. The operation had been delayed to ascertain by dietetic measures whether the vomiting was due to neurosis or to toxemia.

SECTION ON SURGERY.

Stated Meeting, Held May 7, 1915.

Dr. C. A. MCWILLIAMS IN THE CHAIR.

Partial Gastrectomy for Carcinoma One Year After Gastroenterostomy.—Dr. V. GAUDIANI said that while, according to Dr. Wilson's paper from the Mayo clinic, 60 per cent. or more of the malignant tumors of the stomach gave pathological evidence and clinical histories of pre-existing ulcer, on the other hand it had been proven that after gastroenterostomy for chronic ulcer without excision, cancer developed very rarely. Indeed, from the large material at the Mayo clinic, it was shown that only in four cases this had happened. Very recently Professor Vüttner of Breslau stated that out of 120 cases of gastroenterostomies done for ulcer, regarding which he was able to make post-operative inquiry, only two died from cancer. Without discussing this apparent contradiction it seemed to him rather important to refer to a case which was resected one year and a half after a gastroenterostomy for ulcer. The patient was forty-six years of age and was treated for syphilis fourteen years ago, taking regular treatment for some time. Four years ago he was seized with an attack of acute abdominal pain which appeared periodically, both day and night. It took the character of an aching pain across the upper part of the abdomen, with flatulency and a sense of burning. These attacks of pain had no relation to the meals and never occasioned vomiting. The severity of this pain, however, was such that he was obliged to use morphine and warm alcoholic drinks. In October, 1913, a posterior gastroenterostomy was performed by a surgeon outside of this city. This seemed to relieve him only slightly and for a short period of time. When he returned to his home the condition was practically the same as before the operation. He spent a very miserable life for another year, helped only by the use of morphine. In November, 1914, an exploratory operation was performed which revealed a carcinoma which proved to be inoperable. In March, 1915, he happened to come under the care of Dr. Gaudiani, and after a careful study of the patient's history and his condition, having personally witnessed the nature of the attacks, he thought that probably there had been a wrong appreciation of the anatomical and pathological conditions. As the patient asked insistently for surgical aid, refusing any examination, he was operated on on March 14. The *x*-ray picture showed a growth in the lesser curvature of the stomach. At this operation there was revealed a growth, the size of an orange, in the prepyloric part of the stomach and this invaded the lesser curvature. The lymph glands were not much involved except those about the lesser curvature and the pyloric group. The resection was not difficult excepting for the work on extensive inflammatory adhesions of the posterior surface of the pancreas. The operation performed was the typical Billroth No. 2. All of the lesser curvature was removed and the major curvature was resected. At the end of this operation another gastroenterostomy was made because the other one seemed to have narrowed. The patient made a very good recovery and now was in comfortable health and did not require the use of morphine. The specimen consisted of portion of the stomach wall which was the site of an ulcer measuring 5-5 cm. The upper surface was smooth, slightly excavated and covered with a thin layer of necrotic tissue. The floor was thin and indurated. The edges were well defined and the mucous membrane of the surrounding portion of the stomach wall was adherent to the floor of the ulcer at this point. A cross-section through the floor of the ulcer showed, after formalin fixation, a dense white surface measuring 1-1.5 cm. in thickness, extending down to the peritoneum which was much thickened. Elsewhere the mucous membrane of the stomach was markedly thickened. There were but few glands present in the specimen and these were slightly enlarged. In external appearance and on cross-section they presented nothing unusual. The microscopical examination showed the lesions of an infiltrating small cell carcinoma, while in some areas there was the typical picture of an adenocarcinoma. There was evidence of a chronic inflammation in all of the parts examined. In some there was only evidence of a thick cicatricial tissue, without epithelial invasion. The invasion of the new growth could be demonstrated in the examination of the lymph nodes. The practical teaching of this case was that already given out by MacCarty: "Whenever the clinician felt positive of the clinical diagnosis of chronic gastric ulcer, he should consider that cancer could not be ruled out by their present methods of clinical investigation." This meant that resection of the indurated, so-called "calloused" ulcer, ought to be performed every time when it was possible.

Empyema and Abscess of the Lung.—Dr. ANTHONY HART HARRIGAN presented a patient who was admitted to the medical ward of Fordham Hospital October 19, 1914. She was nineteen years of age, a stenographer. Both her parents were living and in good health. She had three sisters and one brother, all well. She began to menstruate at the age of fourteen; the menses were always painful and lasted about seven days. Four weeks before admission she was operated upon at one of the local hospitals for enlarged tonsils and adenoids, and her present illness dated from that time. Two weeks ago she had to go to bed because of severe, cutting pain in the right side of her chest. Her family physician diagnosed the condition as pleurisy with effusion and advised that she be removed to a hospital, which was done. On admission the examination revealed a pale, weak, poorly nourished young woman. The examination of the chest disclosed the classical signs of fluid in the right chest. The temperature was 103° F., pulse 120, and respirations 46. Two days after admission the exploring needle showed fluid which was purulent. The next day the patient was transferred to the second surgical division of the hospital. Through the courtesy of Dr. Willard P. Healy, the patient came under Dr. Harrigan's care. Operation was performed on October 24, 1914, under ether. A thoractomy on the right side was done. A portion of the seventh rib was

removed in the posterior axillary line and a large amount of fluid was evacuated from the pleural cavity. The cavity was properly drained according to the usual methods. Staphylococci were isolated from the pus. During the first few days after the operation the patient did well. On the fifth day her temperature rose, and she complained of pain in the wound. On the seventh day the suction apparatus was used to aid drainage. Following this the temperature became somewhat lower. Examination of the left side of the chest gave negative results. On the twenty-eighth day after the operation the temperature reached 103° F., having ranged in the meantime between 99° and 102° F. This high temperature continued until the thirtieth day, when the patient began to lose ground rapidly. She developed a cough. Examination for tubercle bacilli was negative, as was also the x-ray examination. The patient appeared profoundly septic. On December 4, 1914, forty-one days after the operation, it was noticed that there was a putrefactive odor to the patient's breath, the cough had increased, and she was expectorating small purulent masses with a strong fetid odor. Abscess of the lung was suspected and Dr. Arthur S. Unger made an *x*-ray examination which confirmed this suspicion; he stated that the abscess was deep seated. An immediate operation was done under ether narcosis. The thoracotomy wound was enlarged and the empyema cavity explored. There was no evidence of retention and the cavity was comparatively small. At the bottom of the wound could be seen the lung enjoying a fair amount of respiratory movement. A medium sized hemostat was pushed into the lung and upon withdrawal was followed by an escape of blood and air. Finding no pus at this level a long, straight, broad ligament clamp was introduced again for several inches. Upon removing this a large amount of pus escaped. A finder was introduced into the cavity and the opening into the lung was well dilated. The cavity was of goodly size and corresponded at least to the lower lobe. It was packed with plain gauze. A staphylococcus was isolated from the blood. The patient made a slow but steady convalescence. The gauze was gradually removed. The cavity closed and had remained so. In January, 1915, the patient developed a cough and examination of the sputum showed the tubercle bacilli. The patient was sent to Otisville, where she remained for two weeks, and was then discharged as repeated examinations failed to confirm the finding of the tubercle bacilli and the physical examination was negative. Dr. Francis Carter Wood explained these apparently contradictory results very easily. He stated that in his experience with abscess or gangrene of the lung one could quite easily recover organisms in the sputum which simulated clearly in staining qualities the tubercle bacillus. He believed these were closely allied to the smegma bacillus. Hence one might conclude that tuberculosis played no part in this case. The patient at present was well and had gained twenty-nine pounds in weight.

End to End Suture of the Hepatic Duct.—Dr. DEWITT STETTIN presented this case. He threw on the screen an illustration showing the normal relations of the cystic artery to the cystic and hepatic ducts as Callot had described them, stating that this arrangement was by no means invariable. The cystic duct might run parallel to the hepatic or even make a spiral turn behind it. Ruge estimated the cases of parallelism as high as 33 1/3 per cent. He had recently seen a case in which the ducts were in such close apposition that the hepatic duct was accidentally ligated and transversely divided in the course of a relatively simple cholecystectomy. This accident had happened to others though the literature on the subject was very meager. He presented this patient to show what could happen during cholecystectomy when one least expected trouble, and to point out a way of avoiding the accident, and, if it did occur, how the damage could be repaired. This patient was sixty-four years of age and gave a very characteristic history of gall-bladder disease, which had been going on for ten years. She had had six children and had been a constant sufferer from indigestion. On April 27, 1914, Dr. Stettin said he exposed the gall-bladder region through the right rectus incision. A small, somewhat thickened gall-bladder was found adherent at its fundus to the duodenum which contained one small, rounded stone. The ducts were free. In separating the gall-bladder from the duodenum he found a fistulous communication between them. When the gall-bladder was freed the small opening in the duodenum was closed with a single purse-string suture of silk. He then went ahead with the cholecystectomy in the usual fashion, beginning above. This was by no means exceptionally difficult. After separating the gall-bladder from its bed in the liver he passed the usual ligature around what he took to be the mesentery and divided with his scissors the tissue distal to the ligature. He was much dismayed to find a gaping lumen of about ½ cm. in diameter in these tissues. Suspecting what he had done, he removed the ligature, caught the artery separately, ligated it, and placed a tampon against the proximal lumen of what was undoubtedly the completely divided hepatic duct from which the bile literally poured. A figure which the speaker exhibited showed the anatomical relations and how careful one should be in passing the ligature around the cystic artery, especially if the cystic and hepatic ducts were close together and parallel. He quickly freed the cystic duct and ligated it, and removed the gall-bladder. He then freed the two cut ends of the hepatic duct and saw that his point of division was just below the junction of the right and left duct. Fortunately the tissues of the duct were healthy and it was not very difficult to approximate the two ends. This he did with interrupted sutures of fine catgut, which he passed through the entire thickness of the duct. He made a complete circular suture and reinforced it anteriorly with a second row of sutures, and laid omental tissue over it. A cigarette drain was placed lateral to the line of suture and a gauze tampon was laid in the bed of the gall-bladder. The wound was closed in the usual fashion. The convalescence was relatively uneventful. The biliary drainage gradually decreased and upon the day of the patient's discharge, twenty-six days after the operation, had practically ceased. The patient felt perfectly well and had gained thirty-four pounds since her operation.

Dr. V. GAUDIANI pointed out that the work of Ruge, Rio Branco and others had recently illustrated certain points regarding the anatomy of the biliary tracts, especially as regarded the anomalies of the cystic duct and cystic artery. From the new researches, following practical hints which made impossible mistakes in the technique, as referred to by Dr. Stettin, he offered the following: (1) One should ligate separately the cystic duct and cystic artery; then one did not risk taking together the hepatic or common duct which formed the left side boundary of the Callot's triangle; (2) the ligation of the cystic artery should be made near the neck of the gall-bladder where usually it divided in two branches. Even in an anomalous condition it was almost impossible to ligate the hepatic artery or its branch to the right lobe because of the well-known fatal consequences.

Epithelioma of the Nose Treated by Radium.—Dr. ISAAC LEVIN reported this case, which was cured by the application of radium for a period of six hours. Though the tube was larger than the ulcerated surface the adjacent surface of the skin was not in any way injured by the radium.

Primary Cancer of the Vagina Treated by Radium and the Röntgen Rays.—Dr. LEVIN reported this case, which he said had been declared inoperable. A diagnosis was made of primary carcinoma of the vagina. Microscopical examination showed a squamous celled epithelioma. After eight weeks of combined radium and röntgen treatment all the clinical symptoms of the disease disappeared. A microscopical examination now showed no evidence of carcinomatous tissue. At the present time, sixteen months after beginning the treatment, the patient felt perfectly well and had gained forty-five pounds.

Carcinoma of the Breast (Bone Metastasis) Treated by Radium and Röntgen Rays.—Dr. LEVIN reported this case, in which, three years after an amputation of the left breast for carcinoma, there developed a swelling (2 x 1 x ¾ inches) adherent to the left clavicle. The radiograph showed partial destruction of the bone and consequently a metastasis in the left clavicle. Under combined radium and röntgen treatment the swelling practically disappeared. At present, nine months after the beginning of treatment, the patient was clinically well and there was no indication of any recurrence.

Rhinoscleroma Treated by Radium: Two Cases.—Dr. LEVIN reported these cases. He stated that the first patient had been suffering with this affection for the past thirteen years and had been operated upon frequently. After operation the disease always promptly recurred. Radium treatment was begun fifteen months ago. She was at present completely cured clinically as well as anatomically, and had been without any symptoms of obstruction for nearly a year.

The Efficiency of the Coolidge X-Ray Tube and the Rationale of Radiotherapy in the Treatment of Malignant Tumors.—Dr. LEVIN presented this paper, in which he first made a comparative study of the efficiency of the Coolidge and the so-called Gauss tube for therapeutic purposes, the results of which he summarized as follows: It took about one-third of the time to obtain the same quantity of rays on the surface with a Coolidge tube as compared with the older type of tubes. At the depth of two inches of meat the strip showed about one-third of the quantity of the rays shown by the surface strip during the same experiment with the old-type tube and about one-half by the Coolidge tube. At the depth of four inches there was usually about one-seventh of the quantity shown on the surface obtained from a Gauss type, while from a Coolidge tube one obtained at the same depth usually one-fifth of the quantity shown on the surface. There was no complete regularity in the results of the experiments with either tube, but the Coolidge tube showed a far greater uniformity. Another great advantage of the Coolidge tube was that when it was regulated to a certain penetration it remained so for an indefinite length of time. The writer then presented a report of forty-one cases of deep-seated malignant tumors treated by him during the last eighteen months with the modern method of radium and Röntgen therapy. Among these cases were carcinoma of the breast, mouth, larynx, esophagus, uterus, vagina, ovary, urinary bladder, stomach, sigmoid and rectum, and four cases of sarcoma. Of these forty-one cases, three were at present clinically cured; several cases not clinically cured showed morphological changes in the tumors which strikingly indicated the value of radiotherapy in the treatment of malignant tumors, when the type of cases, the time, and the method of treatment were correctly selected. A statistical analysis of 1002 cases obtained from the literature on the subject of radiotherapy of malignant tumors showed that 6.6 per cent. of inoperable deep-seated malignant tumors might be clinically cured by radiotherapy. This was a better result than had ever been offered by any therapeutic measure, but it did not indicate the true value of this method of treatment, since it had been shown that minute metastatic nodules could be destroyed by the aid of radiotherapy at a great distance from the surface of the body. Dr. Levin presented specimens of carcinoma of the sigmoid which had been treated by the Röntgen rays. He related the history of the patient from whom the specimen had been removed and described the post-mortem findings, from which he deduced the following points: Notwithstanding the continuous, very large doses of Röntgen rays there was no injury to the skin, serous or mucous membranes, lymphatic glands, or parenchymatous organs. At the same time the islands of tumor cells in the peritoneal nodules were either completely destroyed and replaced by dense fibrous connective tissue or surrounded by the connective tissue and inhibited greatly in their growth. In over six months not a single one of the innumerable minute nodules found at the operation developed into a large metastasis. The original sigmoid tumor did not increase in size during this time. It was thus self-evident that the rays exerted a specific deleterious effect on carcinoma cells when used in such a quantity as would leave the remainder of the organism intact. On the other hand, the tumor must not exceed a cerain size in order to be influenced effectively by the rays. This case also illustrated the importance of combined surgical treatment and radiotherapy of malignant tumors. The gross tumor should be removed surgically even when a radical operation could not be performed, then the small islands of cancerous tissue might be destroyed by raying even at a distance. This case also suggested the importance of prophylactic post-operative treatment. Such prophylactic treatment might fail in those cases in which there existed at the time of the operation large secondary metastatic tumors.

The Anatomy of the Superficial Fascia of the Groin in Relation to the Operation for Undescended Testicle, and an Explanation of the Ectopic Testicle of the So-called Perineal Type.—Dr. C. G. BURDICK read this paper. He stated that having made the mistake, and seen others make a similar error, of not replacing the testicle in the scrotum in operations for undescended testicle, he had been led to make several dissections of the superficial fascia of the inguinal region, with the following results: The deep layer of the superficial fascia as it passed downward over the inner aspect of Poupart's ligament divided, the anterior layer passing downward in front of the spermatic cord to become continuous with the dartos of the anterior portion of the scrotum, the posterior passing behind the cord formed a free edge which lay 1 to 2 cm. below the pubic spine and was attached to the symphysis pubis. Therefore the cord entered the scrotum between these two fascial planes. If an instrument such as a pair of blunt scissors was passed between this free edge one could readily demonstrate how this posterior layer extended downward and inward, and was attached to the margin of the ramus of the pubis and ischium internally and below, and externally to the fascia lata. The importance of this posterior layer of fascia in attempting to replace an undescended testicle in the scrotum lay in the comparative ease with which a testicle might be replaced beneath it and so by no possible chance could it ever get into the scrotum. These two fascial planes were readily demonstrated in every operation for an undescended testicle by placing a blunt retractor in the lower angle of the wound and by retracting the skin upward and inward the two planes would be readily brought into view. The finger was now passed beneath the posterior plane and it entered the thigh, but by making a little effort, and here was where one was likely to be led astray, provided this layer was sufficiently lax, the finger apparently entered the upper part of the scrotum. This in a case of undeveloped scrotum quite possibly might lead the operator to think he was in the right plane, and that by forcing his finger down a little further it would be in the right place, but of course this was impossible anatomically. Now if the finger was withdrawn and inserted between the two fascial planes it passed directly to the bottom of the scrotum. Frequently in operating on these patients the gubernaculum was found passing beneath the posterior layer of the fascia, and, if in following it down with the finger it apparently led into the upper part of the scrotum, one was again misled into thinking he had selected the right path. If the testicle itself lay beneath this plane it usually was considered an ectopic testicle of the perineal type, and, personally, he believed that nearly all, if not all, cases of perineal ectopic were of this variety for the following reasons: (1) It was impossible for a testicle following this route to get into the perineum, as both the above layers and Colles' fascia were attached to the inner margin of the ramus. (2) A testicle which had descended to the bottom of this pouch, thus lying close to the inner margin of the ramus, would easily give the appearance of being in the perineum. (3) The only opening of Colles' fascia was close to the symphysis, at the root of the penis, and he had not been able to find any reported cases in which the testicle had reached the perineum by this route. Dr. Burdick exhibited figures illustrating his text. One figure showed a case upon which he had recently operated in which the vas and its vessels passed between the two fascial planes into the scrotum while the gubernaculum and cremaster still remained, passing beneath the posterior fascial layer and entering the thigh. The speaker said it had been his misfortune in two or three cases of congenital hernia, in which, while operating, the testicle had been brought out of the scrotum and apparently replaced, to find later that the testicle lay outside the scrotum. He had not had the opportunity to reopen any of these cases, but was quite certain that they had been caught under this same layer of fascia and hoped soon to have the opportunity of proving the correctness of this assumption.

Blue Tattooing of Skin from Hypodermic Injections of Morphine.—F. Parkes Weber reports a case of this condition in a woman aged 67 years, a morphinist, who from the age of 27 to the age of 59 had been accustomed to take morphine, almost entirely by the mouth, up to 8½ grains a day. She then entirely discontinued taking the drug until after an operation for gall-stones, about four years ago, when she got into the habit of giving herself hypodermic injections of morphine and atropine. Since then she had usually, in the course of every day (twenty-four hours), injected from 1 2/3 to 3 1/3 grains of morphine sulphate, together with from 1/24 to 1/10 grains of atropine sulphate under the skin of her upper extremities or the upper part of the front of her chest. At the time of the report the skin of these regions had a stippled appearance from innumerable minute bluish spots, each bluish spot marking the site of a former hypodermic injection.—*Proceedings of the Royal Society of Medicine.*

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS

MISSISSIPPI STATE BOARD OF MEDICAL EXAMINERS.

Jackson, May 11, 1915.

ANATOMY.

1. Describe external iliac artery. Give relations. Name branches.
2. Trace the blood from the big toe to the retina of the eye.
3. Give origin, insertion, and function of deltoid muscle.
4. Describe sciatic nerve. Give divisions of same. Name muscles supplied.
5. Describe hip-joint. Give kind of articulation. Name ligaments of same.
6. Describe fifth cranial nerve. Give its distribution and function.
7. Describe portal system.
8. Describe external carotid artery. Give relations. Name branches.

PHYSIOLOGY.

1. Name the cranial nerves that are exclusively motor in function, and describe any one of them.
2. Describe in detail the pneumogastric nerve.
3. Name and give function of the digestive secretions naming the active agents in each.
4. Describe the heart sound, and give causes for the sounds.
5. Define blood pressure, and give method for determining it.
6. Locate the respiratory center.
7. Name the secretions and excretions.
8. Name six abnormal constituents of urine.

CHEMISTRY.

1. Name four elements that are gases and give symbol for each.
2. What is the molecular weight of water?
3. Give the chemical formula for each of the following: (*a*) Ammonia. (*b*) Ferric chloride. (*c*) Hydrocyanic acid. (*d*) Laughing gas. (*e*) Ethyl alcohol. (*f*) Benzene.
4. Complete the following equations: $HNO_3 + KOH$ equals.
5. Write equation showing how slaked lime is formed.
6. What elements are the most common constituents of organic compounds?
7. What is the simplest saturated hydrocarbon and its graphical formula?
8. What is Fehling's solution and its use?

MATERIA MEDICA.

1. Give habitat, common name, and one official preparation with dose of (*a*) digitalis; (*b*) gelsemium; (*c*) belladonna; (*d*) aspidium; (*e*) physostigma; (*f*) colocynth; (*g*) veratrum viride.
2. Name two commonly used derivatives of morphine and give dose of each.
3. Name the ingredients of (*a*) Dover's powder; (*b*) Seidlitz powder; (*c*) black wash; (*d*) Carron oil; (*e*) Fowler's solution.
4. Why are the salts of the alkaloids generally used instead of the alkaloids themselves? (*b*) Name and give dose of five alkaloidal sulphates.
5. Mention ten drugs, any one of which when taken internally may produce skin eruption.
6. Give the best chemical antidote for (*a*) arsenous acid; (*b*) bichloride of mercury; (*c*) iodine; (*d*) phosphorus; (*e*) all alkaloids.
7. By what rule would you determine the dose of any medicine for a child?
8. How much of any drug is contained in one ounce of a 5 per cent. solution of such drug.

HYGIENE.

1. Describe a sanitary school building.
2. How would you manage an epidemic of typhoid fever in a town of three hundred or more?
3. In what way do the germs of disease enter our bodies? Describe the five most important.
4. Give hygienic management of a case of tuberculosis in a home.
5. What diseases are transmitted through human excreta?
6. What diseases may be transmitted through milk? What precautions should be taken to prevent these?
7. Discuss briefly the hygiene of infant feeding.
8. What is soil pollution? How is hookworm disease contracted?

OBSTETRICS.

1. Give diagnosis and treatment of extra-uterine pregnancy after rupture.
2. Give cause and treatment of mastitis.
3. Give symptoms, diagnosis and treatment of placenta prævia.
4. What are the uses of the liquor amnii during pregnancy? During labor?
5. How would you deliver a child, when face is presenting with chin posterior?
6. To prevent laceration of the perineum, describe the proper method of delivery of the head.
7. Give treatment of pregnancy complicated with nephritis.
8. Give treatment of pernicious vomiting of pregnancy.

PATHOLOGY.

1. Describe the difference between an embolus and thrombus, and where do you most frequently find an embolus?
2. Explain what is meant by the terms physiologic and pathologic leucocytosis? State whether leucocytosis occurs in the following diseases: typhoid fever, malarial fever, pneumonia, acute miliary tuberculosis.
3. By what methods would you make a diagnosis of tubercular lesions?
4. What general pathological condition characterizes chronic alcoholism?
5. What pathological conditions do we find in the different stages of lobar pneumonia?
6. Give the gross pathology of amebic dysentery. Describe the organism giving rise to it, and give pathological condition of the liver associated with it.
7. What abnormal products do you find in diabetes mellitus? In chronic parenchymatous nephritis?
8. Name and explain the cardinal symptoms of inflammation. State the terminations of inflammation.

SURGERY.

1. Define inflammation and give symptoms.
2. Differentiate between septicemia and pyemia.
3. Give varieties of talipes and give treatment for one variety.
4. Give advice on a case of appendicitis, initial attack; you are called in on the third day.
5. In closing a wound give two cardinal principles that must be observed to get union by first intention.
6. Give symptoms and treatment for dislocation of inferior maxilla.
7. Name the signs of a fracture.
8. Name the coverings that would be cut in operating for an oblique inguinal hernia.

ANSWERS

ANATOMY.

1. The *external iliac artery* arises at the point of bifurcation of the common iliac artery, and runs along the brim of the true pelvis to Poupart's ligament, where it enters the thigh as the femoral artery. *In front* of it are the intestines, peritoneum, iliac fascia, spermatic vessels, genital branch of genitocrural nerve, and deep circumflex iliac vein; *behind it* are the external iliac vein (on the right side), and the psoas magnus muscle; on the *outer side* are the psoas magnus and the iliac fascia; and on the *inner side* is the external iliac vein. Further, on the right side the ureter frequently crosses the upper part of the artery. *Branches:* The deep epigastric and deep circumflex iliac.

2. *From the big toe to the retina of the eye* the *blood* will pass through the following veins: Dorsal digital, internal saphenous (or plantar digital, plantar metatarsal, anterior tibial, popliteal), femoral, external iliac, common iliac, inferior vena cava, to right auricle of heart; then to right ventricle, through pulmonary artery, pulmonary veins, to left auricle and left ventricle, and through the following arteries: aorta, common carotid, internal carotid, ophthalmic, and arteria centralis retinæ.

3. DELTOID. *Origin:* From the outer third of anterior border and upper surface of the clavicle, from the outer margin and upper surface of the acromion

process, and from the lower edge of the spine of the scapula. *Insertion:* Into the deltoid impression on the middle of the outer side of the shaft of the humerus. *Action:* It raises the arm from the side so as to bring it at right angles with the body; its anterior fibers draw the arm forward; its posterior fibers draw the arm backward.

4. *The great sciatic nerve* arises from the sacral plexus and passes out of the pelvis through the great sacrosciatic foramen, below the pyriformis muscle; it extends down the back of the thigh, passing between the great trochanter of the femur and the tuberosity of the ischium; at the lower third of the thigh it divides into the internal and external popliteal nerves. It supplies the hip-joint and the biceps, semitendinosus, semimembranosus, and adductor magnus *muscles*.

5. The *hip-joint* is an enarthrodial joint, formed by the head of the femur and the acetabulum. The articular surfaces are covered with cartilage. Near the center of the head of the femur is attached the ligamentum teres. The *ligaments* are: (1) The capsular, which embraces the margin of the acetabulum above, and the neck of the femur below. (2) The ileofemoral or Y ligament, which passes obliquely across the front of the joint, and is attached above to the anterior inferior spine of the ileum, and below to the anterior intertrochanteric line. (3) The ligamentum teres. (4) The cotyloid ligament, which deepens the acetabulum, and bridges over the cotyloid notch, being there called (5) the transverse ligament. The joint has a very extensive synovial membrane. It is capable of the following movements: Flexion, extension, abduction, adduction, circumduction, and rotation.

Fifth Cranial Nerve. *Origin:* (1) *Superficial*, from the side of the pons Varolii; (2) *Deep* (sensory root), from the medulla, and upper part of cord; (motor root) from floor of fourth ventricle, and side of the aqueduct of Sylvius.

Distribution: First or ophthalmic branch supplies sensation to conjunctiva and skin of upper eyelid, cornea, skin of forehead and nose, lachrymal glands, mucous membrane of nose. *Second, or superior maxillary branch*, supplies sensation to skin and conjunctiva of lower lid, nose, cheek, upper lip, upper teeth and alveolar processes, and palate. *Third, or inferior maxillary branch*, supplies sensation to external auditory meatus, side of head, mucous membrane of mouth, anterior two-thirds of tongue, lower teeth, lower lip and skin of the lower part of the face. This branch, in addition, supplies motion to the muscles of mastication (masseter, temporal, external pterygoid, internal pterygoid), also to mylohyoid and anterior belly of digastric.

7. *The portal system.* The veins of the portal system collect the blood from the digestive tract. They form a trunk, the *vena portæ*, which enters the liver and breaks up into small branches in its substance. The following veins form the portal system:

Inferior mesenteric: drains rectum, sigmoid, flexure, and descending colon. It lies to the left of its artery, and passing behind transverse part of the duodenum and the pancreas, and over left kidney, opens into the splenic vein. (The hemorrhoidal branches inosculate with the hemorrhoidal branches of the internal iliac.)

Superior mesenteric: drains small intestines, cecum, ascending and descending colon. It passes upwards in front and to right of superior mesenteric artery, in front of transverse part of duodenum, and behind neck of pancreas joins the splenic vein at the upper border of the pancreas to form the portal vein.

Splenic: commences in five or six branches in hilum of spleen; these unite to form a trunk which passes below splenic artery behind upper border of pancreas from left to right, and in front of aorta; joins superior mesenteric at a right angle.

The gastric or coronary: a large vein accompanying coronary artery from right to left along lesser curvature of stomach to cardia, where it reaches esophageal tributaries, and, passing to right behind lesser sac, opens into the vena portæ.—(*Aids to Anatomy.*)

The *portal vein* is formed by the union of the splenic and superior mesenteric veins in front of the right crus of diaphragm and inferior vena cava, and behind the neck of the pancreas. Passes up behind first part of duodenum and then between the layers of the small omentum, behind and between the common bile-duct and hepatic artery, the duct being placed on the right and artery on the left, to transverse fissure of liver, where it divides into right and left branches to corresponding lobes, and also gives an offset to the Spigelian lobe. Connected with the branch to the left lobe are in front the *obliterated umbilical vein* and behind the *ductus venosus*, the remains of a fetal connection with the inferior vena cava.—(*Aids to Anatomy.*)

8. The *external carotid artery* arises at the point of bifurcation of the common carotid artery, opposite the upper border of the thyroid cartilage, passes upwards and ends in the substance of the parotid gland behind the neck of the lower jaw, where it divides into the superficial temporal and internal maxillary arteries. *Relations: In front*, skin, fascia, platysma, sternomastoid, lingual and facial veins, digastric, stylohyoid, hypoglossal nerve, and parotid gland; *behind*, superior laryngeal nerve, styloglossus, stylopharyngeus, glossopharyngeal nerve, and parotid gland; *externally*, the internal carotid artery; *internally*, hyoid bone, pharnyx, superior laryngeal nerve, parotid gland.

The branches of the external carotid artery are: Superior thyroid, lingual, facial, occipital, posterior auricular, ascending pharyngeal, superficial temporal, and internal maxillary.

PHYSIOLOGY.

1. *Cranial nerves that are exclusively motor in function:* Motor oculi, trochlear, abducens, facial, spinal accessory, and hypoglossal.

The *third cranial nerve* (motor oculi) arises from the inner side of the crus cerebri, in front of the pons, and from the floor of the aqueduct of Sylvius. It enters the cavernous sinus and then passes forward to enter the orbit through the sphenoidal fissure. While in the sphenoidal fissure it divides into two branches. It is the motor nerve for the muscles of the eyeball, and is distributed to all of these muscles except two. It supplies the superior rectus, levator palpebræ superioris, internal rectus, inferior rectus, and inferior oblique muscles.

2. *Pneumogastric nerve. Superficial origin:* Groove between restiform and olivary bodies. *Deep origin:* Nuclei in floor of fourth ventricle. *Course:* Outward across the flocculus, to jugular foramen through which it passes; here it is joined by the accessory portion of the spinal accessory nerve. As it goes down the neck, it lies in front of the *rectus capitus anticus* major and longus colli muscles. It passes in the carotid sheath behind and between the artery and vein. In the thorax the nerve on each side runs a different course. The *right* passes between the subclavian artery and vein, by side of trachea to root of lung, behind esophagus, through esophageal opening in diaphragm to posterior surface of stomach. The *left* passes between the subclavian and carotid arteries, in front of arch of aorta to root of lung, along anterior surface of esophagus, through diaphragm, to anterior surface of stomach. *Distribution* is shown by the names of the branches: Meningeal, auricular, pharyngeal, superior and inferior laryngeal, cardiac, pulmonary, esophageal, and gastric. *Function:* It supplies (1) *motor* influence to the pharynx and esophagus, stomach, and intestines, to the larynx, trachea, bronchi, and lungs; (2) *sensory* and, in part (3) *vasomotor* influence, to the same regions; (4) *inhibitory* influence to the *heart;* (5) *inhibitory* afferent impulses to the *vasomotor center;* (6) *excito-secretory* to the salivary glands; (7) *excito-motor* in coughing, vomiting, etc.

3. The secretions of the alimentary canal are: Saliva, gastric juice, pancreatic juice, bile, and succus entericus. Of these the gastric juice has an acid reaction; the others, alkaline.

The functions of the saliva are: (1) To moisten the mouth, (2) to assist in the solution of the soluble portions of the food, and thus (3) to administer to the sense of taste, (4) to lubricate the bolus of food, and thus (5) to facilitate the acts of mastication and deglutition, and (6) to change starches into dextrin and sugar.

The functions of the gastric juice are: (1) to change proteids into proteoses and peptones, and (2) to curdle the casein of milk.

The functions of the pancreatic juice are: (1) To change proteids into proteoses and peptones, and afterwards decompose them into leucin and tyrosin; (2) to convert starch into maltose; (3) to emulsify and saponify fats; and (4) to cause milk to curdle.

The functions of the bile are: (1) To assist in the emulsification and saponification of fats; (2) to aid in the absorption of fats; (3) to stimulate the cells of the intestine to increased secretory activity, and so

promote peristalsis, and at the same time tend to keep the feces moist; (4) to eliminate waste products of metabolism, such as lecithin and cholesterin; (5) it has a slight action in converting starch into sugar; (6) it neutralizes the acid chyme from the stomach and thus inhibits peptic digestion; (7) it has a very feeble antiseptic action.

The functions of the succus entericus are: The secretion of enterokinase, secretin, and erepsin, which assist the pancreatic juice in digestion.

SECRETIONS.	ACTIVE PRINCIPLES.	FUNCTIONS.
Salivary	Ptyalin.	Changes starches into dextrin and sugar.
Gastric	Pepsin.	Changes proteids into proteoses and peptones in an acid medium.
	A curdling ferment.	Curdles the casein of milk.
Pancreatic	Trypsin.	Changes proteids into proteoses and peptones, and afterwards decomposes them into leucin and tyrosin; in an alkaline medium.
	Amylopsin.	Converts starches into maltose.
	Steapsin.	Emulsifies and saponifies fats.
	A curdling ferment.	Curdles the casein of milk.
Intestinal	Invertin.	Converts maltose into glucose.

4. There are two normal heart sounds which follow in quick succession, and are succeeded by a pause.. The first, or systolic, sound is dull and somewhat prolonged, the second, or diastolic, sound is sharper and shorter. The sounds may be expressed by the syllables *lubb—dup.*

The first sound is heard best at the apex beat in the fifth left intercostal space; the second sound is heard best over the second right costal cartilage.

The *causes* producing the *first* sound of the heart are not definitely ascertained; the following are supposed to be causatory factors: (1) The vibration and closure of the auriculo-ventricular valves, (2) the muscular sound produced by the contraction of the ventricles, and (3) the cardiac impulse against the chest wall.

The *second* sound is caused by the vibration due to the closure of the semilunar valves.

5. *Blood pressure* is the pressure of the blood due to the ventricular systole, the elasticity of the arterial walls, and the resistance of the capillaries. The normal arterial blood pressure varies; the systolic pressure being about 120 to 150 mm. of mercury, and the diastolic from about 90 to 120 mm. of mercury. Blood pressure is *maintained* by the contraction of the heart, the peripheral resistance, and the elasticity of the arterial walls.

Blood pressure is estimated by a syhygmomanometer.

"The individual whose blood pressure is about to be recorded should be placed in such a position that his heart, the artery the blood pressure of which is to be determined, and the manometer are at the same level. It is usual to record the pressure in the brachial artery. The india-rubber bag of the instrument should be wrapped round the bared arm, the metal covering of the bag should then be adjusted, and firmly strapped in position. The india-rubber tube leading from the bag is then adjusted to the proximal limb of the U-shaped manometer which contains mercury. The experimenter places the index finger of his left hand over the radial pulse of the subject, and with his right hand he compresses the syringe and so drives air into the india-rubber tube and the india-rubber bag around the individual's arm. The pressure of the air in the bag around the arm is recorded by movement of the mercury from the proximal to the distal limb of the manometer. The operator keeps on pressing the syringe until oscillatory movements are seen at the surface of the mercury in the distal limb of the manometer; the mean point of maximum oscillations registers the diastolic pressure. If the pressure in the bag is still further increased, the oscillations diminish in amplitude and finally disappear, and at this point the pulse can no longer be felt at the wrist. The height of the mercury supported then registers the amount of systolic pressure. It will then be noted that the mercury has descended in the proximal limb of the manometer, and has ascended in the distal limb of the manometer: the difference between the two mercurial levels will be the blood pressure of the brachial artery. The normal systolic pressure in man is about 120 mm. Hg, and the diastolic pressure about 100 mm. Hg. In women the pressures are about 10 per cent. less. In children the systolic pressure may be as low as 90 mm. Hg, with a diastolic pressure of about 80 mm. Hg. (R. Hutchison.)

6. The respiratory center is situated in the lowest part of the floor of the fourth ventricle at the calamus scriptorius.

7. *Secretions:* Sebum, mucus, serous fluid, tears, saliva, gastric juice, succus entericus, pancreatic juice, bile, milk, sweat, urine, seminal fluid, and the various internal secretions.

Excretions: Urine, carbon dioxide, sweat.

8. *Six abnormal constituents of urine:* Albumin, sugar, blood, pus, bile, and indican (in excess).

CHEMISTRY.

1. *Four elements that are gases:* Hydrogen, H; oxygen, O; chlorine, Cl; nitrogen, N.

2. *The molecular weight of water:* H = 1, O = 16; $H_2O = 18$.

3. Ammonia, NH_3; Ferric chloride, Fe_2Cl_6; Hydrocyanic acid, HCN; Laughing gas, N_2O; Ethyl alcohol, C_2H_5OH; Benzene, C_6H_6.

4. $HNO_3 + KOH = KNO_3 + H_2O$.

5. $CaO + H_2O = Ca_2H_2O_2$.

6. Carbon, hydrogen, oxygen, nitrogen.

7. The simplest saturated hydrocarbon is methane, CH_4.

8. Fehling's solution is a mixture of copper sulphate, caustic soda and potassium tartrate. It is used as a reagent in testing urine for sugar.

MATERIA MEDICA.

1. DIGITALIS. *Habitat,* Europe; *common name,* foxglove; tincture of digitalis, dose 15 minims.

GELSEMIUM. *Habitat,* Southern United States; *common name,* yellow jasmine; tincture of gelsemium, dose 8 minims.

BELLADONNA. *Habitat,* Europe and Asia Minor; *common name,* deadly night shade; tincture of belladonna leaves, dose 8 minims.

ASPIDIUM. *Habitat,* Europe, Northern America and Northern Asia; *common name,* male fern; oleoresin of aspidium, dose 30 grains.

PHYSOSTIGMA. *Habitat,* tropical Western Africa; *common name,* Calabar bean, or ordeal bean; tincture of physostigma, does 15 minims.

COLOCYNTH. *Habitat,* Southern Asia and the countries bordering the Mediterranean Sea; *common name,* bitter apple; extract of colocynth, dose ½ grain.

VERATRUM VIRIDE. *Habitat,* North America; *common name,* hellebore; tincture of veratrum, dose 15 minims.

2. *Two derivatives of morphine: Apomorphine;* emetic dose of apomorphine hydrochloride 1/10 grain. *Heroin,* dose 1/18 grain.

3. *Dover's powder* contains ipecac 10, powdered opium 10, and sugar of milk 80.

Seidlitz powder contains potassium and sodium tartrate 120 grains, sodium bicarbonate 40 grains and tartaric acid 35 grains.

Black wash contains 30 grains of calomel in 10 ounces of lime water.

Carron oil contains equal parts of lime water and linseed oil.

Fowler's solution contains arsenous acid 1, potassium bicarbonate 2, compound tincture of lavender 3, and distilled water to 100.

4. The salts of the alkaloids are, as a rule, soluble in water, whereas the alkaloids are but slightly soluble in water. For this reason the salts are more generally used than the alkaloids themselves.

Five alkaloidal sulphates: Morphine sulphate, dose 1/4 grain; strychnine sulphate, dose 1/64 grain; atropine sulphate, dose 1/160 grain; quinine sulphate, dose 4 grains; codeine sulphate, dose 1/2 grain.

5. *Ten drugs whose internal use may cause a skin eruption:* Bromine and the bromides, iodine and the iodides, cubebs, copaiba, salicylic acid, quinine, turpentine, antipyrin, belladonna, chloral.

6. *Chemical antidote* for *arsenous acid,* freshly prepared solution of ferric hydroxide; for *bichloride of mercury,* white of egg, or milk; for *iodine,* starch; for

phosphorus, no chemical antidote, but old French oil of turpentine is recommended; for *alkaloids*, tannin.

To determine the proper dosage for a child: Let x = the age of the patient; then $\frac{x}{x+12}$ = the fraction of the adult dose which the patient should receive. Thus, a patient four years old should receive $\frac{4}{4+12} = \frac{4}{16} = \frac{1}{4}$ of an adult dose.

8. One ounce = 480 grains; a 5 per cent. solution will contain 5/100 or 1/20 of 480 grains = 24 grains.

HYGIENE.

1. A SANITARY SCHOOL BUILDING. "The *site* of a school building must be well drained, either by nature or artificially; it must be convenient of access; it should not be near enough to railroads or noisy factories to allow the noise to interfere with work; it should have ample playground space; it should have some shade; the surface should be graveled or turfed; walks must connect the school house with the street or road and with outhouses and water supply. The *foundation* must be impervious to soil-water in order that capillarity may not dampen the walls. They should be of non-porous natural stone, hard-burned brick or concrete, and if of concrete must have a layer of tarred felt, tarred paper or impervious stone or brick interposed between the foundation and the superstructure. If there is a *basement* it should rise sufficiently high above the ground for light and air to penetrate to every part of it, and should never be allowed to become a dump for refuse of any kind. If no basement is provided, the foundation walls should be pierced in appropriate places and guarded with gratings, in order to allow a circulation of air below the floors. *Cloak-rooms* must always be provided in order to avoid the stuffy and disagreeable odor of clothing in damp weather. In the country, shelves for dinner pails should also be provided. *Toilets* must be separate for the sexes, well screened, well painted or whitewashed, and kept clean. If water-closets are used, a type should be selected which can easily be scrubbed, and an automatic flush is desirable. Urinals must be placed in the toilets allotted to boys. *Wash-rooms.*—Children should be afforded an opportunity for cleansing the hands and face after play or visits to the toilet. For this, if piped water is available, the ordinary porcelain basins with run-off to the sewer connection should be installed. In case it is not available, ordinary granite or enameled basins, with a water supply in buckets or tanks should be possible to any school. Paper towels or individual towels brought by the children must be used. The use of roller towels is an abomination. *Water Supply.*—A supply of water under pressure is necessary, which will provide not only water for drinking and washing, but for water-closets, the outflow from which can be purified by a septic tank before its final disposal. *Space.*—Not less than 225 cubic feet of space must be allotted to each person in the schoolroom, including the teacher. Twelve-foot ceilings are best for all purposes. *Ventilation.*—Whatever means are used must provide for a complete change of air in 15 to 20 minutes. This is best tested by using the "bee-smoker," which fills the air with light smoke from burning rags, and if the air is completely clear in the time named the ventilation may be regarded as satisfactory. Whatever system of *heating* is employed should maintain the temperature of every part of the school room between 65° and 70° F., with a relative humidity of at least 40 per cent. Should the temperature fall below 60° the school must be dismissed at once. *Humidity.*—Some means, even if only the placing of pans of water on stoves or radiators, must be provided for adding to the moisture in the air. The room should be *lighted* from one side only, or by properly softened sky-lights, and the lighting area should not be less than one-sixth of the floor area. Prismatic glass in the upper sash is an advantage, since it diffuses the light to the opposite side of the room. *Seats* must be adjustable to the bodies of the children. It is nothing short of criminal to compel the child to adjust itself to the seat. Good work cannot be done by an uncomfortable child, and lasting eye-trouble or bodily deformity such as spinal curvature may come from the practice. *Blackboards* should be always dull-finished. A glossy blackboard is unnecessarily hard on the eyes. Blackboards and erasers should not be cleaned while school is in session, and erasers should be dusted outside. The chalk racks should be cleaned each evening by the janitor."—(Gardner and Simonds' *Practical Sanitation.*)

2. To prevent the spread of typhoid fever: Flies should be kept out of the house as far as possible, by means of screens or otherwise; all discharges from the sick person must be disinfected; all utensils, dishes, etc., used by the patient must be thoroughly cleansed and boiled every day; soiled linen must be soaked in a disinfectant solution before being washed; after each attendance on a patient physicians, nurses, and others should wash their hands in a disinfectant; thorough sterilization of all bedding, etc., must be performed after the disease is over. Further, each household should boil all water that is to be used for drinking or for washing dishes, etc.; milk should be boiled also; and no ice should be put *in* water or other drink or food.

3. *Avenues of entrance for the germs of disease:* Skin and mucous membrane, digestive tract, respiratory tract, genital tract, conjunctiva, placenta.

4. *Hygienic precautions to be taken in treating a case of tuberculosis:* "The patient's quarters should be free from dust, and admit of his spending many hours daily in the open air in all weathers, properly sheltered, and, if very ill, lying wrapped in a hammock or reclining chair. His bedroom should be well aired at night, draughts being avoided. The room should be unearpeted and free from hangings. It should be often cleaned and periodically disinfected. All sputum should be collected in paper spit-cups, which should be burned daily. Smoking should be forbidden. Harm is done by any exercise which results in fatigue, and while fever exists it should not be attempted at all. Patients should be taught the necessity of practising lung gymnastics and breathing only through the nose, which should be kept clear and free from occlusion by secretions, or an hypertrophied catarrhal mucosa. . . . The clothing should be woolen, but not too heavy, or sweating is increased; and a flannel night-gown and loosely knit leggings should be worn at night in cool weather. The skin should be cleansed by daily sponge-baths of lukewarm alcohol and water." (Thompson's *Practical Medicine.*)

5. *Diseases transmitted through human excreta:* Actinomycosis, bubonic plague, chickenpox, cholera, amebic dysentery, bacillary dysentery, typhoid.

Diseases specially liable to be conveyed by the ingestion of milk: Tuberculosis, typhoid fever, scarlet fever, diphtheria, tonsillitis, cholera, and gastrointestinal disorders.

The milk may come from a diseased cow; it may become contaminated by the milker, the container, the surroundings, the water used to wash the cans or to adulterate the milk; or it may become contaminated at the dealer's or purchaser's house by being left uncovered, exposed to flies, etc., or by not being kept in a cool place. The only way to prevent the transmission of disease by milk is to insist on a thorough inspection of all dairies and sources of milk supply, and to educate the public in the care of milk between the time of its purchase and its consumption. The inspection should include: the color, reaction, specific gravity, sediment, taste, odor, acidity, total quantity of solids and of water; the percentage of cream, fats, lactose, casein, and ash; the presence or absence of preservatives, coloring matter, added solids, dilution, pathogenic microorganism, dirt, or other foreign matter. There should also be thorough investigation as to its source, the cows and their environment, the method employed in caring for, milking, storing, and transporting the milk.

Essentials for the production and preservation of pure dairy milk: Vaughan's rules are as follows: "(1) The cows should be healthy, and the milk of any animal which seems indisposed should not be mixed with that from the healthy animals. (2) Cows must not be fed upon swill or the refuse from breweries or glucose factories, or upon any other fermented food. (3) Milch cows must not be allowed to drink from stagnant pools, but must have access to fresh, pure water. (4) The pasture must be freed from noxious weeds, and the barn and yard must be kept clean. (5) The udders should be washed and then wiped dry before each milking. (6) The milk must be at once thoroughly cooled. This is best done in the summer by placing the milk can in a tank of cold water or ice water, the water being of the same depth as the milk

in the can. It would be well if the water in the tank could be kept flowing, and this will be necessary unless ice water is used. The tank should be thoroughly cleaned each day to prevent bad odors. The can should remain uncovered during the cooling, and the milk should be gently stirred. The temperature should be reduced to 60° F., or lower, within an hour. The can should remain in cold water till ready for delivery. (7) Milk should be delivered, during the summer, in refrigerated cans or in bottles about which ice is packed during transportation. (8) When received by the consumer it must be kept in a clean place, and at a temperature some degrees below 60° F."

7. "If the mother cannot nurse her infant, it must be nourished by a wet-nurse. When none can be obtained, give cow's milk one part (by measure) or two parts of water and add milk sugar, 3 iv. to each pint of the mixture, the proportion of milk to be increased with age. When this food disagrees, and the child passes lumps of undigested curd, one-third of the water may be exchanged for lime-water. The water must be sterilized by boiling, and the milk not by boiling, which impairs its nutritive value, but by Pasteurization—*i. e.* by keeping it continuously for thirty minutes at a temperature of 167° F. It is of the utmost importance that nipples, bottles, and vessels in which the food is prepared should be kept aseptically clean. They must not be used twice without being thoroughly cleansed—the bottles and vessels scalded and the nipples immersed in a solution of boric acid. The best rule as to how much of the milk-mixture should be given the child at one time, is to give it as much as it will readily take; if it rejects any, give it less next time." (King's *Manual of Obstetrics.*)

8. Soil pollution consists of the urine and droppings of animals, the carcasses of animals that have died, and vegetable matters in various stages of decay, also sewage and dead bodies.

Prophylaxis of hook-worm disease: Children and adults should be made to wear shoes; proper toilet facilities should be provided, and their use enforced; bathing or wading in shallow water should be forbidden; a proper water supply should be available for drinking purposes; and prompt recognition and treatment of all cases should be encouraged.

OBSTETRICS.

In *extrauterine pregnancy*, there will be signs of early pregnancy, hypogastric or inguinal pains, probable history of a previous sterility, probable expulsion of decidual membrane or shreds, softening of the cervix, enlargement of the uterus, presence of a distended tube, contractions of the wall of the gestation sac; if rupture occurs, there will be sudden, excruciating pains over the lower abdomen and on the affected side, shock, collapse, and symptoms of internal hemorrhage. The *treatment after rupture* is—laparotomy. "After thorough cleansing and sterilization of the abdomen and pubes, as well as of the instruments and hands of the operator and assistants, the bladder is emptied and the patient anesthetized. An incision 3 inches long is then made in the median line above the pubes down to the peritoneum, any bleeding vessels being twisted before opening the peritoneal cavity. The peritoneum is then incised; the intestine kept back by pads of cotton or gauze wrung out of sterilized water; the operator's fingers bring out the distended tube and ovary at the incision after having freed them from any existing adhesions; the pedicle is then transfixed by a double ligature of sterilized silk, and each half of it tied securely according to surgical rule. The pedicle is cut, and the entire mass—the Fallopian tube, with the cyst, fetus, ovary, and effused blood, removed, extra care being taken, in the ruptured cases, to quickly secure the bleeding vessels of the ruptured tube from further hemorrhage. The pads are then withdrawn and the abdominal incision closed and dressed in the usual manner. In case of threatened collapse from hemorrhage during the operation, the peritoneal cavity may be flooded with a 1 per cent. sterilized solution of common salt at a temperature of 100° F., a quart of this solution having been previously prepared. It is rapidly absorbed by the peritoneum, and acts as a restorative—like transfusion."—(King's *Obstetrics.*)

2. MASTITIS. *Etiology:* Infection, generally due to handling; cracked or sore nipples and overactivity of the gland with retained secretion are predisposing causes. *Treatment:* This consists in resting the part; supporting it, applying a hot boracic acid fermentation; nursing from the affected breast should be stopped at once.

Prophylactic measures consist in not touching the breasts (by doctor or nurse or patient) without thoroughly clean hands; by washing and drying the nipple before and after nursing, and by proper attention to hygienic conditions before labor, and the nipple and breasts being preserved from pressure.

3. *Placenta prævia* is the condition in which the placenta is attached in the lower uterine segment, and may be near or over (partially or completely) the internal os. *Varieties:* (1) *Central*, when the placenta completely covers the os. (2) *Partial*, when the placenta overlaps the os. (3) *Marginal* or *lateral*, when the placenta reaches the margin of the os but does not overlap it. *Symptoms:* Sudden hemorrhage, accompanied by syncope, vertigo, restlessness, and feeble pulse. *Dangers:* Hemorrhage, sepsis, death of the mother, death of the fetus. *Treatment:* stop the hemorrhage by a tampon; this must be tight and thorough. *Accouchement forcé* is indicated; this consists of dilatation of cervix, version, and immediate extraction of the child.

4. LIQUOR AMNII. *Functions:* (*a*) *During pregnancy:* (1) As a protection to the fetus against pressure and shocks from without. (2) As a protection to the uterus from excessive fetal movements. (3) It distends the uterus and thus allows for the growth and movements of the fetus. (4) It receives the excretions of the fetus. (5) It surrounds the fetus with a medium of equable temperature, and serves to prevent loss of heat. (6) It prevents the formation of adhesions between the fetus and the walls of the amniotic sac. (7) It has been supposed, by some, to afford some slight nutrition to the fetus. (*b*) *During labor:* It acts as a fluid wedge, and dilates the os uteri and the cervix; it also slightly lubricates the parts.

5. "*In mento-posterior positions*, endeavor to secure anterior rotation of the chin when it fails to take place spontaneously. The several methods of attempting this are: 1. Press the forehead backward and upward during a pain, so as to make extension more complete, and thus cause the chin to dip lower down and touch the anterior inclined plane upon which it may glide forward. 2. Put a finger in the mouth, or on the outside of the lower jaw, and draw the chin forward during a pain. 3. Apply the straight forceps and twist the chin to the pubes. 4. Apply the vectis, or one blade of the forceps, under the most posterior cheek, and over the anterior inclined plane, thus, as it were, thickening the latter, so as to make it reach the malar bone and constitute a *point d'appui* which the chin can touch and so glide forward. Should these attempts to secure anterior rotation fail, an effort may be made with the hand, vectis, or fillet, to bring down the occiput and convert the face into a head presentation. In order to succeed in this maneuver the membranes should be unbroken, the os uteri dilated, the face not so deeply engaged that it cannot be lifted to or above the pelvic brim, and an anesthetic administered. Again, failing in this way to produce anterior rotation, the head, if it be not too deeply engaged in the pelvis, and have not passed through the os uteri, may be pushed back, and the child be delivered by podalic version. Should none of these methods be practicable and the head become impacted in the pelvis with the chin toward the sacrum, the only resort is craniotomy. Attempts have been made in these cases to deliver by forceps after lateral incision of the perineum, but they can only succeed when either the child is small or the pelvis over-large. Usually the child's life has been so far imperiled by delay and its consequences that craniotomy may be done without compunction. Possibly symphyseotomy may prove useful in these cases in future. In all cases of face presentation special care is necessary to avoid rupture of the perineum" (King's *Manual of Obstetrics*).

6. *To protect the perineum:* The patient should be restrained from bearing down unduly; extension of the head must be retarded, and the central part of the occiput must be allowed to be born first; pressure must be made with the hand between the coccyx and the anus; when the perineum has had time to stretch, extension and expulsion are allowed; after the birth of the head care must be taken to see that the perineum is not torn by the birth of the shoulders.

7. *Treatment of pregnancy complicated with nephritis:* "Prophylaxis is of the first importance. The urine should be examined every month in the first six months of every pregnancy, no matter how normal it

may seem, and every fortnight in the last three months. If albumin is present, the amount should be estimated in an Esbach tube, and the urea in a Doremus ureometer. The total quantity of urine per diem should also be ascertained. The principles of treatment are to relieve the kidneys by free elimination by the bowels and skin, and by diminishing the nitrogenous part of the dietary; and at the same time to prevent any further interference with the renal functions by guarding against cold. In mild cases where the albuminuria is the sole symptom, the patient should be warned to rest and guard against cold. The diet should be restricted to milk food, with bread and butter, and a little fish or chicken once a day, and the bowels should be made to act freely once every day. Where there are, in addition, symptoms such as edema or headache, the patient should be kept in bed, the diet even more rigidly restricted, and nothing but milk foods given for some days. The bowels should be briskly purged by a hydragogue, such as jalap, and the kidneys flushed out with diluent drinks. This treatment must be continued until the symptoms have disappeared, although it is rare for the urine to clear up altogether. A little fish and chicken, and some light fruits and vegetables may then be added to the diet, but the regular free action of the bowels must be continued. In more severe cases the skin functions must be stimulated in addition by the use of hot packs. The diet also should be nothing but plain milk and diluent drinks. Hot salines per rectum help to flush out both bowels and kidneys. If the condition grows worse in spite of treatment, it argues either a very severe toxemia, or severely damaged kidneys. The outlook in either case is so bad, owing to the probable onset of eclampsia, that the pregnancy should be terminated, particularly as the prospects of obtaining a healthy living child are remote. This interference becomes urgent if signs of drowsiness indicate approaching coma, or sickness and epigastric pain suggest the near onset of eclampsia. The obstetric treatment then consists in emptying the uterus. Where there is no great urgency this should be done by Krause's method of induction of premature labor. In urgent cases some method of *accouchement forcé* must be employed, the choice depending upon the condition of the cervix, and on the degree of urgency" (Johnstone's *Text-book of Midwifery*).

8. *Pernicious vomiting of pregnancy*. "The treatment consists in rest in bed in a quiet, darkened room and the administration of easily digested foods, such as milk, broths, eggs, etc. A careful search must be made for some local exciting cause, and if any such condition is found, it should receive appropriate treatment. Sexual intercourse should be interdicted. The bowels should be kept freely open. Sodium bromide, camphor, cocaine, silver nitrate, cerium oxalate, hyoscine hydrobromide, antipyrine, etc., are among the drugs used internally. Rectal alimentation may be necessary, and, as a last resort, dilatation of the cervix and internal os, or abortion may be performed (*Pocket Cyclopedia*).

PATHOLOGY

1. *Thrombus* is a blood-clot formed within the heart or blood vessels during life.

Embolus is a clot or other substance brought by the blood current, and forming an obstruction where it lodges.

Emboli are most frequently found in the following arteries: Pulmonary, renal, splenic, cerebral, iliac, axillary, mesenteric and coronary.

2. A *physiological leucocytosis* is a leucocytosis which is found in certain physiological conditions; it is generally moderate and of brief duration. It is found in the newborn, after parturition, after exertion, after a cold bath or massage, during pregnancy, and during digestion.

A *pathological leucocytosis* is a leucocytosis which is found in certain pathological conditions; it is generally found in inflammatory, toxic, and infectious conditions. As a rule, the polynuclears are increased.

Of the diseases mentioned there is a leucocytosis present in: Pneumonia. It is absent in: Typhoid, malaria, and acute miliary tuberculosis.

3. Tuberculous lesions may be diagnosed by the various tuberculin tests, such as those of Koch, von Pirquet, Calmette, and Moro.

4. In *chronic alcoholism* there may be found peripheral neuritis, meningitis, catarrh of stomach, cirrhosis of liver, arteriosclerosis, and granular kidney.

5. Acute Lobar Pneumonia. "It is convenient to describe four stages, those, namely, of (1) hyperemia or engorgement, (2) red hepatization, (3) gray hepatization, and (4) resolution. *First stage or splenization.*—The lung is injected, dark red, and heavy, and pits under the finger; on pressure, there exudes a frothy serum tinged with blood and slightly aërated. The lung still floats in water. *Second stage or red hepatization*—The part involved is solid and friable, presents a granular or red granite appearance, and sinks in water. The alveoli are filled with a coagulated exudation which shows under the microscope fibrin, leucocytes, red corpuscles, proliferated alveolar epithelium, and pneumococci. *Third stage or gray hepatization.*—The lobe has now the appearance of gray granite, the lung substance is softer and more friable; on pressure, a dirty purulent fluid exudes. The gray appearance is due to four factors: (1) Decolorization of the red blood corpuscles; (2) obliteration of the alveolar blood vessels from pressure; (3) fatty degeneration of the coagulated material; (4) great infiltration of leucocytes. A more advanced stage, in which the lung tissue is bathed in purulent fluid, is known as purulent infiltration. It is probably inconsistent with life. *Fourth stage or resolution.*—Resolution of the inflammatory exudation is brought about principally by absorption (autolysis), but partly by liquefaction and expectoration. Pneumonia may affect a lobe, or the whole of a lung, or it may attack both lungs. Double pneumonia occurs in about 10 per cent. of cases. Different parts of the same lung may at the same time show different stages. There is always some degree of pleural inflammation over the affected area. Moderate enlargement of the spleen is very common" (Wheeler and Jack's *Practice of Medicine*).

6. "In *amebic dysentery* the lesions are chiefly seated in the large intestine. They present: (a) Small gelatinous swellings of the mucosa, with partial ulceration; (b) Necrosis and sloughing of the underlying tissues. The ulcers of amebic dysentery thus have undermined edges. The amebæ are found in the ulcerating mucosa, but more abundantly in the tissues beyond the ulcerated area (submucous or muscular coat), where they set up edema and necrosis. Later, along with the ulcers, cicatrices leading sometimes to partial stricture, may be found. Hepatic abscess, usually single, and hepato-pulmonary abscess, are common complications. Amebæ are sometimes found in the portal capillaries. The *ameba* is a rounded cell with a clear outer ectoplasm, and a granular endoplasm. It has a rounded or oval eccentric nucleus, and measures from 10 to 15 μ in diameter. On the warm stage it shows active ameboid movement. In the resting stage it forms a cyst or cysts, and in this state resists drying for a long time. The organisms are found chiefly in the large intestine, especially in the rectum and flexures, but they also occur in the ileum and stomach, and in the liver. They have the power of penetrating the tissues" (Wheeler and Jack's *Practice of Medicine*).

7. In *diabetes mellitus*, sugar is found in the urine; in *chronic parenchymatous nephritis*, the urine will contain granular and hyaline casts and varying amounts of albumin.

8. "Since the days of Celsus, heat, redness, swelling, and pain have been recognized as *cardinal signs of inflammation*, and to these may be added, interference with function in the inflamed part, and general constitutional disturbance. Variations in these signs and symptoms depend upon the acuteness of the condition, the nature of the causative organism and of the tissue attacked, the situation of the part in relation to the surface, and other factors.

"The *heat* of the inflamed part is to be attributed to the increased quantity of blood present in it, and the more superficial the affected area the more readily is the local increase of temperature detected by the hand. *Redness*, similarly, is due to the increased afflux of blood to the inflamed part. The shade of color varies with the stage of the inflammation being lighter and brighter in the early, hyperemic stages, and darker and duskier when the blood flow is slowed or when stasis has occurred and the oxygenation of the blood is defective. In the thrombotic stage the part may assume a purplish hue.

"The *swelling* is partly due to the increased amount of blood in the affected part and to the accumulation of leucocytes and proliferated tissue cells, but chiefly to the exudate in the connective tissue—inflammatory edema. *Pain* is a symptom seldom absent in inflammation. *Tenderness*—that is, pain elicited on pressure—is

one of the most valuable diagnostic signs we possess, and is often present before pain is experienced by the patient. That the area of tenderness corresponds to the area of inflammation, is almost an axiom of surgery. Pain and tenderness are due to the irritation of nerve filaments of the part, rendered all the more sensitive by the abnormal conditions of their blood supply. In inflammatory conditions of internal organs, for example, the abdominal viscera, the pain is frequently referred to other parts, usually to an area supplied by branches of the same nerve as that supplying the inflamed part" (Thomson and Miles's *Manual of Surgery*).

The *terminations of inflammation* are: (1) Return of the tissues to health (by resolution, by organization, or by new growth); and (2) death of tissue, or necrosis (by suppuration, by ulceration, or by gangrene).

SURGERY.

1. *Inflammation* is the succession of changes occurring in a living tissue as the result of some kind of injury, provided that this injury be insufficient immediately to destroy its vitality. *Symptoms of inflammation* are: Redness, swelling, pain, heat, and disordered function.

2. *Septicemia* is a condition due to microorganisms multiplying in the blood, and is characterized by high temperature, but not relieved by getting rid of the original source of infection. *Pyemia* is due to particles of blood clot carrying microorganisms to parts distant from the original source and there setting up metastatic abscesses.

3. *Varieties of talipes: Talipes equinus* consists in extension of the foot, with spasm or shortening of the Achilles tendon, and usually with a loss of power in the anterior tibial group. *Talipes varus* is an inversion of the foot, associated with rotation at the midtarsal joint. *Talipes calcaneus* is characterized by elongation of the tendo Achillis and of the muscles associated therewith, by shortening of the anterior tibial group of muscles, and by slight flexion of the toes. *Talipes valgus* is a deformity of the foot in which eversion is a prominent feature. *Talipes cavus* results from bony subluxation at the midtarsal joint and contraction of the plantar fascia, and produces an exaggeration of the normal transverse arch of the foot.

Talipes equinovarus is a deformity in which the heel is drawn up, and the anterior part of the foot is inverted and drawn inwards.

Treatment: "It may be treated in the early stages by fixing the foot in good position by a series of plaster-of-Paris casings, or by using a malleable metal splint. Tenotomy of tendons which hinder reduction in some cases is necessary, with the subsequent application of plasters. If the ligaments on the inner side of the ankle hinder reduction, they should be divided. In the neglected cases, where the patient has been walking on the outer side of the foot, tarsectomy is necessary. A wedge of bone, with its base outwards, is removed by a chisel or saw, irrespective of the joints, from the tarsus in front of the peroneal groove on the cuboid. The foot can then be brought into good position, and maintained so by plaster-of-Paris" (*Aids to Surgery*).

4. *Treatment of acute appendicitis:* The patient should be kept in bed; no food is to be given for the first twenty-four hours; after this, fluid and jellies may be given; cooling drinks may be allowed in moderation; the pain can be relieved by hot or cold applications on the right iliac region, or morphine may be given if necessary (and only after the diagnosis has been made); an enema of olive oil or glycerine may be given to empty the bowels (if loaded).

The indications for operation vary according to the views of the surgeon. Some maintain that every case of appendicitis should be operated on as soon as the diagnosis is made. Others would operate only in case of rupture, or when suppuration occurs, or in cases which do not improve in a week or so, or in cases which are steadily getting worse. Probably all would agree in taking out every appendix that has undergone more than one mild attack.

5. Stop the bleeding, remove foreign matter, make it as aseptic as possible, coapt the edges, keep the part at rest.

6. In *dislocation of the lower jaw*, the mouth is open and cannot be closed, the jaw protrudes, saliva dribbles from the mouth, speech and swallowing are difficult, and there is a depression in front of the ear. *Treatment:* The surgeon wraps his thumb (for protection), then presses downward and backward on the lower molar teeth; as soon as the condyle is loosened the jaw is closed by pushing up the chin. A Barton bandage is applied and worn for about fourteen days.

7. The *general signs and symptoms of fracture* are: History of injury, disability, pain, swelling, deformity, abnormal mobility, and crepitus.

8. *An oblique inguinal hernia is covered by:* Skin, superficial fascia, aponeurosis of external oblique, intercolumnar fascia, cremasteric fascia, infundibuliform fascia, subperitoneal tissue and peritoneum.

Miscellany.

A Pioneer in Prophylaxis.—The subject of our biograph was a physician, a teacher, a man of letters, and an American. Years before anything was known of the relation of bacteria to diseases the subject of our biograph correlated his own keen clinical observations with the experience of others, and pointed the way toward surgical asepsis—one of the great advances in medicine. His masterly essay on the "Contagiousness of Puerperal Fever," wherein he laid down certain rules to prevent transmission of infectious agents, stands to-day among the great literary landmarks in the history of medicine. Though forced to combat, in his own profession, the deepest skepticism and the most marked opposition to his theories, he lived to see his ideas triumph, and his teachings are now followed by obstetricians and surgeons throughout the world. Let us, therefore, join in honoring Oliver Wendell Holmes, physician, teacher, and man of letters.—*Weekly Bulletin* of the New York City Department of Health.

Treatment of a Failing Current Rectifier.—Not infrequently the owner of a galvanic and faradic wall plate finds that it is inert owing to loss of function of the alternating current rectifier usually employed. This is due in most cases to failure to test the current properly. Moisten a strip of blotting paper in potassium iodide solution and place both tips of the galvanic cords in contact with it, then turn on the galvanic current. If the rectifier is functionating properly a brown stain will appear at the positive pole showing free iodine. If no stain appears it shows that the rectifier is not rectifying the current. Examination of the jars may reveal the fact that the solution has evaporated; or it may be that some one has recharged them with sal ammoniac. The proper salt for this purpose is sodium phosphate. If sal ammoniac has been used the metal plates, being incrusted with salts, must be discarded and a new set of metal plates put in, also new solution. It has been found that a light film of oil poured over the top of the solution greatly increases the life of the rectifier, preventing evaporation of the fluid and creeping of salts.

Reduced Blood Pressure in War.—Dr. A. Moutier recently presented a communication to the Paris Academy of Medicine in which he said that the blood pressure in soldiers returning from the front was almost always markedly reduced. It frequently has been found, Dr. Moutier said, that when a soldier has a wound in one of his limbs the tension in that is lower than in the one which is sound. He believed this lowered blood pressure had much to do with producing various complications, such as gaseous gangrene, tetanus, and frozen feet. He expressed the belief that many amputations might be avoided after gunshot wounds of the extremities if more attention were paid to measures capable of raising and maintaining the intra-arterial tension.

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Original Articles.

THE FLUOROSCOPIC SCREEN AND THE RADIOGRAPHIC PLATE IN THE DIAGNOSIS OF MEDICAL AND SURGICAL LESIONS OF THE ALIMENTARY TRACT.

BY C. WINFIELD PERKINS, M.D.,

NEW YORK.

THERE is probably no subject before the medical world to-day of more importance and practical interest than the utilizing of the Röntgen ray in diagnosis of gastrointestinal diseases. Much attention has been directed of recent years to the detection of the lesions of the stomach, duodenum and intestines, such as cancer, ulcer, adhesions, and various other pathological conditions of the alimentary tract, the original work of this character having received its impetus by Continental observers, as Holzknecht, Haudeck, Schwartz, and Kienbock of Vienna, Rieder and Groedel of Germany, Beclère of Paris, and many others.

The past three years, and especially the past year, have developed an experience among American workers of much value. To such men as Case, Cole, George, Pfahler, Carmen, Hirsch, and many others we owe a large debt of gratitude for their individual observations and original researches in Röntgen diagnosis. The importance of these methods can be judged from the expressed opinions of such men as von Eiselsberg of Vienna and the Mayos of our own country. Von Eiselsberg says: "In spite of the progress made in the diagnosis of the gastrointestinal diseases, among which I place Röntgen examination as first, the choice of the method of operation for gastric ulcer and cancer can be best made at the autopsy *in vivo*, when the abdominal cavity is opened." In a recent communication in *Surgery and Gynecology and Obstetrics*, December 14, W. J. Mayo says: "Cancer of the stomach is the most frequent form of cancer in the human body. In at least 75 per cent. of gastric cancer the pyloric half of the stomach is involved. The opportunities are many, but the surgeons performing the operation are few and results are meager. Perhaps the most important reason for this apathetic condition of the profession in regard to cancer of the stomach has been our inability to diagnose the disease sufficiently early for the performance of a radical operation with a reasonable operative mortality. At present largely through radiography, the clinical diagnosis of cancer of the stomach can be made early in a large percentage of cases. Exploratory incisions, which up to within the past year were necessary and our chief reliance, though carrying the dread to the patient of an unnecessary operation are fortunately no longer required. The history of the patient, the radiographic findings, the use of the stomach tube, give a reasonable prospect of a correct diagnosis."

Superior technical methods have been developed and new radiological signs have been found. Two schools of radiographic workers have been developed, namely, the Continental school, which is essentially fluoroscopic, and the American school which may be called the Static School. Diverging opinions have, therefore, arisen regarding the method or methods employed to reach a diagnosis. There is no room for this useless controversy over the two methods for signs of gastric and intestinal lesions can be recognized by the screen or the plate alone. Serial plates will demonstrate an involvement, sometimes too small to be found on the screen. One method supplements the other and the skilful use of the screen removes the necessity of many plates and the much laborious and expensive work of the Röntgen laboratory. Combining the screen with the plate, this much-needed diagnostic method can be brought within the reach of all persons and circumstances.

A discussion of the various methods of technique would be superfluous in this paper, but for those who may not know I will outline a few of the methods that are employed by me and which largely follow the Continental technique and that of the Mayo Clinic in Rochester. If the patient's bowels move normally, I cannot see the advisability of giving a laxative and thus disturbing the motility of the intestines; however, if there is no movement, a mild laxative is advised the night before. The patient reports without breakfast and an oatmeal gruel meal is given, 10 ounces with 2 ounces bismuth subcarbonate mixed thoroughly; sugar and milk may be added to make the mixture more palatable. The patient is directed to abstain from further food until he is examined six hours later. His clothing is now removed down to the hips, the screen is placed against the abdomen, and the presence or absence of residue is noted in the stomach. The advanced position of the bismuth meal should be normally in the cecum and ascending colon in six hours. A further advance in the large intestine or retardation in the small intestine is indicative of some pathological process. The patient now drinks rapidly 2 ounces of bismuth, well stirred, in 6 to 8 ounces of water. The entrance of this solution at the cardiac orifice and its descent into the stomach are carefully watched. Any irritation or constrictive lesion being noted, the patency and activity of the pylorus are also observed. The observer palpates towards the pylorus, the outline of the stomach and the visibility of the duodenum being made more pronounced by this procedure. Sixteen ounces of potato-starch pap containing 2 ounces of bismuth or barium salts flavored with some syrup is now

given the patient. This mixture usually fills the stomach so that its outlines are well observed, and any irregularities in the peristaltic wave or defects are noted. Palpation, both in the vertical as well as in the horizontal position, can be done at this

FIG. 1—Typical peristaltic rhythm of the stomach. (Front Groedel, "Die Magenbewegungen.)

time; this is a very necessary part of the technique. Clinical diagnosis offers few parallels to the certainty afforded by this method. If necessary, plates are made with the patient lying down or standing, the abdomen being placed against the plate holder. I think it always advisable to make a large plate of the whole abdomen, intestines, and stomach. Smaller plates may be taken of any special region according to the necessity of the diagnosis required.

After the observer becomes familiar with his technique and has followed a large mass of material, he will find that prolonged examinations are unnecessary with the screen. Screening can be done very satisfactorily in a short time. If there are any signs of gastric or intestinal lesions, they appear at once or do not appear at all. The summing up of the clinical history and the results of the radiological examination will soon lead to something definite or to nothing at all. Errors are more often due to seeing too much from a prolonged examination and the little things are enlarged at the expense of the greater ones.

A Röntgen diagnosis of gastrointestinal lesions is always based on departures from the normal form, tone, position, mobility, capacity, motility, outline, and peristalsis along with phenomena, such as filling defects, spasmodic contractures, accessory pouches, and diverticula of the various parts of the alimentary tube. It is absolutely essential to the Röntgen diagnostician to have a clear, well-defined knowledge of the normal as well as the pathological anatomy of the parts to be examined, in other words, he must not only be an expert clinician but an anatomist and a pathologist of no mean ability.

After the examination of the stomach and the small intestines, subsequent examinations are made at intervals of 24, 36, and 48 hours for the purpose of watching the bismuth meal in various stages of digestion. Stasis, adhesions, motility displacements are all noted in the final summing up of the case. The condition of the appendix as regards its emptying power is also taken into consideration, as an old diseased appendix empties very slowly. It is always advantageous to examine the intestines while the patient lies down, for the palpation of the various portions of the gut can be done more successfully in the recumbent position. Plates may also be taken of the intestines following a fluoroscopic examination as a matter of record.

The outline of the large intestine can be very successfully seen by means of the bismuth enema. It is necessary to do this while the patient lies recumbent with the tube under the table. Various forms of protective apparatus are made which are satisfactory for this work. The ascent of the bismuth column through the descending, transverse, and ascending colon can be watched accurately and any defects, adhesions, tumors, or displacements noted. When the bismuth column reaches the cecum palpation can be made for noting adhesions, and pressure at that point will show whether the ileocecal valve is competent or not; if the mixture is seen to shoot into the small intestine a diagnosis of ileocecal incompetency can be made.

The Normal Stomach.—With reference to form there are two types of stomach: the steer horn and the fishhook. The steer horn, as the name implies, resembles the horn of a steer, having a broad base and narrowing toward the pylorus. The type is comparatively rare and is usually associated with deep-chested and muscular men and rarely found normally in women. The common type is usually the fishhook, or J-type of stomach. It is found in nearly all women and many men.

Tonus is the ability of the stomach to hold its

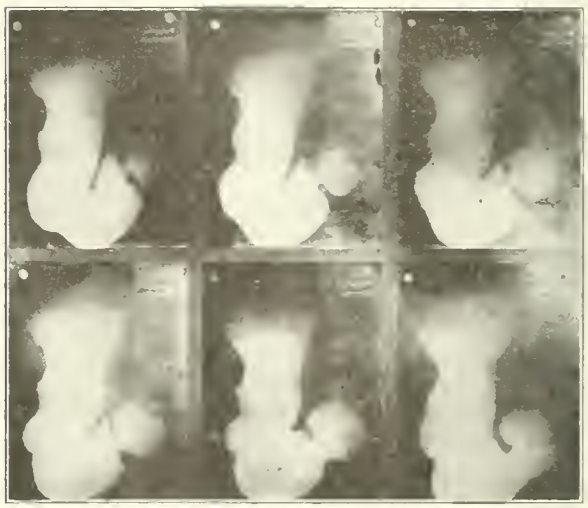

FIG. 2—Phases of the peristaltic waves of the stomach, as visualized with the fluorescent screen

contents firmly. Stomachs are classified by Schlesinger according to tone as hypertonic, orthotonic, hypotonic, and subtonic or atonic. The hypertonic is usually of steer-horn type, orthotonic the fishhook type; the hypotonic is

broad at its base and the bismuth usually settles down, leaving the upper portion relaxed; the atonic or subtonic hangs like a loose bag with the upper walls, the pars media, and cardia collapsed. The position of the stomach always de-

Fig. 3—Schematic drawing after Carman illustrating palpatation with gloved hand behind the fluorescent screen to determine the presence of adhesions or tumors, spasmodic or organic hour-glass contraction.

pends on its form and tone. The steer horn is very high and oblique and the greater curvature is usually placed from 2 to 4 inches above the intercristal line. In the fishhook, J, or orthotonic stomach the greater curvature usually lies on about the level or slightly above the intercristal line, whereas in the hypotonic or subtonic stomach the greater curvature may be anywhere from 2 to 3 inches below the same line and displaced well down into the pelvis. The normal position of the pylorus is in the median line or anywhere to the right in the region of the second or third lumbar vertebra and is always movable. Frequently as a result of adhesions to intestines and gall-bladder, it is pulled over and fixed. Radiologically speaking the normal stomach averages 9 to 11 inches long and 3 to 4 inches in width.

The motility of the stomach is its power to empty itself. The emptying time depends somewhat on the character of food given. Carbohydrates pass sooner than a protein diet. After many competent observations the world over, the failure of the stomach to empty itself of the bismuth or barium salts in 6 hours is indicative of a pathological process; however, an early emptying time may also be associated with a disease process.

The capacity of the normal stomach ranges from 24 to 30 ounces, and any departure from this is usually abnormal. The fixed points of the stomach are the cardia and the pylorus; other portions should be, if normal, freely movable on palpation under the screen. The gastric outline is smooth and regular, though a slight indenture may be noticed below the cardia due to the spleen and should not be mistaken for a deformity. A deeper depression is also observed at the pyloric antrum. A peristaltic wave usually begins at the pars media and becomes deeper as it advances toward the pylorus; the wave is always more pronounced on the lesser curvature than on the greater; at the pyloric antrum it disappears and the food advances into the first portion of the duodenum, usually outlining the bulbus duodeni. This is called a stomach cycle. This functional process begins over again in a normal stomach in about 15 or 20 seconds. During an examination of this process any abnormal condition in its activity, such as exaggeration, prolongation, interruption, or spasm, can be observed and put down as part of the pathological findings. The advances in radiology of recent years have added an entirely new conception of the anatomy and physiology in relation to the form, position, and action of the gastrointestinal canal.

The radiological signs of cancer may be classified as follows: Filling defects; altered pyloric function; gaping or obstruction of the pylorus; hypermotility or advanced position of the six-hour meal (being placed in the left half of the transverse colon or the descending colon); absence of peristalsis over an involved area of the wall of the stomach; six-hour residue as result of stenosis and obstruction; hypertonic stomach, oblique, and placed high up under the diaphragm, due to involvement and stiffening of the walls; finger-shaped projections in the surrounding tissues; hourglass contraction with central canalization; diminished or absent peristalsis; diminished mobility of the stomach; the forming of a diverticulum in the surrounding tissue as a result of the impairment of the walls due to the medullary growth.

The filling defect is a positive and practically indispensable sign of cancer of the stomach. It is formulated by the tumor mass projecting into the stomach, and when the organ is filled with bismuth the gastric lumen shows a corresponding

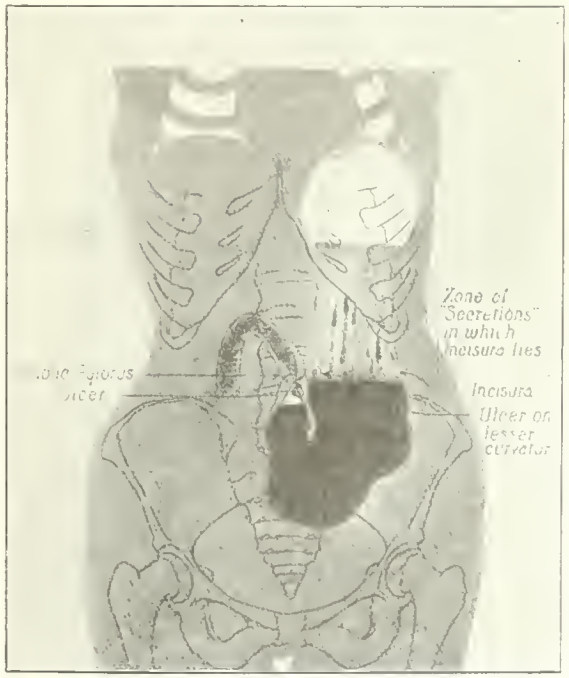

Fig. 4—Schematic drawing after Carman illustrating ulcers of the pylorus and lesser curvature. A large zone of residual secretions is present. Observed under fluorescent screen.

irregularity. These defects vary according to the size and the amount of involvement. There may be various types of defects as a result of the different kinds of tumors; for example medullary carcinoma produces a number of indentations along

the stomach walls, while a scirrhus is apt to be of a small, concentric, narrow, or funnel shape, especially of the pylorus. When the pars media is involved the hourglass type of stomach is formed. Central canalization may result and is diagnostic

Fig. 5—Chronic perforating ulcer (with diverticulum or pouch). Adhesions of the hepatic flexure to the duodenal region. Discovered with the fluorescent screen and verified by the radiographic plate.

of malignancy, while lateral canalization is pathognomonic of a contracture due to an old callus or perforating ulcer. Filling defects must be carefully differentiated from indentations into the wall of the stomach by gas in the colon, adjacent extrinsic tumors, enlarged spleen or liver, mesenteric growths, and organic spasm of the gastric walls. With palpation of the stomach walls while the patient is recumbent, the stomach can be pushed away and indentures filled out, thus showing its true contour. Stomach tumors in contact with the gastric walls are much more difficult to elucidate; under such circumstances the patient may be turned from one position to another and examined at different angles, and the growth's intimate relationship to the stomach may in that way be determined. The deformity due to an organic hourglass contraction is sharply delineated; it is very often irregular in outline and will not relax on palpation or the administration of an antispasmodic such as belladonna or papaverine. In the cardia a filling defect may deform the normal gas bubble or magenblase of the Germans. Examination of the cardiac regions is always more successfully done while the patient is lying down.

The identification of a tumor within or without the stomach or intestines is often a Röntgenological problem. Ordinary clinical examination offers few examples equal to the certainty of a diagnosis afforded by the ability to move the viscera, indent them, and locate pain points and adhesions within a flaccid abdomen, all the while the shadow is visible on the screen. *I again assert that such problems of diagnosis are impossible of solution by any other method.* Altered pyloric function, such as free and continuous passage of food or marked obstruction, is frequently associated with gastric carcinoma. In the pyloric carcinoma, whether from actual stiffening of the antrum or by reason of the lessened acidity of the gastric outlet, it remains gaping and the food shoots out like water in a funnel, while on the other hand a residue may result from obstruction. It is also not infrequent to have hypermotility and a residue as associated findings. These symptoms may seem paradoxical, but they are perfectly logical in the light of reason.

Obstruction may be located at any portion of the gastric lumen, the pars cardia, media, or pylorica. An hourglass stomach frequently shows a residue in its upper sack. A high obstructive lesion very often tends to dilatation of the lower portion of the esophagus. If there is no obstructive lesion in the stomach the head of the six-hour meal may occupy a position more or less proportionate to the acidity; that is, in any portion of the colon from the cecum to the sigmoid depending on the motility. Normally it should be at the cecum and ascending colon, and if anything has passed the left half of the transverse colon, it is pathological. Catharsis must be considered in summing up the diagnosis; some authorities fail to consider this important point. This phenomenon is claimed as a result of hypoacidity of the stomach contents causing immediate evacuation, but there is good reason to believe this interesting symptom may be due to a mechanical gaping or stiffening of the pylorus, allowing the food to empty out of the stomach rapidly. Hypermotility may also indicate duodenal, gall-bladder, cecal, or appendical irritation.

The peristalsis of a carcinomatous stomach very frequently shows certain departures from the normal. Peristaltic vigor is usually in proportion to the degree of acidity; high acidity indicates sharp peristalsis, and with low acidity the peristalsis is diminished. When the pylorus is obstructed frequently a vigorous effort at compensation is made by the stomach as is shown by strong contractions, thus demonstrating Nature's effort to overcome the stenosis. Therefore, in a non-malignant obstruc-

Fig. 6—Chronic perforating ulcer of the lesser curvature with organic hourglass contraction of the stomach. Pain points and adhesions are elicited by palpation under screen.

tion, such as the cicatricial scar of an old ulcer at the pylorus, a dilatation of the stomach walls is often found and is a characteristic symptom. Of more importance in malignant conditions, a peristaltic wave may be interrupted by malignant in-

filtration of the stomach walls. A wave will approach an affected area, seem to be quiescent, and then resume its action beyond the diseased portion. Lessened mobility of the stomach occurs as a result of the malignant process invading the surrounding

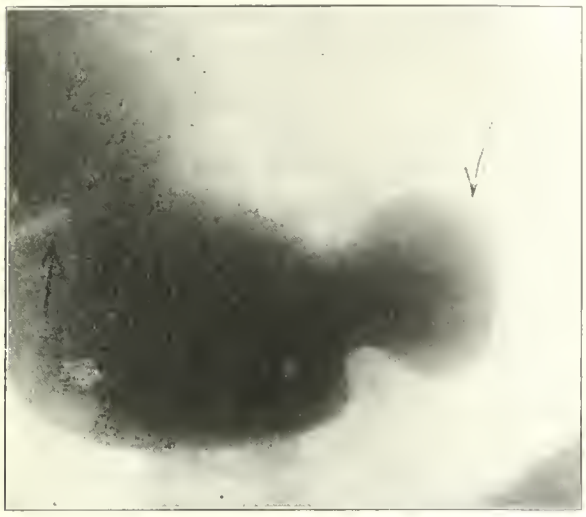

Fig. 7—Pyloric stenosis on basis of callous ulcer; large residue, 6 hours and 24 hours. Dilatation of stomach, with incisura or spastic indrawing of the greater curvature.

tissues. Diminished flexibility of the stomach walls may be noted by palpation so that the stimulating action of massage has no effect on the peristalsis. The subject of antiperistalsis has been studied by such well-known authorities as Haudeck, Groedel and others. It is an *x*-ray storm center. It has never been found in an organic sound stomach and in every case where operative procedure has followed there has always been a definite alteration of the stomach. It is usually found in pyloric stenosis caused by an old ulcer or early carcinoma. It is a valuable sign, but of minor significance.

The question of malignancy of a given condition is always for the pathologist to determine, but the characteristics are so definite and have been reasoned out and proven by so many noted authorities, that cancer can now be diagnosed radiologically in 95 per cent. of cases. A pretty good record for a diagnostic method that has received so much criticism at the hands of some of the profession. Unquestionably the Röntgen ray will materially aid in the correct diagnosis of a disease that attacks the stomach more than any other organ of the body. Valuable information can be given whether an operative measure should or should not be advised, and much suffering and the expense of a fruitless operation be saved the patient. It also offers a better prospect for earlier surgical intervention whereby many lives may be prolonged five, ten, or fifteen years.

The Radiological Signs of Gastric Ulcer.—They may be classified as those that are pathognomonic and those that are suggestive.

The cardinal signs are: Visualization of the bismuth-filled crater (Haudeck's niche). The diverticulum of a perforating ulcer. Organic hourglass stomach with lateral canalization.

The suggestive signs are: The spastic contraction on the greater curvature (incisura). This sign, according to Case, may be indicative of duodenal irritation; it may also show as a reflex irritation from gall-bladder and cecal disease. Snail or hook form of stomach with displacement of the pylorus to the left and down. Prolonged spasm of the pylorus early; duodenal ulcer gives a late spasm. Tender pain point over the area of the lesser curvature. Residue after six hours. Tendency to hypotonic or subtonic stomach. Exaggerated peristalsis.

A bud-like projection or niche on the outline of the bismuth-filled stomach corresponds to the crater of a callous ulcer and is a definite and positive sign. It is usually found on the lesser curvature, and it is called by some authors a chronic penetrating ulcer. This small pocket is formed by an erosion of the mucous membrane down to the peritoneal lining. It is practically the first stage of a chronic perforating ulcer, but it has not excavated its way through the peritoneal coat. When this stage progresses and the irritation continues, the ulcer finally excavates its way through the peritoneal coat and a chronic perforating ulcer with a pouch or diverticulum is formed. The perforation may continue to the liver region or push its way to the pancreatic area. These diverticula vary from the size of a hazel nut to that of a golf ball, and have at times given rise to the diagnosis of an accessory stomach by some earlier investigators. A diverticulum will frequently hold a residue after six hours and also contain an air bubble. It is called the niche (Nischen) sign by Haudeck, who originally described the interesting condition.

Whether the perforation is on the liver or in the pancreatic region can be determined by the fluoroscopic screen; with the liver it shows movement with respiration, but in the pancreatic region no such movement is seen. An oblique view under the screen is of advantage.

Organic hourglass contraction of the stomach frequently accompanies this condition; it can be differentiated from the spasmodic type by persistence after palpation and the administration of an antispasmodic. Organic hourglass contraction is somewhat irregular in outline and the walls are apt to

Fig. 8—Scirrhus carcinoma of the pylorus with stenosis and retention. Operable. Observed by fluorescent screen or plate.

be stiffened; it also is associated with an organic change of the stomach walls such as a carcinoma, a perforating ulcer, or syphilis.

The incisura or spasmodic indrawing of the greater curvature has been held by some as a posi-

tive sign of gastric ulcer, but recent observers, such as Case of Battle Creek, have contended that it may be associated with duodenal irritation as well as that from the gastris mucosa. Personally I have also noticed this symptom in a case of old

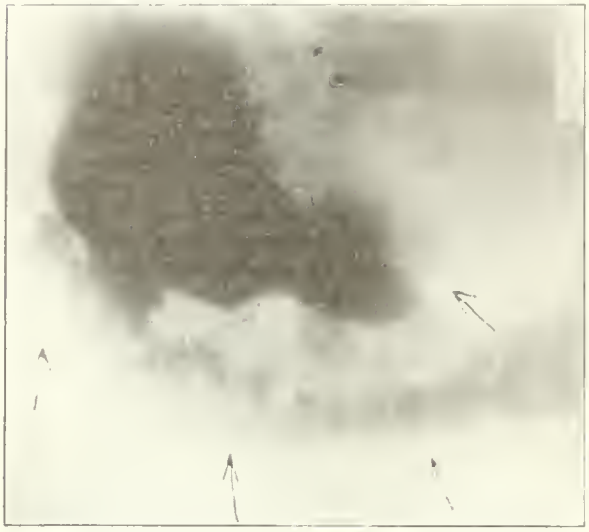

Fig. 9—Early carcinoma of pylorus with hypermotility. Six-hour meal in the transverse colon, splenic flexure and descending colon. No residue at 6 hours.

callous ulcer of the pylorus with dilatation. Carman states it is always found on the greater curvature opposite the point of irritation, but my experience along with that of others shows that it may come from anywhere in the gastric or duodenal region. A true incisura is distinguished from a peristaltic wave by the fact that it does not move toward the pylorus, the spastic indrawing remains in one place, it will persist after vigorous palpation, and is not effaced by the administration of an antispasmodic. Pressing the stomach upward will often remove an indenture caused by the gas-filled colon or the spleen. This condition should not be mistaken for an incisura. Incisura are frequently situated high up in the stomach and as ulcerous stomachs are often of the hypotonic variety it may fail to be seen unless the patient lies down, which allows the bismuth mixture to fill completely the stomach lumen. False incisura may be caused by other reflex causes, but they usually move toward the pylorus and disappear on manipulation. Carman reports a case in which a persistent indrawing of the stomach was due to a mesenteric band passing over the greater curvature and attached to the splenic flexure of the colon. Operation verified the diagnosis.

A hypotonic stomach is not unusually associated with ulcer; it is displaced to the left and down. A scar formation may occur on the lesser curvature near the pylorus and cause the stomach to bend on itself like a snail, hence Haudeck's snail form of stomach notorious in gastric literature.

Delayed opening of the pylorus, in contradistinction to the rapid emptying of duodenal disease, is almost invariably seen in ulcer of the stomach following the administration of the bismuth water. Later pyloric spasm may also be associated reflexly with duodenal, gall-bladder, and cecal disease.

A residue after six hours is very often associated with ulcer, but it may be absent. It has occurred, according to most authorities, in about 75 per cent. of cases; it varies from a small portion to one-half or one-fourth of the meal, and according to the amount of disease involvement. Most authors claim the residue is due to the spasm of the pylorus retarding the evacuation of the stomach. The writer has frequently seen a residue with nothing but an atonic condition of the stomach walls; that is to say, congenital visceroptosis may cause a residue with absolutely no pathological findings.

A localized pain pressure-point over the gastric area is not a positive sign, as many persons are sensitive over the epigastric region. Unless the parietal peritoneum has been punctured as in a penetrating or perforating ulcer, the conditions are rarely acutely painful, but if a pain-point is definitely localized it is of much importance in the final summing up of the diagnosis. Notwithstanding the many signs, both positive and suggestive of ulcer of the stomach, there is a small number of cases in which signs are absent, especially such cases as the florid type of ulcer in the pars pylorica and the stomach wall. In these cases the clinical evidence will help to clear up the diagnosis.

The radiological signs of duodenal ulcer are not so clean cut and definite as those of gastric ulcer. They are, however, of sufficient importance, from a fluoroscopic as well as a radiographic standpoint, that a positive diagnosis can be made in nearly all cases.

The signs may be classified as those that are static and those that are functional. A diagnosis of duodenal ulcer, I belive, is largely made on the functional signs.

The symptom complex of duodenal ulcer is as follows: Quick emptying of the stomach; hypermotility, or the advance of the bismuth meal into the transverse colon in six hours; hypertonic or orthotonic stomach; late pyloric spasm; incisura

Fig. 10—Upper arrow points to obscure gastrointestinal disease discovered by palpation under the fluorescent screen. Patient examined recumbent. Adhesions of the hepatic flexure of the colon and adjoining region. Prolapse of the transverse portion of the colon on the ascending colon with possible adhesions. Lower arrow points to high cecum and clearly visible appendix which has emptied some of its contents. Diagnosis, old gall-bladder disease, adhesions of the colon in that region, and colonic stasis, due to mechanical stricture.

or spastic indrawing of the greater curvature; marked antral activity of the pyloric antrum; pain-point over the duodenal area; defect in the cap; a small residue in the duodenum or stomach; in the stomach the residue is due to a late pyloric

spasm, a reflex symptom of duodenal irritation; distended bulbus duodeni indicative of constriction of the duodenum in its descending portion.

In duodenal conditions it is frequently necessary to take a number of plates, especially if the patient is large and muscular.

I contend it is not always necessary to have a defective cap to diagnose a duodenal ulcer. An ulcer of the florid type may exist and absolutely no defect in the bulbus duodeni be visible. These ulcers may also be serious from a hemorrhagic standpoint. An ulcer of the florid type can be diagnosed only from its functional and radiological signs and not from any deformity.

A defect in the duodenal bulb is frequently due to old gall-bladder adhesions or periduodenitis. A scar of an old healed ulcer often gives less annoyance than an acute ulcer of the florid type, and it is certainly less dangerous.

Quick emptying of the stomach, hypermotility, deformity of the bulbus, late pyloric spasm, and marked antral activity are the cardinal signs of duodenal irritation.

As suggestive signs we may consider: Pain-point over the duodenal area; hypertonic stomach; the incisura or spastic indrawing of the greater curvature; diminished peristaltic activity of the stomach (gastric ulcer has increased peristalsis). Peristalsis of the duodenum is increased, and upon examination with the screen the duodenum will often show a twisting or serpentine motion of the ascending and descending portions. The fluoroscopic screen is the moving picture show of the normal as well as the abnormal activity of the esophagus, stomach, and the intestines, and it has only one rival—the serial plate method or cinematograph, as originated by Rosenthal of Germany and carried to a high degree of perfection by Cole of New York.* The time and expense of exposing and developing forty to eighty plates of a single case, with a few exceptions, offer an effectual bar to its universal adoption. *The localizing of adhesions and pain-points by palpation with the patient standing or recumbent, which is always part of a screen examination, is certainly impossible by the serial plate method.* Pirie of Montreal has recently evolved a method in making six to sixteen separate exposures on a single 14 x 17 plate; this involves much less labor than the taking of a series of forty to eighty plates.

The radiological examination of the small and large intestines has reached a degree of precision that would seem uncanny. Such diseases as cancer, stricture, stasis, colitis, displacements of the small and large intestine, appendicitis, cecal adhesions, Lane kinks, and ileocecal incompetency, can be located and definitely diagnosed both fluoroscopically and with the plate. In the above conditions the fluoroscopic examination is invaluable, and no other method can equal the exact and precise information gained by palpation of the abdominal viscera with the fluoroscopic picture of the bismuth-filled bowel on the screen. Extensive studies of visceral peristalsis can be made only by this method. Holzknecht of Vienna has of recent years aided enormously to the literature of the day by his extensive researches on the peristaltic activity of the large and small bowel. Case of Battle Creek and Jordan of Lane's clinic have largely followed his original technique in their more recent investigations.

Cancer of the bowel is rare; in 41,838 autopsies at the Allgemeines Krankenhaus in Vienna from 1870 to 1893 there were 3,585 cases of cancer; 343 were in the intestine, 164 in the colon, and 162 in the rectum. The possibility of the discovery of cancer in the colon is not striking, but the disease has been so often overlooked that the diagnostician cannot afford to be careless. Many other conditions not thought of can be discovered in a routine examination of the intestines when trouble is thought to have its origin in the large or small intestines.

From what has been said it can be seen that the radiological signs of the surgical and medical lesions of the gastrointestinal tract assume a most important standing when a diagnosis is to be made. Diagnosis should not rest on the *x*-ray findings alone; the Röntgen ray simply furnishes valuable contributory evidence as to the presence or absence of a lesion. The radiologist of necessity must be a clinician, pathologist, and anatomist, and be able to follow his cases to the operating room and take his full share of the responsibility. What we need is cooperation and first-class team work—the conjoint action of the clinician, radiologist, and surgeon; then a definite and positive measure of success can be attained.

The radiology of gastrointestinal diseases is in its infancy, but with enthusiasm and conservative judgment it will attain high rank as a diagnostic measure and be demanded as a necessary procedure before operative interference. With the exception of gynecological diseases the Röntgen ray has, I believe, displaced the exploratory operation. Truly science has advanced if we have diminished the necessity of exploratory operations.

*As early as 1900 Cavallio of Paris was able to obtain cinematograph pictures which showed the movements of the stomach and the intestines in animals. In 1901 Eykeman made the original cinematograph radiographs of the act of deglutition.

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THE EXCISION OF THE FISTULOUS TRACT IN THE TREATMENT OF FISTULA IN ANO.

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AN observation, even superficial, of the structure of the fistula in ano is sufficient to convince one that the best way of treating this disease is by the extirpation of the fistulous tract. The total excision is superior to all the various procedures advocated for the treatment of this condition for many reasons, and whenever it is possible it should be considered as the method of choice.

It is a rational operation; it permits a plastic suture of the sphincters, and so reduces to a minimum the dangers of incontinence, and by removing all the pathological structures produces a radical cure in the shortest period of time.

The fistulous tract is in reality a tumor, and as such should be totally removed. The fistula is

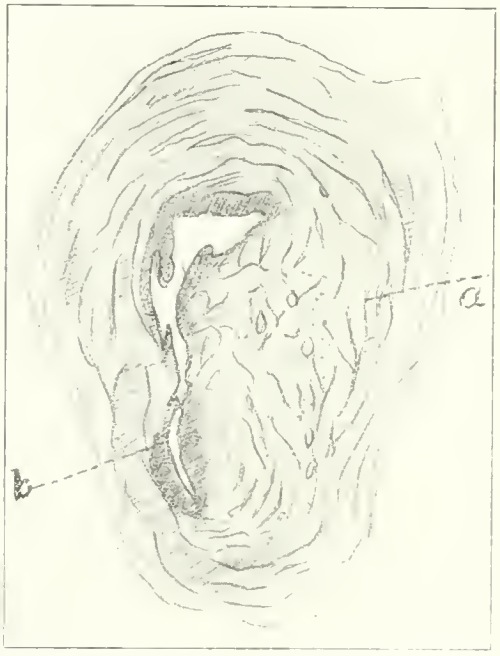

FIG. 1.—Transverse section of the fistulous canal. *a*, fibrous tissue. *b*, granulations.

essentially formed of a tube of hard fibrous tissue lined with granulations. The limits of this tube are very well defined, and its adhesions to the surrounding muscular fibers of the sphincters can be easily separated and dissected.

On the microscopical examination of a cross-section of the specimen we find that the fistula consists mainly of a tube of fibrous tissue perforated by a great quantity of blood-vessels passing from the external to the internal part of the tube. In the inside of the tube these vessels form capillary loops and pedunculated tufts like hemorrhoidal nodes. The abundance of blood-vessels and the fibrous tissue are the main features of the structure.

The skin around the opening of the fistula is also affected, and should be removed with the fistula. If the specimen is cut lengthwise we find that at the level of the external opening of the fistula the rete mucosum or Malpighian stratum of the skin is thickened and shows proliferation of the epithelial cells into the derma. Some sections give the appearance of a squamous epithelioma, and we find also the concentric globes or pearls which in the past were considered characteristic of squamous epithelioma. In my opinion the introflexion of the

FIG. 2.—Longitudinal section of a fistula; *a*, fibrous tissue; *b*, granulations; *c*, Rete mucosum of the skin; *d*, pearls; *e*, vascular tissue in the internal part of the fistula.

epithelium and the pearls are the remnants of the cicatrization of old fistulous openings now obliterated.

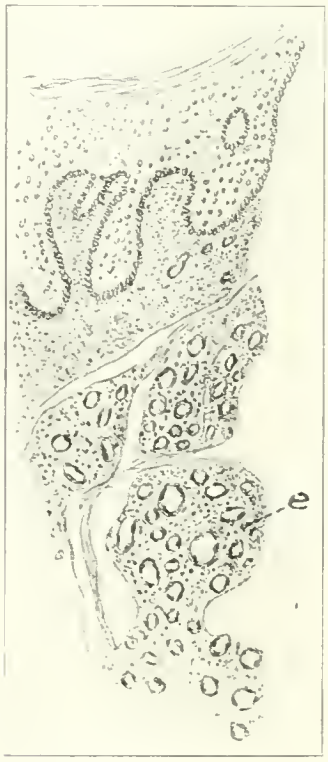

FIG. 3.—Enlarged view of the preparation of figure 2; *e*, vascular tissue in the internal part of the fistula.

The epithelium of the skin ends abruptly at the level of the opening of the fistula. No epithelial lining is found in the internal part of the fistula.

It is impossible to understand how this structure could be cured by simple incision and curetting.

As for the danger of incontinence of the sphincters following the operation for fistula in ano it is necessary to recall some anatomical details of the rectum. The internal and external sphincters surround the last portion of the rectum, the pars analis recti; but while the internal sphincter covers this pars analis in all its extent, the external sphincter occupies only a small part of it. The relative extent of the two muscles is very important, and it is well demonstrated by Fig. 4, which shows semischematically the disposition of the muscular coats of the rectum, according to the researches of Roux. It is clear in this figure that the circular fibers of the internal sphincter are a continuation of the circular muscular fibers of the intestine, and completely encircle the pars analis in its entire length, and the external sphincter covers only the most external portion of the pars analis.

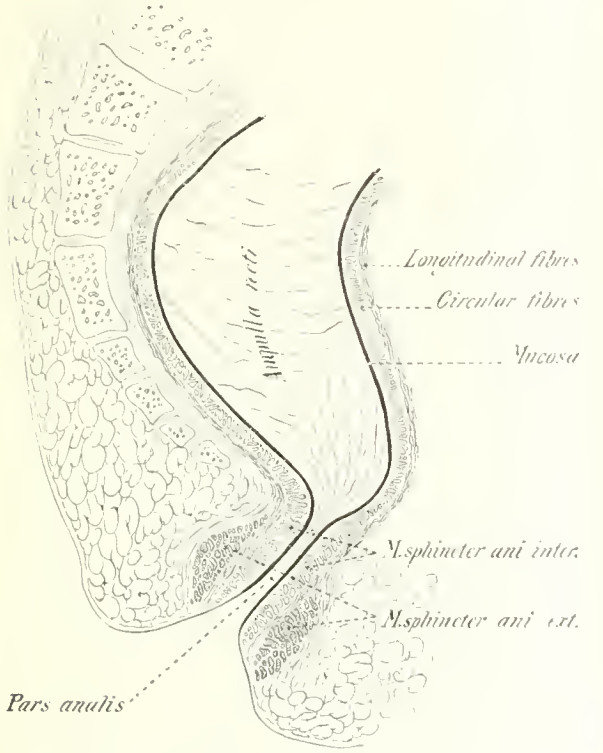

Fig. 4.—Schematic section of the rectum.

The fistula usually affects only a small part of the sphincters, so that, even if the part of the sphincters intervening between the fistulous tract and the mucosa is cut and not repaired, we have always enough sphincter left to keep the anus continent.

The incontinence following the operations for fistula in ano is not due to the incision of the sphincters, but it is more the consequence of the divulsion of the anus preceding the operation. When the stretching is not carefully done, or when it is done too roughly, it may cause rupture of the muscular fibers, interstitial hemorrhages, and consequent atrophy of the sphincters and incontinence.

The Operation.—The day before the operation the patient is given a cathartic and enemas to empty the bowels entirely. The perineum is shaved. The patient is put under general anesthesia and placed on the table in the lithotomy position.

The operation consists of three steps:

First. The stretching of the sphincters. This must not be attempted until the patient is under complete and deep anesthesia, and must be very gently done with patience and time, and using only the two index fingers. To use force is absolutely

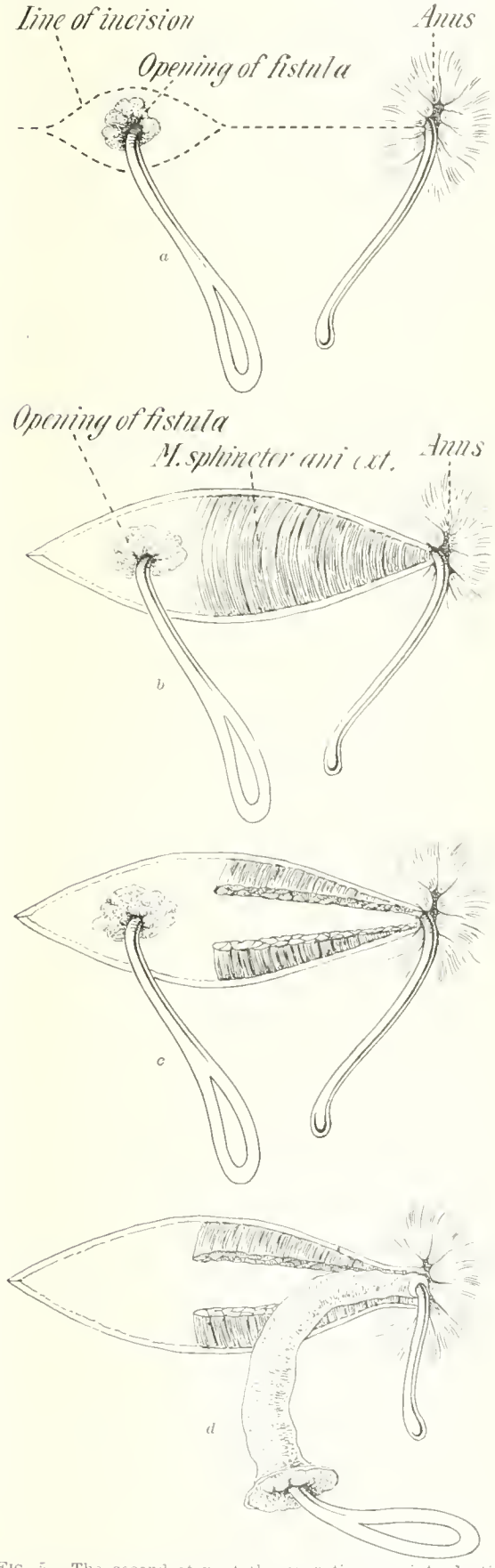

Fig. 5.—The second step of the operation. *a*, introduction of the probe; *b*, incision of the skin; *c*, incision of the sphincter; *d*, exterior of the fistulous canal.

dangerous. The stretching must not be overdone. It is sufficient to overcome the resistance of the muscles without exceeding the limits of elasticity of the muscular tissue. Besides it is not necessary to stretch all the pars analis, but only up to the point that we see the internal opening of the fistula.

Second. Excision of the fistulous tract. After the sphincters have been stretched a small gauze sponge is introduced into the rectum to prevent the feces from coming into the field of operation. A silver probe is then introduced into the fistulous canal, and with the help of the index finger it is made to pass through and protrude from the anus. The probe can be bent to act as a retractor and

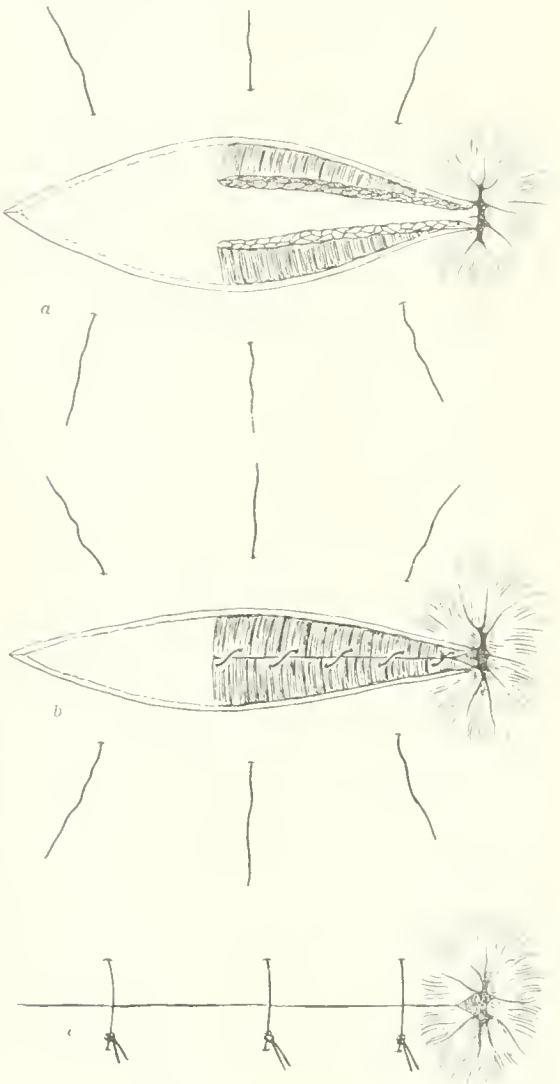

Fig. 6.—Third step of the operation; *a*, the silk sutures in place; *b*, the muscular suture completed; *c*, the operation completed.

bring the fistulous tract into evidence. An elliptical incision of the skin is made around the opening of the fistula, and a straight incision is made in the direction of the fistula to the rectum.

The skin, the mucosa, and the sphincters are now cut in regular order over the fibrous tube of the fistula. The tube is exposed and dissected from the adjoining tissues, and with the help of the probe the fistula is removed unopened. This dissection is not difficult, and may be done partially with the use of a blunt instrument. Very few vessels require ligature.

Third. Suture. Starting about one-half inch from the anus the wound is sutured with three or four interrupted stitches of silk, the silk being buried in the deep tissues through the whole course of the stitch, but these sutures are not tied until the end of the operation. The incisions in the sphincters are now closed with a continuous suture of fine chromic catgut threaded in a small needle, and when this muscular suture is finished the skin sutures are tied. No suture is applied to the mucosa of the rectum, so that in the side of the anus the wound gapes open for a little space and is drained.

A large rubber tube covered with gauze and abundantly smeared with vaseline is placed in the rectum with the aid of an anal speculum. The skin suture is dressed with mercurial ointment and sterile gauze. This antiseptic insures a rapid healing of the wound.

The rectal tube is removed after twenty-four hours; the silk sutures on the tenth day. A cathartic is given three days after the operation. The wound is generally healed in about three weeks.

31 Washington Square.

THE TREATMENT OF TYPHOID FEVER WITH TYPHOID VACCINE ADMINISTERED INTRAVENOUSLY.

By HELEN I. McWILLIAMS,

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(From the Quarantine Laboratory, Port of New York, Health Officer's Department.)

Typhoid vaccine was first administered intravenously as a therapeutic measure in typhoid fever by Ichikawa in Japan, who described his method in April, 1912. He published in May, 1914, a full report covering 82 cases treated in this way. His vaccine was prepared by treating living typhoid bacilli with the serum of patients convalescent from typhoid fever, by washing the bacilli several times, and adding carbolic acid to 0.3 per cent. He described a critical drop in the temperature, and a truly remarkable improvement in the condition of the patient within twenty-four to forty-eight hours after the injection of this vaccine. About half of the patients treated entered at once upon convalescence; others either failed to respond or showed only a temporary fall in temperature, but the author thought that the course of the disease was shortened in these cases also. The death rate in these cases seems high (12 per cent.), but his control untreated cases showed a mortality of 30 per cent. Prof. R. Kraus and his co-workers in the Argentine Republic obtained similar results entirely independently of Ichikawa, and published their first reports a few months after the latter's full report had appeared. Since then the intravenous injection of vaccine has been used in treating typhoid fever by a number of men in Europe, particularly in the war hospitals, and by F. P. Gay in this country.

Table I presents a brief summary of the number of cases treated by each of these observers and of the results obtained so far as can be ascertained from their published reports.

Most of the cases tabulated in the column "Cured" were instances of complete recovery by crisis; some of them showed a slight rise of temperature several days after the crisis; others did not respond promptly to the injection, but it seemed clear from the author's description that the course of the disease had been shortened. In other words, those

TABLE I.

Author, Reference and Date of Publication	Number of Cases Treated	CASES CURED		DEATHS		Kind of Vaccine Used and Dosage
		No.	%	No.	%	
*Ichikawa						
(a) Mitteil. d. med. Gesellsch. Zu Osaka, Vol. 10, No. 5, April, 1912.						
(b) Ztsch. f. Immitätsfor. XXIII, p. 32, May 6, 1914	82	73	89	9	11	Vaccine sensitized with human [illegible] lescents. 0.3% carbolic added
Torres						
Sem. Med., B. Aires, 1913.	6	3		3		Chantemesse's vaccine
Dessy, Grappiolo, Fossati.						
Sem. Med., B. Aires. No. 7, p. 357, Feb. 12, 1914.	5	5*		0		Lustig's vaccine.
Grappiolo, Fossati.						
Sem. Med., B. Aires, March 7, 1914.	11	11*		0		25-50 million typhoid bacilli.
Escudero	2	*		0		
Pinero						
Sem. Med., B. Aires, No. 53, p. 1026, Dec. 31, 1914	15	*		.		
Kraus R.						
(a) Wien. klin Woch. XXVII. No. 29, p. 1143, June 10, 1914.	*					Vaccine killed with ether. 50-100 million typhoid bacilli.
(b) Wien. klin. Woch. XXVIII, No. 2, p. 29, Jan. 14, 1915.						
Mazza						
Wien. klin. Woch. XXVIII, No. 3, p. 64, Jan. 21, 1915.	*			.		
*Ditthorn & Shultz						
Med. klin. XI, No. 4, p. 100, Jan. 24, 1915.	3	3		0		Vaccine dissolved in antiformin (Altman & Shultz).
Koranyi						
Wien. klin. Woch. XXVIII, No. 4, p. 85, Jan. 28, 1915.	29	17	59	3	10	Ichikawa vaccine. 0.1-0.5 cc.
Biedl, Eggerth & Paltauf.						
Wien. klin. Woch. XXVIII, No. 5, p. 125, Feb. 4, 1915.						
Biedl						
Prager, med. Woch. XL, No. 6, p. 53, Feb. 11, 1915.	10	7		3		Vincent's vaccine. 100-300 million typhoid bacilli
	11	11		0		Besredka's vaccine 250-300 million typhoid bacilli.
Eggerth						
Wien. klin. Woch. XXVIII, No. 8, p. 209, Feb. 25, 1915.	48	38	79	2	4	Besredka's vaccine. 125-250 million typhoid bacilli.
Sladik & Kotlowski.						
Wien. klin. Woch. XXVIII, No. 15, p. 389, April 15, 1915.	1	2		1		Besredka's vaccine 250 million bacilli
Boral						
Wien. klin. Woch. XXVIII, No. 16, p. 415, April 22, 1915.	1	.		1		Besredka's vaccine. 250 million typhoid bacilli
Reibmayr.						
Muenchener, med. Woch., p. 610, May 4, 1915.	68	11	60	0		Vaccine killed at 53° C. 250-510 million typhoid bacilli.
Goldscheider & Aust.						
Deutsch. med. Woch., XII, No. 13, p. 361, March 25, 1915.	64	22	34	0	.	Marx's vaccine. 250-750 million typhoid bacilli.
Rhein						
Muenchener med. Woch., No. 13, p. 427, March 30, 1915.	33	25	76	3	9	Vaccine killed by heating 0.6-1.5 c.c. Six patients received two injections.
Csernel & Marton.						
(a) Wien. klin. Woch. XXVIII, No. 9, p. 229, March 4, 1915.		..		..	.	
(b) Wien. klin. Woch. XXVIII, No. 27, p. 733, July 8, 1915.	24	16	66	5	21	Polyvalent vaccine. Killed by adding 1-10 volume Hayem's solution. 15-21 million typhoid bacilli
*Lowy, Luksch, Wilhelm						
Wien. klin. Woch., XXVIII, No. 28, p. 756, July 15, 1915.	33	24	73	9	27	Vincent's vaccine (Luksch). 250 million typhoid bacilli.
	36	33	92	3	8	Besredka's vaccine. 125-200 million typhoid bacilli.
Paulicek						
Wien. klin. Woch., XXVIII, No. 28, p. 759, July 15, 1915.	68	37	54	23	34	Vincent's vaccine. 100 million typhoid bacilli.
*Gay, J. P.						
Jour. A.M.A., LXV, No. 4, p. 322, July 24, 1915.	17	8	47	..	..	Killed sensitized vaccine. 300 million typhoid bacilli.
*Deutsch						
Wien. klin. Woch., XXVIII, No. 30, p. 811, July 29, 1915.	*	..	..	..	.	Besredka's vaccine. 62-250 million typhoid bacilli.
*Holler						
Ztsch. klin. Med., p. 462, August, 1915.	15	14	93	0		Vincent's vaccine. 100 million typhoid bacilli.
	3	1	.	1		Besredka's vaccine. 250 million typhoid bacilli and Vincent's vaccine 100 million typhoid bacili.

*Majority of cases received two or more injections.

instances of recovery in which the disease apparently ran its usual course uninfluenced by the intravenous injection of vaccine are not recorded as "Cured."

The percentage mortality in itself offers but little evidence as to the danger or efficacy of the treatment, as it will necessarily vary according to whether only mild cases, only severe cases, or all types of cases are subjected to the injections. The highest death rate, 23 per cent., was observed by Paulicek. His patients were soldiers who had suffered from severe exposure in cold weather, and they died in most instances from a complicating pneumonia. The high mortality of 23 per cent. represents, he says, a reduction by 20 per cent. from what was obtained without the injection of vaccine. It has already been mentioned that the death rate in Ichikawa's control cases was more than twice as high as in the treated cases.

Of far greater importance than the percentage mortality is the question as to how many, if any, of the deaths could be attributed directly to the action of the vaccine. Five cases (treated by Boral, by Csernel and Marton, by Löwy, Luksch and Wilhelm, and by Paulicek) showed intestinal hemorrhage following the injection and terminated fatally. One case (of Sladik and Kotlowski) resulted fatally from hemorrhage into the thyroid gland. One of Eggerth's patients developed a hemorrhage from the lungs and died three hours after the injection. One of Biedl's had hemorrhage from the nostrils before the intravenous injection of vaccine was given: after the treatment the hemorrhage recurred and could not be stopped.

All these persons may have died from hemorrhage induced by the injection. This suggests that hemorrhage should serve as a contraindication to the use of vaccine intravenously.

Koranyi attributed one of his deaths to the vaccine, but thought that he had administered too large a dose. Finally, two of Eggerth's patients, who were suffering from pneumonia in addition to the typhoid fever, died three hours after the injection of the vaccine. One of Holler's patients who received an intravenous injection of Besredka's vaccine and upon the following day an intravenous injection of Vincent's vaccine went into collapse and died, showing symptoms of heart failure. Hence it should be ascertained that the heart and lungs are in good condition before the treatment is given.

Of these twelve patients whose deaths may have resulted directly from the injection of the vaccine five received Besredka's vaccine, four received Vincent's vaccine, and one received both of these vaccines. No death has been attributed by the authors directly to the injection of vaccine killed by heat.

The dosage used has been 100 to 300 million of Besredka's vaccine; 100 to 300 million of Vincent's vaccine, and 250 to 750 million of vaccine killed by heating.

The cases receiving the same type of vaccine are grouped together in:

TABLE II.

Kind of Vaccine	Number of Cases Treated	Cured, per Cent	Mortality, per Cent
I. Ordinary typhoid prohpylactic. (Typhoid bacilli killed by heating)	165	53	2
II. Vincent's vaccine. (Typhoid bacilli killed with ether)	129	64	28
III. Besredka's vaccine. (Living sensitized typhoid bacilli)	101	83	8
IV. Other vaccines	161	75	14

Here again the percentage of "cures" does not include the recoveries in which the course of the disease was apparently uninfluenced by the vaccine, whereas the percentage mortality includes all deaths —even those resulting from lobar pneumonia, tuberculosis or other causes not connected with the typhoid fever or the vaccine treatment.

It is obvious from Table II that the observations thus far made do not show that any one type of vaccine has any great superiority over the other types. The number of cases treated is not yet sufficiently large for the percentages of cures and percentages of deaths to be taken at their face value. There is an indication that the Besredka vaccine yields slightly better results than the others.

Several hypotheses have been advanced to explain the mechanism of the rapid recovery of typhoid patients after the intravenous administration of vaccine. The suddenness of the reaction (consisting in a chill in 20 to 40 minutes after the injection with a rapid rise in temperature followed by a drop to normal within 24 hours) suggests at once anaphylaxis, and Ichikawa was inclined to regard the phenomenon in this light; the intravenous injection of typhoid bacilli would bring about an anaphylactic reaction in the patient already sensitized to the proteins of the typhoid bacillus; the patient would then enter upon a condition of insusceptibility (antianaphylaxis) to these same proteins.

Gay found that rabbits immunized against the typhoid bacillus responded to an intravenous injection of typhoid bacilli with amarked leucocytosis. He claimed that this reaction was specific and that it was often transitory, so that it might escape notice unless the leucocyte counts were made at one-half to one hour intervals. It seemed possible, therefore, that such a specific leucocytic response might be responsible for the recovery of typhoid patients following an intravenous injection of vaccine. With the idea of throwing some light upon this phase of the subject we decided to give a typhoid patient a full dose of vaccine intravenously and then to make leucocyte counts of his blood at one hour intervals until he had passed through the reaction.

With the consent of the health officer, Dr. O'Connell, an only moderately severe case of typhoid fever in the Quarantine General Hospital on Hoffman Island was selected for treatment. The patient was a man 27 years old and had been ill nine days. A blood culture in bile taken two days before the administration of the vaccine was negative but typhoid bacilli were recovered from the stool obtained on that same day. The Widal reaction was positive. Five hundred million typhoid bacilli killed at 56° C., the initial dose of the typhoid prophylactic put out by the New York Department of Health Research Laboratory, were injected into the median vein at the elbow. Thirty-five minutes later the patient had a severe chill and his temperature rose rapidly, reaching 106.4° three hours after the injection. It remained in the neighborhood of 105° for twelve hours and then rapidly fell to nearly normal during the next twelve hours. During the next seven days the temperature remained below 100°. The patient had in the course of twenty-four hours been transformed from a sick typhoid patient into a convalescent. As is indicated by the high temperature, the reaction was very severe, but the pulse at no time assumed an alarming character, according to Dr. Stanley B. Doyle, the resident physician, to whom we are greatly indebted for his assiduous care of this patient and also of the second one during the reaction period.

A leucocyte count was made just before the vac-

TABLE III.

Case 1

Time After Injection	Leucocyte Counts	DIFFERENTIAL COUNTS—Percentage of: Polymuclears	Large Mononuclears	Lymphocytes	Eosinophiles	Basophiles	Transitionals
Before injection	5,800	52 5	6 5	39	0 5		1 5
1 hr.	6,100	2	14	84			
2¼ hrs	4,400	17	11 3	70		0 6	1 1
3⅝ hrs.	1,470	42	4	52	2		
4 hrs.	7,400	56 2	9	33	1 5	0 3	
5 hrs.	2,350	54	9	33	3	..	1
6 hrs.	6,600	61	5	32	1		1
7 hrs.	6,200	68	5	24	2		1
8 hrs.	6,800	71	5	22	1 2		0 8
9 hrs	6,900	78	6	15 6	0 4		
10 hrs.	7,200	..	..	..	..	..	..
11 hrs.	6,400	91 4	1	7 3	0 3		
12 hrs.	14,850	92	1 3	6 5	0 2		
13 hrs.	11,600	77	9	14	..	..	..
14 hrs.	9,600	87	7	5	0 5	..	0 5
15 hrs.	8,800	88	3 6	7 6			0 8
17 hrs.	10,600	56	5	39			..
18 hrs.	18,800	64	19	17			
19 hrs.	20,450	67	7	26			
20 hrs.	16,900	88	5	7			
21 hrs.	16,050	90	3	7			
22 hrs.	13,000	75	5	19			1
24 hrs.	17,600	76	4	20			
25 hrs.	19,800	64	4	29			3
27 hrs.	19,000	79 5	2	15 5			3
27½ hrs.	22,200	66	15	17			2
28⅝ hrs.	17,600	77	10	10	1		2
29 hrs.	16,200	85	2	12			1
30 hrs.	17,350	87	6	6			1
31 hrs.	11,000	73	5	22			
32¾ hrs.	13,200	62	6	29 5			2 5
33⅝ hrs	13,500						
34½ hrs.	13,400	72	3	22	0 5		2 5
46⅝ hrs.	8,100	76	1 5	22	0 5		

cine was administered, and then regularly at one hour intervals until the temperature had reached normal. Smears of the blood were made at the same periods and preserved for differential counts. A full record of these counts is given in Table III.

Curves of the leucocyte counts and the temperature are plotted upon the same chart, and will be discussed together with similar curves from our second case.

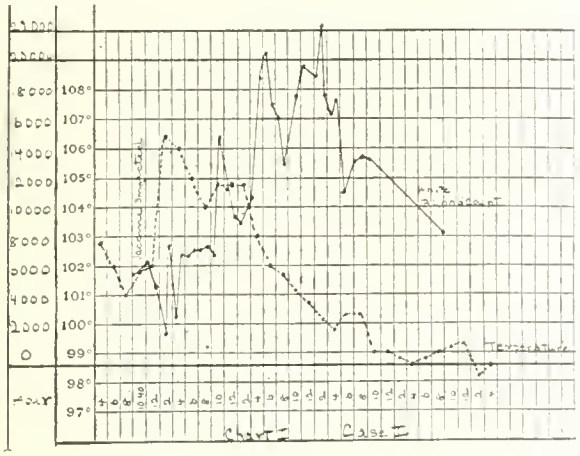

Chart 1.

In order to show which variety of white cells is most affected by the increase or decrease in the total number of leucocytes, the number per cubic millimeter of polymorphonuclears (including the eosinophile cells and transitional cells) and of the lymphocytes has been calculated for each period and the results plotted in curves.

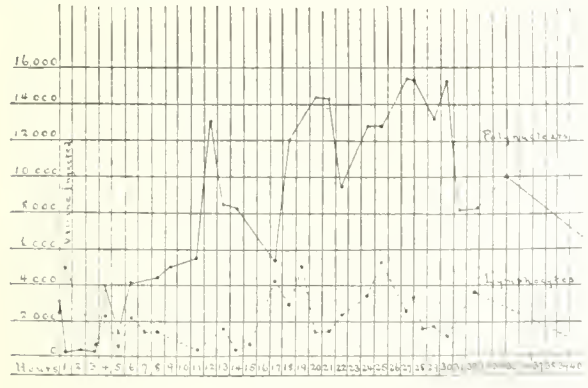

Chart 2.

Before discussing the behavior of the leucocytes in this case, the results in the second case will be presented.

The second patient subjected to the treatment was an earlier and much severer case of typhoid fever, also in the Quarantine General Hospital. He was a man 22 years old at about the fifth day of the disease. A blood culture in bile on the day before the administration of the vaccine was positive for typhoid bacilli. The stool examination and the Widal reaction on the same day were negative; typhoid bacilli were isolated from the stools six days later. The same vaccine as in Case I was used, but a smaller dose, 350 million, was given. The injection was made into the median vein at the elbow as before. Fifteen minutes later the patient had a severe chill, which lasted for ten minutes. His temperature was high at the time of the injection, and rose rapidly after the injection to 107.4°. It remained in the neighborhood of 106° for ten hours and then fell rapidly to normal. The patient talked incoherently in his sleep all night on July 29, received his injection on the morning of July 30, had a high temperature during that day, but slept well all during the night of the 30th. On the following morning his temperature was normal. The effect of the treatment was, however, only transitory. The temperature rose again on the afternoon of the 31st and the disease ran the usual course of a severe typhoid to recovery. The patient had a severe bronchitis, and Holler has called attention to the fact that such cases are often very refractory to the treatment.

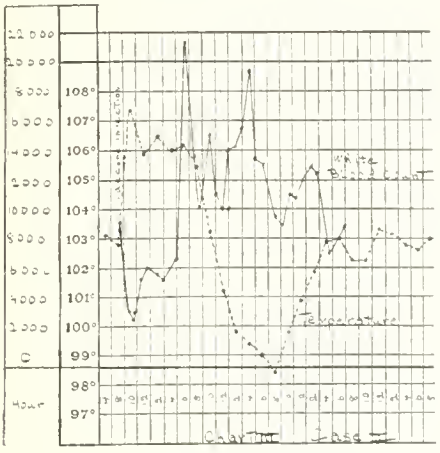

Chart 3.

A full record of the leucocyte counts and differential counts in this case, and also curves of the temperature, total number of leucocytes, and number of polynuclears and lymphocytes are given in Table IV and charts 2 and 3.

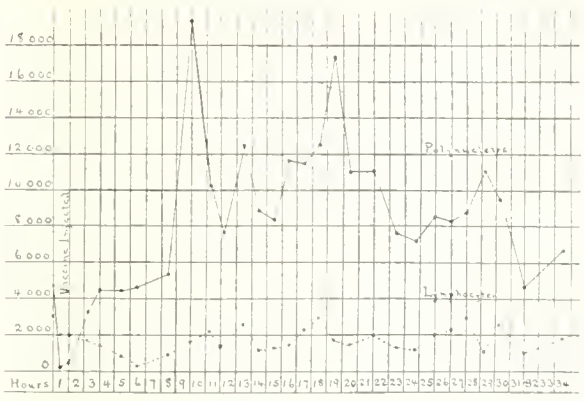

Chart 4.

Both patients showed a marked decrease in the number of leucocytes in the blood a few hours after the injection. In Case I the leucocytes fell from 5800 to 1470 in three and one-third hours, in Case II from 9200 to 2500 in one and one-half hours. After this first drop they rapidly increased in number to more than 20,000 per cubic millimeter in both instances. Such a leucocytosis is very high for typhoid fever cases, which usually show a leucopenia. It is interesting to note that the decrease in the number of leucocytes coincides with the rise in temperature after the injection, and that the increase in the number of leucocytes later on occurs synchronously with the fall in temperature. This is clearly shown in charts 1 and 3. Löwy, Luksch and Wilhelm using Besredka's vaccine and Gay using the killed sensitized vaccine noticed a similar behavior of the leucocytes in their cases. Holler made blood counts in a large number of cases and

observed the marked leucopenia shortly after the injection in almost every instance, but he only rarely obtained a high-grade leucocytosis, probably because his later counts were made at too long intervals. His leucocyte counts in Case VI, which received Vincent's vaccine, resemble ours very closely as far as he carried them. It seems, therefore, that the living sensitized vaccine, the killed sensitized vaccine, the vaccine killed with ether, and the vaccine killed by heating all call forth a similar response on the part of the leucocytes when injected intravenously into typhoid patients.

TABLE IV.

Case 2

Time After Injection	Leucocyte Counts	DIFFERENTIAL COUNTS—Percentage of: Polynuclears	Large Mononuclears	Lymphocytes	Eosinophiles	Basophiles	Transitionals
Before injection	9,200	53	13	32	....	1	1
1 hr	2,800	1	23	74	....	1	1
1½ hrs.	2,500	7	4	82	1	1	5
2¾ hrs.	5,350	56	2.5	36	....	0.5	5
3½ hrs.	6,050	74	1.5	22.5	0.5	....	1.5
5 hrs.	5,800	73	5	17	1	2	2
6 hrs.	5,400	83	5	7	....	1	4
8 hrs.	6,400	81	3	14 5	....	0.5	1
9½ hrs.	21,750	90	2	7	0 5	0.5	....
10½ hrs.	13,600	72	9	16	....	....	3
11½ hrs.	10,200	72	7	15	....	....	6
13 hrs.	15,000	80	1	17	....	....	2
14 hrs.	11,000	81	6	11 5	....	....	1.5
15 hrs.	10,120	82	4	12	....	....	2
16 hrs.	14,000	83	3	12	....	....	2
17 hrs.	14,200	81	0.5	16	....	0.5	2
18 hrs.	15,500	81?	....	19?	....	....	....
19 hrs.	19,600	89	0 5	10	....	....	0 5
20 hrs.	13,500	83	2.5	14	....	0.5	....
21½ hrs.	13,400	83	1.5	15	....	....	0 5
23 hrs.	9,600	80	3	16	....	....	1
24¼ hrs.	8,800	81	2	17	....	....	....
25½ hrs.	11,200	77	4	18.5	....	0.5	....
26½ hrs.	10,500	77	0.5	21	....	....	1.5
27½ hrs.	12,000	73	1	26	....	....	....
28½ hrs.	13,000	87 5	1	11 5	....	....	....
29½ hrs.	12,400	78	0 5	21	....	....	0.5
31½ hrs.	6,600	73	7	19	....	....	1
34 hrs.	8,800	78	....	22	....	....	....

Charts 2 and 4 demonstrate that both the leucopenia and the leucocytosis following the treatment are due to variations in the number of polynuclear leucocytes, while the lymphocytes remain comparatively constant in number throughout the reaction period.

The eosinophile cells are much reduced in number in typhoid fever; in agreement with Rhein we find that their number is increased a few hours after the injection of vaccine into typhoid patients.

From the above study the present status of the treatment of typhoid fever with intravenous injections of vaccine would appear to be as follows:

1. More than 550 cases treated in this manner have been reported in the literature.

2. In more than half of these cases the disease was cut short, the patient having been saved from one to several weeks of fever.

3. A few deaths must undoubtedly be attributed directly to the injections of vaccine. However, this is likely to occur with any new and radical method of treatment. As the contraindications and dosage are better understood such deaths should become extremely rare.

4. No one type of vaccine seems to possess any great superiority over other types with regard to treatment.

5. The proper dosage for intravenous injections appears to be from 100 to 250 million bacilli.

6. The injection of the vaccine calls forth first a marked leucopenia and several hours later a high-grade leucocytosis in typhoid patients. Variations in the number of polynuclear leucocytes are responsible for these changes, the lymphocytes remaining relatively constant. The eosinophile cells undergo an increase shortly after the injection.

7. The various types of vaccine call forth similar changes in the blood picture.

ROSEBANK, STATEN ISLAND.

SYPHILIS OF THE LUNG.*

BY M. T. EASTON, M.D.,

PEORIA, ILL.

MY paper this evening is on a condition which, while recognized as a rare one, I personally believe to be more common than is generally supposed. It is based on the report of a case which occurred in my practice.

The history is as follows:

L. M., age 51. Patient was taken with a severe hemorrhage of the lungs during the early morning hours of March 18, 1912, during which time he coughed up a large amount of blood, also a large quantity of a very foul smelling, purulent sputum.

He gives a history of having had during the two weeks previous to this time twenty-one hemorrhages. Has no pains in chest. Has lost about 20 lbs. in six weeks. He also states that he has had more or less of a severe cough for the past four months. Previous to that time was perfectly well.

Past history: Pneumonia, 31 years ago, sick about two weeks. Syphilis, 1905, initial sore on penis. Treatment consisted of inunctions and internal medication, continued only for three weeks. Then took five bottles of some patent preparation. He has had absolutely no treatment since that time.

Family history: Father living, age 84. Mother died at age of 45 of pneumonia. No tuberculosis in family.

Personal history: Married 31 years, five healthy children. Occupation: Bartender. Drinking habits are moderate, although he has always been associated with the liquor trade. Infected his wife with syphilis shortly after he contracted it, eight years ago.

Examination showed well nourished man of 51 years, slightly anemic, temperature 100°, pulse 80, regular and full. No skin eruptions.

Regional examination: Head and neck, negative. Scalp, negative. Eyes show sluggish pupils, but not Argyle-Robertson reaction. Nose, negative. Ears, negative, except for scar over the left ear due to injury received in a fight many years ago. Mouth and throat negative. Neck shows no glandular enlargement.

Chest: Inspection, negative. Palpation: Increase of tactile fremitus over area of about the size of one's hand, over the right lower lobe posteriorly. Percussion of apices negative; dullness over the above-mentioned area, with hyperresonance around the border. Auscultation: Bronchial breathing over the above-mentioned area, together with moist râles, and signs of cavity formation, otherwise chest is negative.

Abdomen: Liver, stomach, spleen, intestines, etc., entirely negative.

Genital: Scar on penis showing site of old chancre, otherwise negative.

Arms and legs: Negative.

Nervous: Complete absence of patellar reflexes. Shows Romberg's sign slightly, otherwise negative.

Urine examination: Reaction, acid; specific gravity, 1,022; albumin absent; sugar absent, microscopical negative.

Sputum examination: Repeated examinations of the sputum, six in number, made by me, showed total absence of tubercle bacilli. The patient informs me that he had also had his sputum examined in other cities at various times, always with a negative result. Moro skin reaction was absolutely negative.

Diagnosis: At first the case was regarded as one of tuberculosis. After I had seen the patient three times he moved to his home at Bushnell, Ill., and placed himself under the care of Dr. Geo. Duntley of that city.

*Read at a meeting of the Peoria County Medical Society, June 3, 1915.

On a visit to this city, Dr. Duntley and I discussed the case and concluded to put him on antisyphilitic treatment, thinking possibly that it might be a gumma. Our diagnosis was based on (1) Repeated absence of tubercle bacilli in the sputum. (2) Loss of knee reflexes and sluggish pupils as evidence of syphilitic involvement in other organs. (3) Physical findings absent in both apices and present only in the lower lobe of the right lung.

These points leading to the diagnosis, we hoped to corroborate them by the therapeutic test.

Treatment: The patient was put under treatment of sodium cacodylate, 3 grains administered hypodermically every day for a time, then every second day, by his physician in Bushnell. After a few injections he returned to Peoria and I continued the same line of treatment. After about 15 injections a marked improvement was noted in the patient's condition. His hemorrhage entirely ceased, his sputum became less, and finally his cough disappeared. Examination of the affected area of the lung at this time showed no moist râles, no harsh breathing, and only a small amount of dullness present.

The patient has remained in Peoria ever since that time and I have had frequent opportunities for examination. A recent examination of the lung shows only a few, faintly heard moist râles, over the area which was affected, which I have concluded to be due probably to a bronchiectatic condition in some of the smaller bronchial tubes, due to contraction of scar tissue forming at the site of the old gumma.

There are no changes on inspection, percussion, or palpation. The patient feels fine, has no hemorrhages, and has gained much weight, has no cough and no pains. He has, however, developed a typical Argyle-Robertson pupil, marked ataxia, and has occasional tabetic lightning pains.

The Wassermann test, which was not available on account of financial conditions at the beginning of treatment, but which was done after the patient's recovery, showed a positive reaction.

The patient is in great fear lest his condition return and I give him occasional courses of injections of sodium cacodylate, which in this case has proven very effective.

In olden times, prior to the discovery of Koch's bacillus of tuberculosis, cases of pulmonary tuberculosis were sometimes designated as syphilis, most of which were undoubtedly tubercular.

Virchow, in 1865, states that authors of the seventeenth and eighteenth centuries spoke frequently of phthisis, as lues venerea, and of its cure by antisyphilitic measures. Others, and especially Laennec, opposed this view, holding that tuberculosis was the sole cause of phthisis. However, it was not doubted that syphilis of the larger air passages existed, especially syphilitic laryngitis, but they hesitated long in believing that true syphilitic phthisis could exist.

In 1851 Depaul described the lungs of congenital syphilitic children, which on section showed nodules containing pus. Virchow, however, regarded these as a form of pneumonia and not syphilitic.

In 1862 Virchow had a case in his clinic, on which an autopsy was held, which showed syphilitic conditions of the tibiæ, subcutaneous tissues, lungs, and pleura. On section these lungs were found to contain multiple nodules, the largest being the size of a walnut, with softened centers, oftentimes bronchiectatic cavities being found. This case, together with a few cases of congenital syphilitic infants, showing nodules on the pleura or in the lung substance around the bronchi, which were found to be syphilitic, convinced him of the possibility of syphilis attacking the lungs.

White hepatization of the lungs, an affection found in congenital syphilitic infants, was described by Virchow in 1847, also by Weber in 1842.

In 1854 Hecker was the first to show the relationship of this to syphilis, and later Lorain and Robin found the same condition of white hepatization in a case of pemphigus syphiliticus, which went to autopsy.

According to Dieulafoy, syphilitic conditions of the lungs are divided into the following classes, according to their chief manifestations: (1) bronchopneumonia of a tuberculous aspect; (2) cavities, simulating phthisis; (3) gangrene; (4) fibrosis of the lungs, with dilatation of the bronchi.

He states that he has found syphilis to attack the lung only in the later stages, the bronchial involvement always being an earlier manifestation.

Pathologically, the involvement may be in the form of gummata, diffuse syphiloma, or fibrosis.

Dieulafoy makes the following classification of the various forms of syphilitic affections of the lung:

1. A form with an acute course, very rare, is described, exactly like acute pneumonic phthisis. This involves nearly always the right side, and is diagnosed only by the presence of other syphilitic lesions and continued absence of the tubercle bacillus in examinations. It is very rare and while it should be mentioned, is of such great rarity as almost to be disregarded.

2. Diffuse syphiloma of the lung, or syphilitic bronchopneumonia, occurring almost always in the earlier stages.

3. Syphilitic gummata, resembling chronic tuberculosis. These cases are similar to the one reported by me in this paper. Dieulafoy has found these patients to have little fever, a good appetite, little wasting, frequent cough, some dyspnea and pain, purulent expectoration, and occasional hemorrhages. In the late stages of the disease the physical findings are those of cavities, with bronchial or cavernous breathing. This form of pulmonary syphilis occurs most often in the lower and middle lobes of the right side of the chest.

4. Pulmonary syphiloma with fibrosis or sclerogummatous lesions. In this condition the lung at autopsy is found hard on section and palpation, the pleura is thickened, and on its surface is found cicatrices, similar to a syphilitic liver. Gummata may coexist and be found at different places throughout the lung. The symptoms of this condition are those of chronic bronchopneumonia and bronchiectasis, with no preexistent cause—such as pertussis or measles.

5. White hepatization—a rare condition, found in syphilitic infants, which will be only mentioned and not taken up completely in this paper.

6. Syphilitic gangrene of the lung—an extremely rare condition, which is reported in two or three autopsies.

7. Syphilitic pneumopathy, or the coexistence of pulmonary tuberculosis. It is a well-known fact that syphilis predisposes to tuberculosis.

James Nevins Hyde states that the lung may be the seat of syphilitic infiltration, affecting usually one side of the chest. Gummata very rarely form in the apex, but are found in all other parts of the lung. They consist of grayish, semisolid masses, varying from pea to hen's egg size and surrounded by a fibrous capsule and later undergoing caseation. Softening progresses and finds exit in a bronchus, or resorption may take place, leaving a fibrous mass with a cheesy center. The pleuræ and bronchi are either involved in the same process or exhibit irritating effects of the pulmonary neoplasm.

Microscopically, Hyde has found the center to

consist of granular connective tissue in process of degeneration, and refractive granules. External to this is fibrous tissue. Around the whole is small cell infiltration. Sometimes a protective connective tissue capsule is formed, but in cases in which the action of the virus is intense, necrosis occurs before this capsule has time to form.

Osler in his "Modern Medicine" gives the following description of acquired syphilitic lesions of the lung:

1. Gummata. These are rare, involve the lobes and lower lobe most frequently. They are hazelnut to hen's egg in size. They soften and break into the bronchi or may undergo sclerotic changes, leading to shrinkage of the lung and bronchiectasis.

2. Bronchopneumonia. Osler refers to an autopsy described by Delephine and Sisley, in which an enormous gumma of the right lobe of the liver was found, pushing up the diaphragm, to which it was adherent, extending through and involving the lower lobe of the lung. There were patches of a caseous pneumonia and others looking like a catarrhal or bronchopneumonia, with which findings there was also sclerotic induration. This lesion was an involvement by direct extension and is not a true bronchopneumonia.

A diffuse infiltration is described by Rollet and Schmitzer, probably of syphilitic origin.

3. Sclerotic Patches and Chronic Interstitial pneumonia. At the root of the lung especially and also extending throughout the tissues are long strands of fibrous tissue mapping out the lobules. This is called the pneumolobulation of Virchow. There may be bronchiectasis or cavity formation. This condition often occurs associated with gummata.

Osler describes a few autopsies in cases in which syphilitic conditions of the lungs were found, which will merit mention. One, on a patient dying of interstitial nephritis, showed the pneumolobulations of Virchow, although very few pulmonary signs had been noticed during life.

In another, the initial symptoms were cough, dyspnea, and hemoptysis, and had been treated as tuberculous in the out-patient department. There were weakness and wasting of the left arm; impaired resonance and numerous râles at the left apex and the base of the right lung were the only physical signs. The patient died suddenly of pulmonary hemorrhage.

The examination disclosed the apex of the left lung consolidated, and section showed a caseous mass surrounded by scar tissue. In the right lung there were many caseous masses surrounded by fibrous bands. In the center there was a cavity, not bronchiectatic, which was filled with blood, and opened into a bronchus and also into a branch of the pulmonary artery.

Fowler and Goodlee state that gummata occur mostly in the lower lobes, often near the root of the lung, and more often in the substance than on the surface.

They have found pulmonary gummata to be of a gray color, presenting a smooth appearance, later becoming of a yellow color, firm and dry. The contents may be discharged, but they have found this to be rare in comparison with the occurrence of similar change in tuberculous masses. They have found them to tend, not like skin gummata, to necrosis, but rather toward scar tissue transformation, with puckering of the lung and pleura. They may become calcareous. Robinson reports an autopsy on a patient who died, showing symptoms of severe thoracic pain on the right side of the sternum, cyanosis, anasarca, and dyspnea. The lungs were found collapsed, airless, no crepitation, with five areas of consolidation, which were dry, airless, and of a grayish color containing yellow patches of firm consistence. No fluid was present. Elsewhere the lungs were slightly moist and crepitant and the bronchial mucous membrane was pale and smooth. The anatomical diagnosis was multiple gummata of the lungs based on a composite picture of gross and microscopical findings, together with: (1) Multiple nodules in middle and lower parts of the lungs, with apex uninvolved; (2) acute internal lesions of vessels within these nodules, and absence of tubercle bacilli; (3) syphilitic aortitis and aneurysm.

Councilman has made exhaustive microscopical studies of the syphilitic lung processes. He has found the essential process to be the production of gummata, together with pneumonitis and fibrinous exudation, also a fibrous change in the alveolar walls, the whole subsequently undergoing caseation.

The first step in the process of caseation is hyaline degeneration of the capillaries of the affected area, then atrophy of the alveolar walls. The alveoli become distended with large pale epithelial cells and the fibrin cells undergo hyaline degeneration. The capillaries are converted into rigid tubes and the lumen is much reduced. Similar changes occur in the small vessels. Around the bronchi and arteries is a formation of connective tissue, the alveolar walls become thickened. The whole then undergo necrosis and a caseous looking mass results. Giant cells, according to Fowler and Goodlee, are not so commonly found as in tuberculosis.

Symptomatology.—According to Osler the symptoms are uncertain. Practically they are those of tuberculosis, but with the physical signs more commonly at the root of the lung and toward the base and nearly always absent in the apices. The clinical features are those of chronic bronchiectasis or fibroid phthisis. With tracheal or bronchial stenosis dyspnea is a very prominent feature.

Fowler and Goodlee describe the following train of symptoms in these cases: Cough. The earliest and most prominent symptom and due to changes in the lung itself. Dyspnea varying in severity. Hemoptysis is not of especially frequent occurrence, but may prove fatal. Expectoration of a profuse, purulent, and offensive nature. Fetid odor is common in advanced cases in this disease. No tubercle bacilli are found on repeated examinations. Pain is not a prominent feature. Emaciation is not so extreme as in tuberculosis. Night sweats are often present. Pyrexia may be considerable or may be absent. The physical signs are those of consolidation and excavation, as determined in the usual way. In this connection it is interesting to note the case reported by Teuxara of Lisbon, Portugal, of what seemed to be ordinary bronchial asthma, with gray and thick sputum. The case was diagnosed as syphilitic on account of the coexistence of ulcers on the leg. Under syphilitic treatment the condition entirely disappeared.

Diagnosis.—Fowler says that in suspected cases we must show: (1) Undoubted evidence of a syphilitic infection. Of course this would now include a Wassermann in suspected cases; (2) Absence of tubercle bacilli from the sputum on repeated examinations; (3) Presence of syphilitic tertiary manifestations in other organs, especially in the viscera.

Stanley, writing in the *British Medical Journal*,

states in regard to the differential diagnosis from tuberculosis that the signs and symptoms must be most carefully analyzed. Hemoptysis, according to him, which occurs with syphilis of the lung, suggests a slow ulceration of a mucous surface and lasts for several weeks. Cough is irregular and may be paroxysmal. Pyrexia, wasting, and sweating may at times occur. He states that the rapid disappearance of these symptoms under antisyphilitic treatment is characteristic and striking. The physical signs in syphilis of the lung are more irregular. His observations have been that the disease occurs in the intrascapular region, especially on the right side, although sometimes it is not confined to the base or central part, and it even may be scattered.

He considers a diagnosis of syphilis of the lung justified with the above symptoms and signs, especially with the history from infection, the occurrence of other visceral lesions, and the absence of tubercle bacilli on repeated examinations. Coexistence with tuberculosis is possible and a lung with beginning syphilitic lesions is probably more susceptible to tuberculosis. Stanley states that early recognition of this syphilitic affection and its appropriate treatment may avoid this later complication. The commencement of a tuberculous process in syphilitics should be the indication for the beginning of a vigorous antisyphilitic treatment.

It also may be noted (Fowler and Goodlee) in this connection that (1) Syphilis affects the base or central part, while tuberculosis affects the apices mostly; (2) Both undergo caseation, but tubercles break down more frequently than gummata; (3) In advanced cases there is often stenosis of the trachea or bronchi in syphilis, while this is absent in tuberculosis.

Prognosis.—In the earlier stages great improvement may be effected by proper antisyphilitic treatment, but after stenosis and dilatation, fibrosis, excavation, and permanent changes of this character have occurred, it is not to be expected that they will disappear.

Treatment.—Most of the older authors pinned their faith on the mercury and iodide treatment and had some measure of success. My own case showed a very good improvement on sodium cacodylate treatment, as mentioned before. I believe that salvarsan in these cases would be indicated, unless the patient were in an extremely weak physical condition, when it would seem that some other means might be preferable.

Conclusions.—1. Syphilis of the lung, while a rare condition, does occasionally occur.

2. All cases of suspicious lung involvements, especially those resembling tuberculosis, and repeatedly showing absence of tubercle bacilli on careful microscopical examinations, should be regarded as possibly syphilitic.

3. Especial care should be taken in cases showing the above mentioned signs and in which no physical findings occur in the apex, but only the base of the lungs. These cases should be regarded as sphilitic.

4. In cases in which syphilis is suspected treatment should always be instituted at the earliest possible moment in order to prevent the permanent changes of fibrosis and stenosis of the bronchi.

5. In a known syphilitic, who is also known by microscopical examination to be afflicted with tuberculosis, I believe it always advisable to administer some appropriate form of antisyphilitic treatment along with the treatment for the other condition.

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THE MATERNAL INSTINCT A FACTOR IN THE PRENATAL DEVELOPMENT OF THE EPILEPTIC TYPE OF NERVOUS CONSTITUTION.

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Although the epileptic type of nervous constitution[1] is fully determined before birth, the direct inheritance of epileptic attacks in the children of epileptic parents is rare (17 cases in 2000, Starr[2]). Neuropathic stock predisposes only in a general way. Cousins are more frequently affected than brothers or sisters. Specific factors must determine the epileptic child of the family which did not enter into the development of his non-epileptic brother or sister who may however reflect the general neurotic heredity in various other ways, as in hysteria, neurasthenia, psychasthenia, or tic.

The epileptic occurs with a frequency not generally suspected. There is one pronounced epileptic for every 400 of our population (Church and Peterson[3]) but many are known only to their families. No race under the sun escapes. The specific factors that determine their development are therefore of a fairly frequent and ordinary nature.

The absence of all pathognomic physical signs of epilepsy should earlier have directed our search more confidently towards a psychogenic origin of this disease. Gowers,[4] from a consideration of the pathological anatomy of epilepsy, made statements as far back as 1888, which implied the prediction that our explanation of epilepsy must come from the realms of psychic occurrences, whose only changes are of a functional nature. Some of his words in speaking of this point are "The changes in the nerve centers are probably of that fine kind which is revealed only by altered function and eludes the most minute search."

The epileptic manifestations are reactions to disturbances in the psychic sphere where our instincts and emotions have their foundation and play. Stoddard[5] of London in 1909 summed up some existing views by writing, "Broadly expressed, one would say that the essential feature of the epileptic is that there is a periodic loss of volitional control of the instincts and emotions." He quotes Aschaffenburg as asserting that, "The specific feature of the epileptic character is a periodic fluctuation of the affective tone." The most prominent abiding features of the epileptic personality are exaggerations and discrepancies in his emotional domain. His manifestations probably result from an imperfectly developed instinct.

The essential motive in all genuine epileptic fits is believed by Clark[5] to be an unconscious striving on the part of the epileptic to return to intrauterine life. Hoch and others say that this motive has to be accepted. My study urged consideration of this view.

The epileptic feels better after a fit. Peace is restored to a restless subconscious or, as Stoddard says, the fit seems to "clear the air." To the subconscious motive or desire of the epileptic the fit serves a purpose and has a significance. Such a subconscious desire in the epileptic appears to be instinctive. The instinct is a perverted one for it directs a return to intrauterine life, which may be interpreted as a desire of the epileptic not to be in or of the world. His return is represented periodically by the epileptic manifestations and therefore is gratifying to his unconscious desire. As this desire never could have been in the consciousness of the epileptic it was regarded as one not essentially of his own making, and my investigation as to its cause was therefore directed to the parents of epileptic children.

The nervous state of a pregnant woman is a matter of material significance to the makeup of her child's nervous constitution. Dana,[6] in speaking of the etiology of epilepsy, says that "Powerful emotions during pregnancy have some influence." It seemed worth while, therefore, to determine whether or not some particular emotional factor or imperfect instinct could be uncovered that acting during pregnancy influences the nervous anlage of the developing child and is responsible for the deformed or dwarfed emotional and instinct equipment that prompts the strange expressions of the epileptic constitution.

A case of pure psychogenic convulsions studied with Dr. Ames and reported at the Neurological Section of the Academy of Medicine in December, 1914, taught several lessons confirmatory of Clark's hypothesis and instructive to further advance.

The patient was a girl 18 years of age who entered the Neurological Institute November, 1914. She had been subjected for four years to violent one-sided convulsive seizures occurring periodically like those of the epileptic and continuing till complete exhaustion set in. There was absence of hysterical stigmata but the condition responded to psychoanalysis. For details the reader is referred to the publication of this case in the MEDICAL RECORD[7], but instructive points were brought out by the psychoanalysis of this convulsion which can be enumerated as follows: (1) The convulsion was identified as a reestablished behavior phenomenon. (2) The reestablisment of this behavior was unconsciously desired for it served a perverted instinct. (3) The behavior represented that of a time only a few years earlier in the patient's life. (4) A revelation of the desire was appreciated by the patient. (5) When the desire was recognized and relinquished, its fulfillment, the convulsive attacks did not reappear.

A psychogenic origin of the epileptic should, apart from the first point agreeing with Clark's hypothesis, agree in a measure by its other points with those of this psychogenic convulsion. It is Clark's idea that the epileptic fit is the reestablishment in a violent form of the movements of a child in utero and has the accompanying unconscious state of that time. The simple loss of consciousness of a petit mal attack is a less energetic attempt at the same performance. To me it seems positive that something must happen during the unconscious spell that is gratifying to the unconscious motive but which the conscious mind would not approve or tolerate. Unconsciousness and amnesia allow this performance to continue unchecked.

The epileptic type of nervous constitution would seem then one possessed of a perverted instinct that desires the fit, thereby agreeing with the second point. The third point also would be fulfilled if we wish to regard the intrauterine life as the time of the epileptic's life represented by his fit. The last two points indicate that if the nature of this instinct could be revealed to the epileptic and he could perceive it with his conscious reasoning faculties as a subconscious desire for his convulsions this desire could be relinquished and its consequences would cease.

Among my patients during the past few months at the Neurological Institute an interesting fact was revealed. The epileptic was repeatedly found to be the child that before birth was most fervently unwelcome. He was the child that during this early developmental period was deprived of a proper emotional and instinct endowment. In some instances the attitude of the mother is not merely a lack of welcome but a mental rebellion and a hate for her unborn offspring. The measure in which this factor is present during pregnancy and the associated measure of fright, grief, worry, chagrin, mental or moral strain or shock, the common starting points of psychogenic disease, aggravated, of course, by neurotic heredity seem to determine the strength of the peculiar characteristic tendencies that are imparted to and decide the epileptic type of nervous constitution.

Sometimes the maternal instinct in the mother seemed quite lacking but often there was probably only a temporary perversion of this instinct. In some families of several children there was only one pregnancy which was unwelcome and this turned out to be the epileptic child. A defectively developed instinct seems to be contending with the epileptic from birth. Constantly struggling with this defective instinct he goes down before it at times of instability of his nervous organization, in early life and adolescence easily, but if then escaping succumbs at times when his nervous system is racked by a nervous strain, by some disturbing psychic experience or by the continual irritation of a pathological brain condition or other organic trouble.

"The rise of the egoistic sentiments and decline of altruistic" in the epileptic indicate only a natural striving for balance, or struggling compensations by his conserving forces for the defect in him of instincts, advantageous to his fellowman. He feels the extra need to think only of himself.

Epilepsy is not, properly speaking, directly heritable. The neurotic element supplied by heredity would seem to play only a general role in conditioning an unnatural feeling of the mother toward her unborn child. Chance existing reasons of environment or circumstance play also their important part at times in such an attitude of mind. It is readily understood why neurotic stock should by affecting instincts play its part in this cause for the development of the epileptic.

Such an explanation makes it clear why the epileptic is common to all races, all ages and in the frequency that exists, his determining characteristics being the result of a psychic state possible to any woman bearing a child and needing no other

specific complement than could be supplied by her own distorted thoughts, emotions, instincts, and desires.

The very interesting views of Freud and the other leaders of the new psychology trace all manifestations of hysteria to mental processes more or less morbid, in which motives of shame have resulted in repressing the consciousness of certain experiences which thus become unconscious or subconscious. In this state they tend to symbolize themselves and hysterical manifestations arise. In the case of the epileptic the morbid mental process of the mother must work its disturbing effect by influencing the instinct makeup of the child with which she is pregnant.

The subconscious desire or instinct that prompts the convulsion can be regarded as a psychophysiological system which becomes dissociated. The dissociated system present in the subconscious and coming to the upper strata of consciousness becomes manifested with a very intense sensorimotor energy. It manifests by liberating all the energy it possesses until fatigue and exhaustion set in. Sidis[9] compares the liberation of a dissociated system with its overwhelming energy to the eruption of an underground volcano, this liberation giving rise to temporary attacks or seizures by subconscious states of the whole field of upper consciousness. He says that understanding the energy which the dissociated subconscious system manifests in this way is not surprising that it appears almost supernatural and by the superstitious ascribed to diabolical possessions. Impulsive insanities and psychic epilepsy are recognized already as really being due to this mechanism.

A quotation from Sidis in speaking of the threshold and mental systems shows the way to control an undesired subconscious system. "Dissociated systems present impulsiveness, because of lack of associated counteracting systems. The only way to diminish the overpowering inpulsiveness with which the dissociated subconscious systems make an onset in their rush into the personal consciousness is to bring about an association with counterbalancing or inhibitory controlling conscious systems, to work the dissociated system into the tissue of the personal, controlling consciousness." When a system is thus brought into consciousness or the whole situation perceived by the patient the seizure vanishes completely.

At the present writing it seems that the manifestations of the epileptic result from the promptings of an instinctive and unconscious wish. This fact would place the epileptic in almost the same category as the hysteric whose manifestations, whether they be paralysis, blindness, or convulsions, are admittedly prompted by an unconscious wish. Psychological treatment of the epileptic seems strongly indicated.

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THE SUSTAINED FAILURE IN THE PROBLEM OF TUBERCULOSIS.

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"NOTWITHSTANDING the immense sums expended, it is doubtful whether we are getting our money's worth in lowered death rate, which is, after all, the final criterion by which the success or failure of the anti-tuberculosis campaign must be determined." The above is quoted from an editorial of March 6, 1915, in the *Journal of the American Medical Association*, entitled "The Sustained Interest in the Problem of Tuberculosis." Paraphrasing the above, I should say: Notwithstanding the immense sums expended, it is certain that we are *not* getting our money's worth in lowered death rate, which is, after all, not the final criterion by which the success or failure of the anti-tuberculosis campaign, must be determined, since the reduction of the death rate has been obtained entirely by curing the victims of the disease by improved methods of treatment and not by actually reducing the number of manifest cases.

Landis says: "We cannot prevent a disease by curing its victims," but the lowered death rate from tuberculosis has so far tended toward persuading us to believe that we can. It is true that we have cut the death rate in half, but, in our satisfaction we overlook the fact that the number of cases is constantly increasing.

Ten years of hard work, two hundred millions of dollars, and still in no place in the world has this disease been reduced in numbers. Still the cry is for more beds, more hospitals, more milk and eggs, more nurses, and more money. Governor Craig, in his annual message, estimates that the entire revenue of the State of North Carolina would be insufficient to care for all its tuberculous victims in sanatoriums.

If our efforts for the past ten years were really successful, if instead of merely palliating we had really prevented, there should be less need for help instead of more; our hospitals should have fewer beds for tuberculosis patients and the number of cases should be markedly decreasing. Where is the fault? Are the fundamental ideas governing our campaign inadequate?

Tuberculosis is still costing the United States over nine hundred million dollars a year. Does this look like success? Is it not time to question our theories and see if they suffice?

What are these theories? First, we believe that we can protect our people against tuberculosis by protecting them against infection. Second, that we can prevent infection by isolating open cases and by promoting their recovery. Can we protect our people against infection? If so, we must begin with the children, for by the time they reach maturity, they are all infected. Studies of infants six weeks old, with not a trace of tuberculous lesions, show the presence of tubercle bacilli and these

studies teach us that non-tuberculous babes, of non-tuberculous parents, in non-tuberculous homes, have tubercle bacilli resident within their bodies just as they have colon bacilli. What is the source of these infections? Open cases, we answer, with the promptness and courage characteristic of ignorance. Is this true? Is it likely that every child has been exposed directly or indirectly to contagion from open cases? And, if so, is it probable that we can prevent it? Is the tak of safeguarding every moment of the lives of twenty million school children for this year and all the years to come, a practical undertaking? Certainly not, therefore we must gather in the open cases so that they cannot infect our children. But suppose open cases are not the sole source of danger? Suppose there are other sources, at present unknown and undreamed of, against which we are powerless to contend. Suppose open cases are an infinitesimal source of supply compared with the universality of the infections. Hillenberg found that from 25 to 70 per cent. of all the children in an exceedingly healthy hill district were infected with tubercle bacilli, although there had not been a case of tuberculosis in that district for ten years and the disease was almost unknown. Open cases could not have been the source of these infections, what was? If the entrance of tubercle bacilli into the bodies of children is a natural and inevitable phenomenon, then their safety can never be secured by attempts to protect them against an infection which has already occurred. Safety does not lie that way, but must be sought in preventing the consequences of these infections. The entrance of tubercle bacilli into the bodies of our children is inevitable and their residence is constant and can never be prevented, neither now nor in all the years to come. This menace to the health of our nation will always exist and the problem is not how to prevent infection, but how to prevent the development of tuberculous processes. We can only deal with the consequences of these infections since we can never prevent them. How can we prevent these infections from becoming dangerous by developing into tuberculous processes?

Our social workers will see that sanitary, housing, labor, moral and political problems are solved. All good is against their development, all bad favors it, but the best conditions of existence do not suffice for adequate protection. Nothing does and nothing can. In spite of the best of life, tuberculous processes will constantly and hourly develop with us even as they do with the lower animals, who are ideally protected. We cannot prevent infections, and we cannot prevent their development, but we can realize that the greatest danger from tuberculous processes is their lack of manifestations and that, in order to detect them at the earliest possible moment, we must not wait for them to thrust themselves upon us but periodically do the best we can to determine their presence or absence. Instead of waiting for a case to become manifest, we should regard the loss of lung substance sufficient to cause manifestations as evidence of neglect or incompetency. Let us change from attempting to prevent infections to attempting to prevent structural changes sufficient to cause manifestations. Since each child is menaced, each child should be watched. Our present methods depend upon manifestations. No manifestations, no examinations. This is all wrong, because the apparently healthy child may be in equally great or even greater danger than his sickly brother. The "pretuberculous" child, the child that is "tuberculizable," the child offering any suggestions of ill health, will in the future be safe from tuberculous processes because our perceptions of these dangers will be so quickened, our comprehension so enlarged that we shall work with immense precision to detect and weed out these threatened ones. As soon as the profession as a whole comprehends the real nature of tuberculous processes and their diagnosis by negative findings, the suggestive children will be saved, but the crops of consumptives for the years to come, for 1920 and 1930 and on all through life, are being silently prepared to-day among apparently perfectly well children. Children below par will attract attention and their tuberculous beginnings will be discovered and overcome so that they will not furnish the cases of the future. Tuberculous processes are, and must always be, perpetuated in well children and adults, because good health is requisite for concealing their development.

When the health of the child is not sufficiently affected to attract attention, the danger is masked, screened, and concealed until it is ready to strike. Each child is exposed to this danger. Tuberculous processes may develop any day in any child, not because of exposure to open cases, but because this constant residence of tubercle bacilli is a perpetual, potential source of danger from within. The only way to reduce the number of manifest cases of tuberculosis is to not permit them to become manifest. To seek and find and overcome. The world of well children and adults must be explored and the lurking dangers exposed before we can protect the future of our people and this can best be done by competent periodical examinations of our school children. New York City is spending two million dollars a year in its tuberculosis work and getting no results in reducing the number of its cases. The problem becomes more vast each year and the expenses more impossible. Suppose a study could be made of the pupils in one public school in one of our large cities. If five hundred of the children in one school could be regularly examined by an enthusiastic expert for five or ten years, what would it cost and what would be gained?

It would cost for an enthusiastic expert for

one year	$2,500
For *x*-ray and laboratory work	2,000
For incidentals, office expenses, etc	500
Total	$5,000

What should we gain? Beginning with the fall of 1915, all the children threatened with tuberculous processes among these five hundred would be weeded out, fed, put in open-air schools and protected. Henceforth, these children would teach us the efficacy or failure of arresting tuberculous processes at the earliest possible moment. The records would inform us of the percentage of manifest cases later on. Suppose these cases remained well, should we have reduced the future crop? Would this be the first success in lessening the number of manifest cases? By keeping track of our work for five or ten years we should have a sustained, comparative study of tuberculous processes in well children which would furnish an immense amount of comprehension as to their nature and the problem of the tuberculosis of adults might be solved at the same time. Which is more important, the reduction of the death rate or the reduction of the number of cases?

MEDICAL RECORD.

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SOME INTERESTING PHENOMENA ASSOCIATED WITH MIGRAINE.

MIGRAINE is a frequent and interesting disease, and much has been written by various authors in the past concerning its possible relationship to epilepsy, in which it has practically been proved that clinically migraine and epilepsy are first cousins. But there are many neglected phases of this condition which are surely deserving of wider recognition than they have as yet received. And in a disease which is of such great frequency as hemicrania, this information should be further popularized. In most cases of migraine the manifestations consist of nothing more than recurring periodic headache of a varying degree of severity, often associated with gastric distress, blurring of vision, and scotomata, frequently colored. But we know that in some cases we also find that hemianopsia, hemiparesis, hemiparesthesia, astereognosis, hemiplegia, anesthesia in the distribution of the fifth nerve, ophthalmoplegia, recurrent facial palsy, aphasia, and even mental disturbances may accompany and exist as sequelæ of the migrainous attack. In the great majority of cases these phenomena of a focal nature are transitory, and it is believed that they are due to temporary vascular spasm, a theory which is supported by the clinical history of such cases.

Now, although migraine is as a rule harmless, J. Ramsey Hunt of New York has recently pointed out (*American Journal of the Medical Sciences*, September, 1915) that paralytic and other persistent sequelæ of migraine also occur. These permanent focal symptoms are rare, but they may be very serious. They include facial palsy, ophthalmoplegia, organic hemiplegia with aphasia, hemianopsia, and optic atrophy. Before becoming permanent, as sometimes rarely occurs, these symptoms reappear in recurrent attacks, each of which is transitory, but at times becoming more and more prolonged until finally a permanent attack may ensue. It is evident that these atacks must have some pathological basis, which probably is essentially a vascular spasm. Nor must it be forgotten that vascular accidents, such as hemorrhage and thrombosis, are much more liable to occur in one who, in addition to his migraine paroxysms, is suffering from some degree of cerebral arteriosclerosis, than in one whose cerebral blood-vessels are perfectly normal.

In order to make a diagnosis of persistent and other permanent sequelæ following migraine, or of what may be called migraine paralysis, one must be certain of a definite clinical history of true, essential, or idiopathic migraine, and of the direct relationship of the paralytic condition to the migrainous attack. So-called warning symptoms, consisting of recurrent transient ptosis, diplopia, hemianopsia, hemiparesis, aphasia, and Jackonian seizures are not infrequent. Anatomically there is found a disturbance in the region supplying the area in which function has been lost, the pathological lesion in the permanent paralyses accompanying and following migraine consisting of vascular thrombosis (as a rule) or even of vascular hemorrhage—in other words, vascular lesions of a permanent nature. In all such cases the blood and spinal fluid should be subjected to a complete examination, and syphilis should be excluded as an etiological factor.

THE CURABILITY OF TUBERCULOUS MENINGITIS.

FROM time to time there is reported in medical literature a case of complete recovery from a disease in which the diagnosis of tuberculous meningitis has been established both clinically and bacteriologically. The importance of making a critical analysis of every report of this nature is quite obvious. There can no longer be any question as to the authenticity of many of the cases of recovery from tuberculous meningitis so far recorded. That these cases constitute an almost infinitesimal proportion of the total number of cases of this disease must be admitted, but they provide the one bright ray of hope in stimulating whatever therapeutic efforts may be at the disposal of the practitioner.

An example of the few cases referred to above is perceived in the case reported by Ferdinando Fonzo in *La Pediatria*, May, 1915. The patient was a girl eleven years of age belonging to a tuberculous family, who for a year and a half prior to the illness for which she came under observation had suffered frequently from an irregularly remittent fever with occasional chills. The patient was first seen by the author on the seventh day of an attack that was ushered in by a chill, and that was accompanied by a fever with slight remissions, and during the first few days by a slight cough. On the fifth day of the disease there was first noticed a clouding of consciousness, and there were then manifested involuntary movements of the facial muscles and of the arms and legs, strabismus, and seizures of vomiting. Physical examination revealed the characteristic objective signs of meningitis. By lumbar puncture there were removed under moderate pressure 40 c.c. of a limpid cerebrospinal fluid, in which there formed on standing a fibrinous reticulum, and in which on microscopic examination there were detected the typical acid and alcohol-resisting bacilli of Koch. Following the

performance of lumbar puncture the general condition of the patient improved, at the end of six days the sensorium was apparently normal, and fifteen days after the beginning of the illness the patient was regarded as clinically cured.

There can be little doubt that the above case was one of tuberculous meningitis. Fonzo interprets the initial symptoms as the expression of an influenzal infection in a patient harboring a latent tuberculosis. This period of latency would correspond to the first stage in Hamburger's classification, in which stage there are healed or latent lesions in the lungs or tracheobronchial lymph nodes. The second stage is characterized by the diffusion of the infection from these lymph nodes throughout the entire body, and the third stage by the development of ulcerative lesions in the lungs. According to this conception tuberculous meningitis would represent the transition from the first to the second stage. This transition, initiated by whatever cause, whether traumatic or infectious, breaks down the barrier of defence during the first stage. In the case reported by him Fonzo believes that an attack of influenza precipitated the general diffusion of the tuberculous infection.

THE TEACHING FUNCTIONS OF BOARDS OF HEALTH.

In recent years there has been a great increase of State and city health department pamphlets intended for the information of the public. It is encouraging to note that President-emeritus Eliot of Harvard University is a strong advocate of such work. He says that there is nobody to give Americans the sort of instruction they need about tuberculosis, alcoholism, venereal diseases, prostitution and diet, and to give it with authority, except the medical profession and the public health officials (*American Journal of Public Health or Social Hygiene*, September, 1915). This statement is well substantiated by the fact that tuberculosis continues to spread—thus showing that public opinion has not forced adequate control of this disease, although its infectiousness has been known and widely taught for a generation past. In regard to alcoholism it has not been brought home to the entire population that the habitual use and above all the abuse of alcoholic beverages reduces the productiove efficiency of the community. There is great room for improvement over the present ignorant way of dealing with habitual drunkards.

Public neglect and silence about venereal diseases are no longer justifiable, since recent discoveries have made the diagnosis more certain, and the treatment more effective. Interest should be quite as strong in these as in any other communicable diseases. The proper handling of venereal diseases by the public naturally leads to the question of how the public should treat prostitution. "Recent inquiries have demonstrated that more than half of the prostitutes in a modern city, or a rural community, are likely to be feeble-minded women." The public needs to be aroused on this subject. The remedies usually suggested, namely, license, regulation, and segregation, have failed in Europe and in Asia. It is essential that true information on this subject be given to the public.

"The ignorance of the American people concerning individual, family, and public hygiene is vast; and its consequences are deeply to be deplored. . . . The ignorance of the American people concerning the enjoyable, healthful, and productive use of foods is profound; and this ignorance results in immense waste, reduced industrial efficiency, unnecessary ill-health, and shortened life." The ordinary American eats too much protein. It is a proper function of health authorities to instruct the public on the nutritive values of various foods as well as to protect it against unsafe food.

President Eliot has rightly called attention to the need of more well-informed zeal on the part of all persons, if the power of preventive medicine to promote the public welfare is to be fully utilized.

BLEEDING FOR MADNESS.

The sanguinary old days when venesection was a panacea are to us now nothing but a curious history and while there are certain selected cases in which venous engorgement is a prominent feature and phlebotomy is indicated, still the physician who would travel around nowadays with lancet and basin, bleeding as he went, might be likely to find himself regarded as an anachronistic lunatic who were better behind bars. We are most of us familiar with the brief but bloody career of Gil Blas as a surgeon. Following the ingeniously simple therapy of his master he bled them and purged them and finally turned them over to the sexton.

After the ingenious psychology of the psychoanalytic school, the elaborate researches of what might be called the physicochemical school, and the meticulous theorizing of the endocrinous school, it must be quite refreshing for the alienists to turn to the simple little remedy for melancholia set forth by Dr. F. Lucas Benham in the *Lancet* for September 4. Benham would let out about a pint or so of the bad blood which is doing all the mischief and thus relieve the pressure on the brain. He says, "in meeting with a case of melancholia, especially one of rapid onset, where the brain is evidently oppressed and clouded and working with considerable friction, the practitioner's clinical instinct will suggest the employment of an efficient sedative which will enable the machine to run with more ease and less pressure." He hints that the prompt application of a little, sharp scalpel may prevent a suicide or a life-long incarceration in a madhouse. He tells of a young Englishman who came to him in Australia in a state of depression and was promptly relieved of about twenty ounces of blood. The young man was thus enabled to get rid of his ideas of suicide and wrote his physician later that he had entirely recovered and had enlisted and gone to the front. The question naturally obtrudes itself whether or not this is a form of suicide.

The writer recommends the more general adoption of venesection in depressed cases, but we cannot help feeling that this advice is based upon a too naive conception of mental disorder. To be sure, there may be cases of high blood pressure

where the symptoms would be relieved by a judicious phlebotomy, but it seems that the criterion should be that furnished by the sphygmograph and not a fanciful and obsolescent concept of mental disorder.

WHERE MEDICINE AND PEDAGOGY TOUCH.

MEDICINE is quite as much concerned with the prevention of disease, or the preservation of health, as with the cure of disease. Although the majority of the medical profession has been kept so busy with the alleviation of suffering that it has had very little opportunity to work actively in this field, it has never been conscious of any loss of interest. In fact, every physician feels that he is quite as much concerned with the preservation of health as with the treatment of patients. This feeling is inspired by the unwritten ideal of the medical profession which includes the prevention of disease.

Education is concerned with the perfect healthy development of both mind and body. The teaching profession is more fortunate than the medical profession in having a definite motto. This motto is "A sound mind in a sound body" and was given to it by the great educational theorist, John Locke. Everything that in any way bears either directly or indirectly upon the development of a healthy perfect mind is of great importance to the teacher. It should be no less so to the physician. It is here that the professions of teacher and of physician touch common ground in the realm of ideals. As a matter of fact the medical profession has not until recently been concerned with child psychology or the proper and healthful training of the mind. It is a field of science that has developed aside from medicine. Really the ideal of the teacher is so all-inclusive as to embrace medicine, especially preventive medicine. Or, to put it another way, we might say that the ideal is so broad that it really expresses the ideal of medicine. The motto, "A sound mind in a sound body," could serve for the medical profession quite as well as for the teaching profession, and medicine would be richer for having its aim so clearly stated.

If the teaching profession should charge us with over-reaching, we could remind it that its leader, John Locke, was a physician, and that it was with the insight he gained as a physician that he saw and expressed so clearly the ideal of the teacher, "A sound mind in a sound body." This is the ultimate aim of all medicine.

DOCTORS AS WAR PRISONERS.

THE articles of the Geneva Convention, adopted July 5, 1906, provide among other things that the belligerent who is forced to leave the sick and wounded in the hands of the enemy must also leave a certain proportion of medical attendants and equipment and that members of the Army Medical Service who have fallen into the hands of the enemy must continue their duties, but as soon as their service can be dispensed with, they must be sent back. Just how closely the provisions of these articles are being observed by the present combatants is, of course, impossible to ascertain although we hear complaints from both sides of violations of them. The German side of the question is voiced by the editor of the *Deutsche medizinische Wochenschrift* in his issue for June 17, who after calling attention to the above articles, complains that Germany is getting the worst of the bargain. He says that his nation has over 800,000 prisoners and has not nearly enough of the enemy's physicians to care for them so that an unjust tax is levied on its own military surgeons. He alleges that Russia has without exception retained every German surgeon captured although they have not sufficient German prisoners in that country to justify this. Speaking of the large number of Russian prisoners he states that it is particularly necessary to have Russian physicians to take care of them, partly because their knowledge of the language would facilitate their care and allow each doctor to do a good deal more work than is the case when interpreters are necessary and partly because the Russian is racially less susceptible to certain contagious diseases such as typhus than the German. Dr. Schwalbe, the editor of the journal mentioned, is, however, rabid in his hatred of everyone, belligerent and neutral alike, who does not subscribe in toto to the German views; in short, he is ineligible to membership in Dr. Meltzer's Medical Brotherhood, and consequently his testimony against the Russians is not to be accepted without corroboration from some more pacific source.

LUMBAR PUNCTURE FOR THE ENDOCRANIAL SYMPTOMS OF TYPHOID FEVER.

THE phenomena indicative of cerebral irritation seen in the early days of typhoid fever, such as headache, mental confusion, delirium, etc., constitute one of the most unpleasant features of this affection, since the patient must be constantly watched, and young, vigorous subjects often do violence to themselves. As a rule we have to depend on measures which reduce the fever, such as cold applications, for combating this condition. At a military medical evening held last March in Metz (*Deutsche medizinische Wochenschrift*, June 2) Schemensky reported excellent results from lumbar puncture in these cases. He had attributed the symptoms in part to increased intracranial tension, and the results of puncture showed this to be true for a large majority of the cases. Three patients with severe headache were completely relieved and of fifteen punctured for disturbances of consciousness nine were benefited. The six who did not improve had severe pulmonary or cardiac symptoms.

WAR AND ANTHROPOLOGY.

WHENEVER many varieties of mankind are brought together the local anthropologists, ethnologists, and philologists are usually found employing their gratuitous opportunities for study. This has been seen especially in world expositions. While warfare does not necessarily entail similar opportunities, the present struggle in Europe has given this chance, especially to the German scientists because of the motley character of the prisoners in the detention camps. Thus Buschan in a communication to the *Deutsche medizinische Wochenschrift* for June 24 improved a leave of absence by studying anthropologically seventy-five men selected from the following races: Caucasians (four different peoples), Koreans, Tartars, Letts, Esthonians, Basques, Bretons and Welsh. It was found that anthropological data of the Germans were defective for pur-

poses of comparison, and the author thus subjected numerous young German recruits to the same examination for control purposes. He believes that the government should request its medical men to make a mass investigation along the same lines.

News of the Week.

Casualties in the German Medical Corps.—The *Deutsche militärärztliche Zeitschrift* publishes the following report of casualties in the medical corps of the German army and navy for the first thirteen months of the war: Wounded, 437; missing, 125; captured, 95; killed, 119; died of wounds, 45; died of disease, 98; killed by accident, 20.

Dr. David Wheeler of Boston, formerly attached to the American Ambulance and more recently a belligerent in the Foreign Legions of the French army, was severely wounded in the battle of Champagne. A number of other Americans were wounded and thirteen killed in the same action.

Work of the American Ambulance.—During the first eleven months of its establishment the field service of the American Ambulance in Paris has transported 57,000 wounded from the front. The number of automobiles now engaged in this service is about 90, with 20 more machines attached to the hospital at Neuilly. The cost per trip per wounded man runs from 10 cents to 60 cents, depending on the length of the run and the condition of the roads. One supply and one staff machine accompany each of the units in the field, themselves composed of from ten to twenty-five cars. There have been no deaths among the drivers of the field ambulance, although they penetrate very near to the lines and are frequently under heavy fire. Additional cars are added to the field equipment as the fund grows. The number of beds in the hospital at Neuilly has increased from 175 to 600. The per diem cost is $1.32 for each patient, which is not considered high, regard being had to the increased cost of all necessities and to the fact that all the patients are surgical.

Typhus in Serbia.—Dr. R. P. Strong of Harvard, who recently returned from Serbia, where he was in charge of the American expedition fighting the typhus epidemic, is quoted as saying that the total number of deaths from tphus in Servia had been between 130,000 and 150,000. Practically every district was visited by the Commission's agents, who distributed supplies of medicines and disinfectants and instructed the inhabitants in preventive methods. Plants for the manufacture of medical supplies have been established in all the large cities. The work of educating the people in cleanliness and disease preventive methods was enormous, but it has been successful, and as a result conditions are in fine shape and there is virtually no chance of a return to former chaotic conditions.

Red Cross Nurses Killed.—The Russian Red Cross has published a list of forty-six Sisters of Mercy who are alleged to have been killed during Austro-German bombardment of Russian hospitals.

American Missionaries Expelled from Van.—Sixteen American missionaries from Van, Turkey, arrived in New York last week, after a long and perilous journey through the Caucasus and Russia. Among them were Drs. Clarence Ussher and George Reynolds. They report that the Turks, under the command of a European officer, bombarded the mission buildings, which were at the time flying the Red Cross and five United States flags.

New York City Death Rate.—During the week ending October 2 there were 1,209 deaths in this city with a rate of 10.36, as compared with 1,132 deaths and a rate of 10.58 for the corresponding week of 1914. The rate for the first forty weeks of 1915 is 13.37, as compared with a rate of 13.81 for the corresponding period of last year.

For the Improvement of Vital Statistics.—The Washington State Board of Health has given notice that in future it will prosecute all physicians who neglect to report births and deaths and give notification of the occurrence of infectious diseases. Local health officers who fail to placard homes in which cases of infectious disease occur will also be prosecuted.

Hospitals Urged to Hunt for Carriers.—The Health Department of New York has sent a letter to all the hospitals, some 200 in number, in the city urging them to have a physical examination of all the members of their kitchen staffs made periodically. The outbreak of typhoid among the house staff at the Sloane Maternity Hospital caused by the presence of "Typhoid Mary" among the cooks is cited as a justification for such an examination. The department is now conducting such an examination of all cooks and waitresses in the hotels and restaurants of the city.

Tetanus After Vaccination.—Four cases of tetanus in recently vaccinated children have recently occurred in this city. In each case the infection was found to have been carried by dirty dressings applied to an open wound caused by scratching, examination of the virus used having proved it to be free of tetanus germs.

Street Accidents in New York.—During the month of September there were 28 deaths from traffic accidents in this city as compared with 49 deaths from the same cause in September, 1914. Eighteen were killed by automobiles, of whom ten were children under 8 years of age.

National Association for the Study of Pellagra.—The third triennial meeting of this association will be held in Columbia, S. C., on Thursday and Friday, October 21 and 22, 1915. The headquarters will be at the Jefferson Hotel; the scientific meetings will be held at the State Hospital for the Insane. The president is Surgeon C. H. Lavinder, U. S. Public Health Service; the secretary, Dr. J. W. Babcock, Columbia, S. C.

A Radium Institute in New York.—It is reported that a Radium Institute similar to that in London and some other European cities, will be established in this city, through the labors of Dr. C. Everett Field. There will be a hospital for the treatment of cancer and other diseases by the external and internal use of radium, and also laboratories for the study of radium in its many phases. The institute will begin with one gram of medicine, but this amount will be increased later. The founders of the institute are seven in number, but their names and the names of those composing the medical staff are not yet announced. The building will be in the neighborhood of 72d street and West End avenue.

A New Disinfectant.—It is stated that a new disinfectant has been discovered by workers in the laboratory of the Public Health Service in Washington. The *Bulletin* of the P. H. Service describes the substance as follows: "The new preparation is derived from pine oil, a by-product in the manufacture of turpentine. It is easily prepared by mixing

certain proportions of the oil with rosin and sodium hydroxide solution, the finished product being a reddish brown liquid, rather thick and oily in appearance, but free from turbidity. With water it makes a perfectly white emulsion, much resembling milk. It has a pleasing odor, no objectionable taste and attacks neither fabrics nor metals. It possesses over four times the disinfectant properties of carbolic acid and is almost non-toxic, so that it may safely be used as a throat spray or mouth wash in solutions of the ordinary strength. The cost of the preparation is remarkably low, as it can be manufactured for less than 50 cents a gallon, solely from products of this country."

New York and New England Association of Railway Surgeons.—The twenty-fifth annual session of this association will be held at the Hotel Astor, New York, on Thursday and Friday, Oct. 21 and 22, under the presidency of Dr. W. H. Marcy of Buffalo. The corresponding secretary is Dr. George Chaffee, 338 Forty-seventh Street, Brooklyn, N. Y.

Reprints Requested for the Library of the Surgeon-General's Office.—Lt.-Col. McCulloch, librarian of the Surgeon-General's office, writes that in order to make as complete as possible the bibliographies of American physicians in that library it is desired that all reprints and pamphlets not saleable in the general market should be deposited therein. Physicians will therefore confer a benefit by sending copies of all separate pamphlets and reprints of their authorship, or bound collection of the same, to The Librarian, Surgeon-General's Office, Army Medical Museum, Washington, D. C.

New York State Civil Service Examinations will be held in various cities throughout the State on October 30, for the following appointments:

ASSISTANT BACTERIOLOGIST, Quarantine Laboratory, Department of the Health Officer of the Port of New York. Men and women. Salary $1,200 per annum. Open only to candidates who have satisfactorily completed a systematic course in bacteriology and have also had not less than eight months' practical experience in laboratory work, including work in the bacteriology of cholera and plague. Two years' practical work in bacteriology at full time in a laboratory will be accepted as the equivalent of a systematic course in bacteriology. Candidates will be examined on the technical procedures used in the study of the pathogenic bacteria of infectious disease. These positions will require full-time attendance and incumbents will be required to be on call for additional night service should emergencies demand such service. Subjects of examination and relative weights: Written examination on bacteriology as related to quarantinable diseases, 1; education and experience, 1. Open to non-residents as indicated in paragraph 3 above.

ASSISTANT PHYSICIAN, State Charitable and Reformatory Institutions. Men only. Open only to licensed physicians of New York State. At least six months' experience in a general hospital is required. Preferred ages 25 to 40 years. Subjects of examination: Anatomy, physiology, chemistry, materia medica, therapeutics, obstetrics, surgery, theory and practice, 1; experience, 1. Vacancies at $1,200 and maintenance exist at the Hospital for Crippled Children, West Haverstraw, and at the Syracuse Institution for Feeble-Minded Children. For the latter vacancy the requirements are at least one year in a general hospital or an equal period of post-graduate work in a research laboratory.

CORONER'S PHYSICIAN, Albany County. Paid by fees; for each post-mortem examination, $20; for examination of body when post-mortem is unnecessary, $5. Candidates must be legally licensed medical practitioners and residents of Albany County, as above. They will not be required to appear at any place for written examination, but will be rated on their experience and personal qualifications as shown by their sworn statements and by answers to such inquiries as the Commission may direct to proper sources of information among persons acquainted with their experience and qualifications.

SUPERINTENDENT, Fulton County Tuberculosis Hospital, salary $750, without maintenance. The superintendent will be required to visit the hospital three or four times a week and oftener when necessary, the hospital being under the immediate charge of a woman as head nurse. Open only to men, who have been at least for three months immediately preceding the examination residents of New York State. Applicants must be physicians licensed in New York State, with experience of at least three years in active practice. Subjects of examination and relative weights: Questions relating to the duties of the position, 1; experience, 1.

Persons desiring to enter these examinations must file applications in the office of the State Civil Service Commission on or before October 20, 1915.

Obituary Notes.—Dr. FRANK D. VREELAND, formerly of Paterson, N. J., a graduate of the New York Homeopathic Medical College and Hospital, New York, in 1879, died at the home of his son in Passaic, N. J., on Oct. 4, aged 64 years.

Dr. WILLIAM H. KRICKBAUM, a member of the staff of the Pennsylvania State Hospital for the Insane, died of typhoid fever on September 21 at the age of 37 years. He was graduated from the medical department of the University of Pennsylvania, and he was a member of the Montour County Medical Society, and of the Medical Society of the State of Pennsylvania and a Fellow of the American Medical Association.

Dr. JOHN MERRICK BEMIS of Worcester, Mass., a graduate of the University of Vermont, College of Medicine, Burlington, in 1893, medical superintendent of the Herbert Hall Hospital, Worcester, and a member of the Massachusetts and Worcester District Medical Societies, died at the hospital on September 22, aged 55 years.

Dr. PRUDENCE FENNEMAN of Hamilton, O., a graduate of the Cleveland-Pulte Medical College, Cleveland, O., in 1899, died at the home of her sister in Canfield, O., on September 22.

Correspondence.

AN ANTISEPTIC PASTE.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—The wound application known under several names but chiefly as S. S. paste is brown sugar changed to the consistency of condensed milk by the addition of nitrate of silver and water (1 to 3,000) solution. It is applied to septic and sloughing or gangrenous wounds and the technique of its employment is to fill the wound with the 1 to 3,000 silver, then at once apply the paste and cover with the usual pad and bandage; but a fold or two of unbleached muslin has advantages over the ordinary gauze wipe for padding purposes, let the bandage itself be either gauze or muslin. The bandage may stick fast, but the cohesive is water solutive and consequently it is readily soaked off and re-

moved. Pastes have a place in wound treatments and the niche of this one is more or less wide, according to the judgment and the skill in manipulation of its employer. It is an honest paste and will perform just what its formula promises.

Manifestly the initials S. S. stand for Silver-Sugar, and the observation of two precautions is important. (1) The paste should be well rubbed up and free from lumps. (2) Any cakes, or remnants, remaining upon the skin beyond the reach of a more or less scanty discharge, and therefore undissolved, may be let alone, and a new application may be made without regard to them.

One position it does seem to hold without a rival and that is when an antiseptic must be applied through a window in a plaster of Paris cast. To use a colloquialism "it stays put."

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INFESTATION WITH HYDATID.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—In the MEDICAL RECORD for July 31, I notice in the "State Board Examination Questions" the following: "What are the parasitic diseases that may be caused by eating insufficiently cooked meats?" This question is answered on page 213 as follows: "Infection by tapeworm, trichina, and by echinococcus."

I venture to call your attention to the fact that hydatid does not belong in the same category as tapeworm and trichina so far as mode of infestation is concerned. Larval tapeworms and larval trichinæ are muscle parasites which may develop to adult worms when ingested by suitable hosts in insufficiently cooked meats. On the other hand, hydatid in man arises, as you of course are aware, from the ingestion of the eggs of a dog tapeworm, a thing which conceivably could happen as a result of meat being contaminated with such eggs, but which probably happens, as a rule, from eggs on contaminated hands or vegetables. Hydatid infestation, therefore, belongs in the category of diseases due to lack of sanitary precautions and inadequate regard for cleanliness, just as do infestations with ascarids, whipworms, pinworms, etc., and not to the category of diseases due to eating improperly cooked meat, which diseases may arise in the midst of highly sanitary surroundings and the utmost cleanliness. As Dr. Stiles has put the case in his hookworm campaign, infestation with ascarids, whipworms, hydatid, and such parasites is indicative of coprophagy.

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CLASSIFICATION OF MEDICAL LITERATURE.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—Permit me to correct a paragraph in the issue of your journal for June 5, 1915, which has come to my notice. In her article on "A Logical Classification of Medical Literature," Miss von der Osten metes out a certain degree of praise for a classification of anatomy published by me some years since. This work was given the series number 74, established for contributions approved by the Institut International de Bibliographie in Brussels. Miss von der Osten adds: "It may be obtained in this country through Dr. Herbert H. Field, of Brooklyn, N. Y." It is this statement that I wish to correct. The pamphlet is on sale by the Concilium Bibliographicum, Zurich, Switzerland (30 cts.). Its author, although a Brooklynite, left the City of Churches in 1885, so that the post would have some difficulty in finding him.

HERBERT HAVILAND FIELD, M.D.
ZÜRICH, SWITZERLAND.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

SCARCITY OF MEDICAL CANDIDATES FOR THE SERVICES—LEPROSY—ASSOCIATION FOR SCIENCE—SECTION OF PHYSIOLOGY—OBITUARY.

LONDON, September 25, 1915.

THERE is still a scarcity of candidates for medical officerships in the Army and Navy. It is announced that there will be vacancies for 2,500 within the next half year, though some practitioners have returned from the Colonies to take service. Sir Alfred Keogh is willing to extend the arrangements for granting commissions in the R. N. M. C. to residents of three months in general hospitals connected with schools who are registered, physically fit, and willing to be called upon if required on forty-eight hours' notice. Hospitals willing to assist can inform the war office the number of their beds and of their residents. It is thought that to some extent the hospitals will be secured against undue loss of their residents, who will be able to return, if need be, and will in any case have had some special training before they go. The scheme seems to promise a beneficial arrangement for all concerned.

The address on leprosy delivered at Dublin Academy last May by Dr. C. M. O'Brien has now appeared *in extenso* and deserves more attention than a report at the time could supply. It gives an excellent epitome of the history of the disease—once the most generally diffused and still perhaps the most fatal of all maladies. No modern writer has described it more accurately than the Greek authorities and Dr. O'Brien gives in detail the description of Aretæus, following it up with notes from Guy de Chauliac, John of Gladdesden, Glanville, and others, to illustrate its literature. In connection with this he considers the contagiousness and mode of infection. The question of bacteriology leads to the tuberculin and Wassermann tests, and so to the experimental transmission of the disease to animals and the artificial cultivation of the microorganism. The great difficulties encountered in its transmission to animals from injection or inoculation of nodules teeming with bacilli are freely admitted. Many series of negative results must be faced, but numerous as they have been they cannot destroy a single positive observation, and Dr. O'Brien related in full the history of a case in which his diagnosis was confirmed by Sir Thomas Myles and Mr. T. T. O'Farrell, the latter of whom prepared the slides and carried out the inoculations, the Wassermann test being applied by Prof. E. J. McWeeney. The conclusions submitted from this case were that it possessed many of the characteristics insisted on by ancient and modern writers, and showed that the Wassermann test was not specific for either syphilis or leprosy. Further, to him the tuberculin test carries little conviction. The portion taken from a nodule

of this patient and stained by the Ziehl-Neelsen method showed many bacilli, of which a few were seen within the cells, but the majority were scattered about the lymph spaces. Dr. O'Brien concluded by the reflection that the marked advance in the study of leprosy is overshadowed by the tragedy of events, as we have not a single cure to the credit of science, for "those cases cured by the Holy of Holies, as recorded in Scripture, come under quite a different category, of course."

The 85th annual meeting of the British Association for the Advancement of Science has been duly celebrated and as usual has presented both in the sections and in some of the papers composing them, many points of interest to the profession. The meeting was this year at Manchester, and there was a large attendance. Professor Bateson, retiring president, introduced his successor, Professor Arthur Schuster, who delivered his address, taking for his subject "The Common Aims of Science and Humanity." It was decided to hold next year's meeting at Newcastle-on-Tyne and Sir Arthur Evans was elected president. The social assemblies and entertainments which usually accompany this meeting were less numerous than usual on account of the war, but there was plenty to see in the city for those who were not familiar with it and hearty hospitality was shown by the citizens.

In the Section of Physiology Dr. C. E. Lea illustrated certain electrical methods of diagnosis in a case of auricular fibrillation which had been under observation for over two years, during which the pulse had been characteristically irregular but easily controlled by digitalis. Dr. E. P. Poulton brought forward points to show that the cause of diabetic coma is not a true acidosis. The blood, he remarked, is more acid in uremia and also during moderate exercise.

Prof. Herring read a paper on Thyroidectomy and Thyroid-feeding in reference to the effects on the adrenin content of the suprarenals. The experiments seemed to give uncertain results.

Dr. Graham Brown gave a lantern exhibition of the effects observed after the removal from a chimpanzee of the right, then the left, post-central gyrus, and lastly, the right motor area. Paralysis lasted for six days. Within 14 days action became apparently normal again and the animal could execute fine movements, even such as opening a door with a key. The operations had therefore not caused any loss of power for such fine movements.

Dr. D. Bridge Lees, consulting physician to St. Mary's hospital, died suddenly, as did his colleague, the senior surgeon, McOwen, of whose death I informed you a month ago. Thus St. Mary's loses two of her senior staff within a month. Dr. Lees was elected on the staff in 1880. He had been previously physician to the Hospital for Sick Children. He was Bradshaw lecturer to the Royal College of Physicians in 1912 and last July he was elected senior censor to that college. He contributed to the societies and journals, chiefly on thoracic and rheumatic diseases.

Lt. Col. J. J. Lampney, who retired in 1897, has died at the age of 65. He joined the service in 1877, was in the Ashanti Expedition, 1881; Senior Medical Officer of the West African Settlements, 1891-2, and on the Boundary Commission (Sierra Leone).

Dr. Archibald R. Douglas, medical superintendent of the Royal Albert Asylum, Lancaster, for 25 years, has died suddenly in the prime of life. He made interesting contributions to psychology.

Captain J. N. Armstrong, M.B., R.A.M.C., has been killed in action after serving several months in the Durham Light Infantry. He was senior moderator in natural science and gold medalist—aged 25.

Captain A. Hellas, I.P.H., R.A.M.C., killed in the Dardanelles, was senior medical assistant at Aberdeen Royal Asylum, but volunteered to the First Highland Field Ambulance on the outbreak of war.

Lt. V. T. Warren, R.A.M.C., was killed at the Dardanelles within a few weeks of arriving there with the Third Welsh Field Ambulance.

Lt. John Macadam, another victim of the war, died of wounds received at Gallipoli, aged 23. He joined the Territorial Force in 1912. He had been a student at St. Bartholomew's Hospital, but on the outbreak of war joined the active service.

Progress of Medical Science.

Boston Medical and Surgical Journal.

September 30, 1915.

1. The Child and the Community. E. O. Otis.
2. Transvesical Prostatectomy. P. M. Pilcher.
3. A Study of the Effect of Rowing on the Heart. R. I. Lee, W. J. Dodd, and E. L. Young, Jr.
4. Experimental and Clinical Observations on the Blood Pressure in Spinal Anesthesia. G. G. Smith.

1. The Child and the Community.—E. O. Otis points out that the community is beginning to realize that diseased and physically unfit men and women should not be allowed to marry and produce diseased and physically unfit children. In two states, at least, so-called eugenic marriage laws have been enacted. Both for the child's sake and for the sake of the community who have to care for the defectives, such a law seems just and reasonable. It is a significant fact bearing upon this point, that the most important causes of infant mortality in New York City, as stated by Dr. Baker, chief of the Division of Child Hygiene of the Department of Health, in 1913, are the so-called congenital, inherited diseases, the deaths from which diseases occurring during the first month of life, amount to 35 per cent. of the total deaths under one year. To ensure a healthy child, pre- and post-natal care and training of the prospective mother is essential, and in many communities this is now done in connection with the lying-in hospitals, or, as in Boston, by the Child Hygiene Department of the Board of Health and other private instrumentalities through visiting nures who instruct the future mothers in personal hygiene, the general care of pregnancy, and in their own and their babies' care after confinement. The Caroline Rest Training School for Mothers, conducted by the New York Association for Improving the Condition of the Poor, is an excellent example of this kind of welfare work. After the child has graduated from its milk diet, the community has still a duty in seeing that it is provided with proper food. At school the child should be thoroughly examined from time to time for defects or diseases. Sixty-eight per cent. of the Boston school children have defects. The author tells of the Forsyth Dental Infirmary for Children which cost $800,000, and is endowed with $2,000,000 as an example of what should be done to protect the teeth of children. As most authorities now believe that the majority of cases of tuberculosis in adult life became infected in childhood, he points out the urgent need of combating this disease. He states that Hamburger has demonstrated that latent tuberculosis is present in 71 per cent. of children from seven

to ten years of age. This fact should make the community realize its duty in providing proper playgrounds, open-air schools and even preventoria or places in the country. The author concludes by making a plea that the community offer the child means of spiritual development as well as to provide for its physical well being and its mental training. He can see no other way for providing religious instruction in a communal way except through the medium of the public schools.

2. **Transvesical Prostatectomy.**—P. M. Pilcher states that the chief objection to the two-stage operation has been the discomfort due to leakage of urine over the abdomen of the patient. This has been overcome by adopting the following technique for the first operation: Preferably with the bladder filled with fluid, a suprapubic cystotomy is done under local anesthesia, using one-half to one-quarter per cent. novocaine solution to infiltrate the tissues. The points of the technique which he emphasizes are: 1. Exposure of anterior surface of bladder as high up as possible. 2. Making opening in bladder at least 3 inches from urethral opening. 3. Drainage of bladder by Pezzer catheter or Pilcher modification. 4. Purse-string suture around opening in bladder to secure water-tight joint, employing same principles as in drainage of gall bladder. 5. Immediate resuture of suprapubic wound, obliterating prevesical space, reconstruction of the facial planes, etc., and closing the wound without drainage except where button drainage tube emerges. The results of an operation by this technique are: 1. Primary union of wound in practically every case. 2. Absolutely dry wound without any leakage of urine. 3. Complete control of urine for tests. 4. Patient out of bed in twenty-four hours. 5. Half of the operation complete without anesthesia or surgical shock. As soon as the bladder can be safely emptied the suprapubic cystostomy should be done. In all cases of emergency, where there is active hemorrhage into the bladder, suprapubic cystotomy should be done. The author prefers to wait about ten days before removing the prostate.

3. **Effect of Rowing on the Heart.**—R. I. Lee, W. J. Dodd and E. L. Young find that an abundant and somewhat contradictory literature has grown up concerning the effect of exercise on the heart. They point out that James Mackenzie of England, with his wide experience in cardiac disease, seriously doubts the existence of the so-called "athletic heart"; and that Cabot in an analysis of 600 successive cases of failing heart was not able to attribute the cardiac impairment to athletics or exercise. For the purpose of making observations the authors selected three groups of students at Harvard—freshmen, candidates for the crew, and graduates who had averaged more than ten years of rowing. Their conclusions are: That there is very little difference in the size of the heart of men who have been rowing for two to four years and men who have been rowing over ten years. The hearts of these two groups are very slightly larger than the hearts of a younger group who have not as yet participated in serious competitive rowing. These differences seem to be explained by the differences in age and development. The only conclusion that can be drawn at this time from this particular study is that prolonged participation in rowing under the system now in vogue at Harvard University and the Union Boat Club of Boston does not materially increase the size of the heart when the heart is sound at the beginning.

4. **Blood Pressure in Spinal Anesthesia.**—G. G. Smith working with Dr. Porter in the laboratory of comparative physiology of the Harvard Medical School came to the following conclusions: The blood-pressure can be lowered as much by spinal anesthesia as by section of the cord in the cervical region. The greatest fall was caused by injection of the drug in the thoracic region, where the vasomotor fibers which supply the splanchnic area leave the cord. This part of the vasomotor mechanism is the first affected by the drug when the injection is made in the lumbar region. The extent of diffusion of the drug within the dural sac appears to be influenced more by the bulk of the solution injected than by any other one factor. A given amount of drug in a concentrated solution diffuses less and consequently lowers blood pressure less than does the same amount of drug in a more dilute solution. The greatest effects upon blood pressure were noted when adrenalin was combined with novocaine. Entire fixation of the drug does not take place within twenty minutes after the time of injection. When a solution of greater specific gravity than spinal fluid is used, the extent of diffusion may be increased by gravity. Attempts to raise the blood pressure by the intravenous injection of pituitrin or adrenalin gave only a very transient rise.

New York Medical Journal.

October 2, 1915.

1. A New Method for the Treatment of Inoperable Cancer. S. P. Beebe.
2. The Autolysin Treatment of Cancer in the Light of the Proteomorphic Theory. H. S. Williams and J. W. Beveridge.
3. Infantile Eczema. H. W. Cheney.
4. Repair of the Female Perineum. A. S. Brinkley.
5. Backache. H. Weinstein.
6. The Advantages of Quinine and Urea Hydrochloride as a Local Anesthetic. J. L. Amster.
7. The Management of an Obstetric Case. S. J. Druskin.
8. Radium in Rhinoscleroma. J. Guttman.
9. Pituitary Extract in Obstetrics. L. J. Friedman.
10. General Military Tuberculosis with Unusual Spinal Fluid Findings. J. Roby and A. Kaiser.

1. **A New Method for the Treatment of Inoperable Cancer.**—S. P. Beebe reports the results of treating cancer with extracts of a poultice powder originally applied by Dr. Horowitz which contains the following substances: Menyanthes trifoliata, melilotus officinalis, mentha crispa, brassica alba, anemone hepatica, viola tricolor, anthemis, fructus colocynthidis, lignum quassiæ, urtica dioica, radix rhei, hedge hyssop. These substances are in approximately equal proportions in the poultice, with the exception of the mustard, which forms twenty per cent. of the mixture, and the colocynth fruit, which is five per cent. A saline extract of this powder was used for hypodermic injection in the arm. A summary of 100 cases treated is given: Fifteen are clinically well; 7 are improved; and 28 received no benefit.

2. **The Autolysin Treatment of Cancer.**—H. S. Williams and J. W. Beveridge postulate that neoplastic cells are susceptible to the attacks of leucocytic enzymes, that there is a constant tendency to disintegration of some of these cells under the attacks of the white blood corpuscles. The white blood corpuscle is provided with digestive enzymes, and with a mechanism for the production of special proteolytes to cleave an endless variety of protein molecules; being unable, however, to complete the hydrolysis thus begun. The "autolysin" referred to by the authors and for whose action they seek an explanation is the extract of the poultice powder used by Beebe and described in the foregoing paper. This autolysin contains vegetable protein and is introduced into the circulatory system hypodermically where it constitutes an antigen stimulating chiefly the blood cells to give rise to defensive enzymes. These enzymes begin the disintegration of the cancer cells. In considering the possible influence of the chlorophyll in the autolysin or "poultice powder" from which the extract is made, the authors suggest that it may be a special stimulus to the white cells whose remote progenitors, living in stagnant water, came in

constant contact with vegetable cells containing it; and that the ancestral memory might very well leave the leucocyte still in condition to respond energetically to the primordial stimulus of chlorophyll. This food or stimulus directly supplied to leucocytes may be what enables them to make such rapid and effective attacks on the cancer cells when autolysin is administered.

3. **Infantile Eczema.**—H. W. Cheney emphasizes the following points: 1. Infantile eczema in the majority of cases is the evidence of a toxemia, intestinal in origin. 2. Such cases require primarily the services of a pediatrist to oversee the feeding, and only secondarily advice as to external medication.

5. **Backache.**—H. Weinstein discusses the diagnosis of the various pathological conditions which may give rise to backache. Lumbago may be an early symptom of tabes or osteomalacia. Myositis may be confounded with the rhachialgia of neurasthenia. Malignant tumors may give rise to pain as well as tuberculosis of the spine, arthritis, sacroiliac disease, or neuritis. Backache may be a premonitory symptom of smallpox; it may occur in Malta fever; or it may follow typhoid fever. Cancer of the rectum or obstruction of the sigmoid may cause pain in the back. Calculus in the pelvis of the kidney or in the ureter may cause pain in the back on the same side. Diabetes may be accompanied by backache.

Journal of the American Medical Association.

October 2, 1915.

1. Prognosis of Sterility. E. Reynolds.
2. Relative Frequency of Ectopic Gestation. A B Spalding.
3. Streptococcus Bacteriemia in Endocarditis. Its Presence Before and During the Development of Endocardial Signs. J. A. Oille, D. Graham, and H. K Detweiler
4. Prostatectomy Mistakes and Failures. G. S. Whiteside.
5. Verumontanitis. W. J. Pennock.
6. The Value of the Combination Method in the Treatment of Cervical Carcinoma. S. N. D. Clark.
6. Guinea-Worm Disease. G. G Davis and J. J. Hilton.
7. A Case of Congenital Perineal Testicle. G. N. Loewe.
8. Sarcomatous Proliferation (Sarcoma of Rib) in a Traumatic Tumor Sixteen Years after Its First Appearance. J. H. Outland and L. Clendening.
9. Fistula of the Esophagus and Bronchus. Report of a Case, with Roentgenologic Findings. R. C. Beeler.
10. A Spemimen of Auto-Amputation of the Appendix. J. R Judd.
11. Cervical Rib as a Cause of Brachial Pain. F. B. Kyger

2. **Relative Frequency of Ectopic Gestation.**—A. B. Spalding takes his clinic cases as a basis for his figures. Previously when his practice was limited to obstetrics he did not have a case of ectopic pregnancy in private or clinic work. It was only after he combined gynecology with obstetrics that he was called upon to treat cases. During the past three years he has operated on thirteen clinic cases. They were encountered at fairly regular intervals in a comparatively large number of patients in the out-patient clinics of the Leland Stanford University School of Medicine. During these years 36,668 patients in all were registered, and of this number, 2,995 were treated in the women's clinic. The thirteen cases were among these. The ratio for the whole outpatient clinic, corresponding to general practice, was 1 to 2,820 patients; for the women's clinic, corresponding to the specialist's practice, 1 to 227 women; for the obstetrical department alone, 1 to 131 pregnancies.

3. **Streptococcus Bacteriemia in Endocarditis.**—J. A. Oille, D. Graham and H. K. Detweiler working in the heart clinic recently established at the Toronto General Hospital had a case of a girl whose symptoms had been attributed to pulmonary tuberculosis, but who later had no cough and a too slow morning pulse rate. Yet she had slight fever twice a week. This suggested the taking of a blood-culture in accordance with Rosenow's method. Success along this line has been attained even beyond expectations, so that now cases formerly diagnosed as cases of chlorosis, anemia, indefinite fever, obscure tuberculosis, and nervous breakdown are being called endocarditis. The authors observed twenty-six cases and felt justified in coming to the following conclusion: 1. A streptococcus bacteriemia is present in the great majority of cases of active endocarditis and probably in all in some stage of the disease. 2. Endocarditis more commonly follows tonsillitis in children and young adult females than is generally believed. Possibly this accounts for the frequency of mitral stenosis in females. 3. This low grade streptococcic endocarditis is much more common than the so-called rheumatic endocarditis. 4. A large number of persons showing symptoms of the neurasthenic type are really suffering from a subacute streptococcic endocarditis. 5. Endocarditis may be active for considerable periods of time without symptoms. 6. A family incidence of tonsillitis and endocarditis (also appendicitis, gastric ulcer and other diseases which are often of streptococcic origin) is of frequent occurrence. 7. The pulmonary systolic murmurs so frequently found in "run-down" and anemic individuals are rarely functional.

4. **Prostatectomy Mistakes and Failures.**—G. S. Whiteside refers to a statement made by Young that when a prominent surgeon publishes a series of successful cases he incites many to try to imitate his success without proper instructions in his operation, or understanding of the procedure or of the dangers to which he subjects his patient. In addition to proper training in the technique of an operation, the author emphasizes the importance of a correct diagnosis before operating. Stricture of the urethra, spinal neuroses, cancer, and diseases of the kidneys or other organs are frequently overlooked. Careful diagnosis is necessary in determining in each case whether the perineal or the suprapubic route should give the better result. It is most important to determine the functional activity of the kidneys, in order to know the risk of uremia following the operation. If the kidneys are insufficient, spinal anesthesia is probably the safer method. It is of the greatest importance that the operator carefully supervise the after-care of the patient.

5. **Verumontanitis.**—W. J. Pennock calls attention to the inaccurate descriptions of the verumontanum as given by anatomists, for instance, Gray. Embryologically the veru is developed from the united lower ends of the atrophied Müllerian ducts. Rytina has demonstrated the veru to be made up of glandular tissue in its central portion, and urethroscopy has made evident the erroneousness of the previous descriptions by anatomists. Besides infection by pyogenic organisms, there are other etiological factors to which the author especially calls attention, as common causes of noninfective inflammation. They are: 1. Coitus interruptus. 2. Ungratified sexual desire. 3. Masturbation. The chief symptoms are urinary frequency, burning sensation in the deep urethra, diminution of sexual power, premature or delayed and painful ejaculation, and referred pain in the lumbar region, in the rectum, or in the testicle. The diagnosis is aided by an urethroscopic examination. Silver nitrate solutions are applied locally for the treatment of infected cases.

6. **The Combination Method in the Treatment of Cervical Carcinoma.**—S. M. D. Clark recommends that the internal iliacs and one ovarian artery be ligated as an adjunct to treatment of cancer of the cervix by the Percy heat method. He concludes: 1. The heat method alone has doubtful curative properties, and should be viewed in the light of a valuable adjunct in the treatment of cervical carcinoma. However, in extremely obese women, it offers the best and only chance for a permanent cure. 2. Heat should be used as a routine in all types of cervical carcinoma, except in

hopelessly advanced cases. 3. The ligation of both internal iliacs and one ovarian possesses definite merit, and when combined with heat, furnishes the best means of converting the borderline cases into frankly operable ones. 4. It cannot be too strongly emphasized that the combined application of heat and ligation of vessels, on the one hand, and total extirpation, on the other, in all except clearly operable cases, should be done as a two-stage operation. 5. In the combination of heat with starvation, we have a valuable means of markedly increasing the operability and of decreasing the primary mortality of radical extirpation. 6. Heat combined with extensive arterial ligation, followed by radical hysterectomy, offers the greatest possibilities for permanent cure.

The Lancet.

September 18, 1915.

1. On the Bacteriology of Septic Wounds. A. Fleming.
2. Rhinophyma: Its Etiology, Pathology, and Treatment. W. Milligan.
3. On Galyl, a Substitute for Salvarsan and Neosalvarsan. A. Foerster.
4. A Case of Temporary Motor Aphasia Developing in the Course of Tuberculosis. J. B. McDougall.
5. Salvarsan in the Treatment of Yaws. W. M. McDonald.
6. Observations upon 100 Consecutive Operations for Appendicitis. R. M. Glover.

1. **Bacteriology of Septic Wounds.** — A. Fleming, writing from the Research Laboratory attached to the General Hospital at Boulogne reports that the bacteriology of wounds inflicted in this war has furnished a very interesting study because the flora of these wounds has been found to be very different from that met in civil practice. Nearly all the wounds were due to bullets or fragments of shells and they seldom remained sterile. Pieces of mud-covered clothing were usually carried deep into the wound. To determine the relationship between the infections found in wounds and the bacteria on the clothing the author examined samples of clothing taken from wounded men on their arrival at the base. Small pieces were cut off from portions of clothing remote from the wound, so that contamination of the clothing by discharges from the wound might be avoided. Pieces about half an inch square were planted into broth tubes and cultivated aerobically and anaerobically. Of twelve samples of clothing examined, *B. aerogenes capsulatus* was found in 10, *B. tetani* in 4, streptococcus in 5, and staphylococcus in 2; while other organisms which were not properly identified, but which were in all probability mainly non-pathogenic, were found in some of the samples. These examinations were made in November last when there were many cases of tetanus, which is hardly surprising when it is considered that one sample in three of the clothes examined showed the presence of the tetanus bacillus. From a study of the bacterial flora it was noticed that these wounds pass through three phases, more or less distinct. The bacterial history of a wound is much the same whether it is slight or severe, except that in the slight and perfectly drained wounds the transition from one stage to another is much more rapid and healing occurs in a shorter time. Streptococci are found in practically all wounds, whether old or recently inflicted. The spore-bearing anaerobes, comprising chiefly *B. aerogenes capsulatus*, *B. tetani*, and some putrefactive organisms, on the other hand, progressively diminish in relative frequency as the age of the wound increases. In the early stages these spore-bearers are present in much greater numbers than anything else, whereas later, although they may still be seen in the pus films, their numbers are relatively few. The most striking feature of the discharges from these wounds was the extraordinary amount of pus—thus indicating that phagocytosis was very active and the resistance to the infection very great. This is in marked contrast to cases seen in civil practice where the infectious agent usually has enhanced virulence due to its passage from one individual to another, or where infections occur more or less spontaneously due to lowered resistance on the part of the individual. The author recommends the periodic administration of a vaccine to keep the patient's resistance up to a high level.

2. **Rhinophyma: Its Etiology, Pathology, and Treatment.**—W. Milligan is of the opinion that chronic alcoholism or traumatism are not etiological factors in producing rhinophymata. It may conceivably be an end result of acne rosacea which is very often present on the nose and in other parts of the face at the same time. Histological examination of sections of the pathological tissue removed by operation shows marked thickening of the connective tissue of the corium with hyperplasia and cystic dilatation of its sebaceous glands and small deposits of fat between the various hypertrophied areas. The outcome of these changes is an elevation of the papillary layer of the true skin into circumscribed projections of varying size and shape. Cystic dilatation of one or more of the sebaceous glands is, as a rule, a marked feature in many sections, and it would appear as if these glands were not only enormously increased in size, but were actually increased in number. Their ducts are in many cases greatly dilated and more tortuous than normal, while their epithelial lining is often considerably thickened. Blood-vessels, arteries, veins, and capillaries are enlarged, have thickened walls, and run a more tortuous course than is usual, while around them there are often cellular extravasations. The author reports a case successfully treated by dissecting away the hypertrophied tissue and putting two very thin skin grafts from the thigh in its place.

3. **Galyl, a Substitute for Salvarsan and Neosalvarsan.**—A. Foerster states that the drug referred to in this paper is a discovery of Dr. Mouneyrat, to whom we owe hectine, and is named Galyl (1116). Like salvarsan, it is a derivative of arsenobenzol, which was first prepared by Michaelis in 1881. In galyl two molecules of arsenobenzol are linked with two phosphoric groups; it is tetraoxy-diphospho-amino-diarsenobenzene, and it contains 35.3 per cent. of arsenic and 7.2 per cent. of phosphorus, is a yellow powder of a tint different from those of salvarsan and neosalvarsan, and is insoluble in distilled water. It, however, dissolves rapidly in a weak solution of sodium carbonate, from which it can be precipitated readily by the addition of an acid. The tubes in which the drug is dispensed, contain the small amount of sodium carbonate required for solution, and thus the handling and dissolving are no more complicated than in the case of neosalvarsan. The solutions are yellow, with a brownish-green tint when fairly concentrated, and differ considerably from the bright yellow of salvarsan solutions. Galyl is best administered by means of intravenous injections, as intramuscular injections are painful and may lead to necrosis like salvarsan. Any of the methods used for the latter drug are admissible. Salvarsan, whether employed intravenously or intramuscularly, does not yield any better results. Headache, slight fever, or diarrhea may be untoward effects. The dose of galyl for an adult is 0.3 gram. It is much less expensive than salvarsan.

British Medical Journal.

September 18, 1915.

1. The Treatment of Cholera by Hypertonic Saline Solutions During an Epidemic of Swatow, South China. G. D. Whyte.

2. The Administrative Control of Measles. R. M. F. Picken
3. Universal Suspension Apparatus for Arm and Leg. M. Sinclair.
4. An Operation for the Obliteration of the Cavity in the Tibia Remaining after Sequestrotomy. W. Gemmill.
5. The Treatment of Septic Wounds by the Electrolytic Bath. F. Fowler.
6. A Case of Hysterical Amblyopia. K. Campbell.

1. Treatment of Cholera by Hypertonic Saline Solutions.—G. D. Whyte says that the extraordinary effect of intravenous infusion in the collapse stage of cholera must be seen in order to be realized. Unfortunately this improvement is only transient unless the rapid passage of the saline solution from the circulatory system into the alimentary canal and its subsequent loss by vomiting and diarrhea is prevented. This is done by using a hypertonic saline solution—double the normal strength—as first suggested by Rogers. If the specific gravity of the blood of the patient is below 1.062 the injection of saline solution is not required. The blood pressure, degree of fever, and many other factors have to be carefully considered in determining the amount of saline to be injected and the frequency of the injections. The author gives tables and other data fully explaining the details.

3. Universal Suspension Apparatus for Arm and Leg.—M. Sinclair describes a form of suspension of the arm and a splint which allow all permissible movements of the limb and give great comfort to the patient, who is free to move at his will, or to sit up by his bedside if he wishes. For the leg he describes a suspension which consists of a fixed frame carrying a traveling cradle, from which the limb in its splint is suspended by a system of weights and pulleys as in the case of the arm. A patient with a fractured femur can raise his pelvis without other aid when supported in this apparatus. The author gives diagrams and full particulars.

5. Treatment of Septic Wounds by the Electrolytic Bath.—F. Fowler took up what seemed to be a fantastic idea. The answer to the question of how to attack germs in the tissues has been sought in the use of antiseptic lotions, vaccines, or serums. The discovery of Russ that nearly all germs are carried toward the positive pole of an electric current passing through a solution of sodium chloride, and that the small current required is fatal to the germs was seized upon by the author to answer the question, how can the germs in the tissues be induced to leave the deep parts, if we cannot kill them without also killing the tissues? The practical results of the treatment instituted by the author seem to support Russ' observations. The electrode connected with the positive pole of the battery is immersed in the bath with the wounded limb. The negative pole must be connected to some indifferent part of the body either through another bath or a moist pad. A current of 20 to 30 milliamperes, which the patient should barely feel, is sufficient for an ordinary bullet wound.

Berliner klinische Wochenschrift.

August 23, 1915.

Artificial Cultivation of Variola-Vaccine Virus.—Proescher, who recently published an important discovery in regard to the bacteriology of typhus has now come to the fore with an article on the cultivation of the virus of smallpox-vaccine. After a review of the work in this field of his predecessors he expresses his belief that the virus is a filtrable microörganism, visible in dark field illumination, staining rather weakly. These bodies, by their action upon the tissues, cause the formation of certain reaction corpuscles which have sometimes been regarded as the cause of the disease. Von Prowazek's "initial corpuscles" may be a stage in the development of the true cause. Heretofore it has been quite impossible to demonstrate that this living virus is the actual cause of vaccinia. The author takes up the work at this juncture. Taking some U. S. Government vaccine he inoculated the cornea of a rabbit and produced a typical vaccine keratitis with an abundance of so-called Guarnieri's corpuscles. When the lymph was studied with the dark field minute cocci and diplococci were visible, as well as epithelial cells filled with the latter. Vital staining of these bodies proved impossible. The lymph was then diluted, rapidly centrifugalized, and the sediment placed on cover glasses in smears, the latter then dried and treated with various stains. The difficulty in staining may be due to preservation of the lymph in glycerin. After infinite pains in technique the author concluded that both intra- and extracellular forms of virus coexist, although the minute extracellular organisms must have originally escaped from the cells. The author succeeded in cultivating similar organisms from the unfiltered and filtered virus and from the cultures produced the characteristic keratitis in the rabbit but here the matter rests. We do not know what these bodies are—whether bacteria or protozoa—and as yet the subject of immunizing with cultures has not been studied, nor that of the formation of antitoxic or bactericidal antibodies. The first culture *in vitro* could not at first be propagated in media such as ascites and serum bouillon but after the addition of a carbohydrate like maltose a luxuriant growth was obtained under anerobic conditions. The author has now carried it through twenty-eight generations. The great difficulty lay in making the first culture. The virus seems to weaken rapidly in virulence in the incubator at 37° C. Strange to state when inoculated directly into animal tissues which have approximately the same temperature the virus maintains its virulence and multiples. As already stated glycerin is believed to explain this behavior *in vitro*. To obtain the first culture ascites fluid, guinea pig serum, and bits of aseptic kidney, etc., from the same animal are placed in a sterile tubule, and tested again for sterility after forty-eight hours in the incubator. One-tenth c.cm. sterile virus is then inoculated into the tube which is allowed to remain in the incubator for two weeks under strict anerobic conditions. The colonies are seen as a faint haze about the bits of flesh. Dark field illumination now shows that these are composed of the specific formations already described.

Münchener medizinische Wochenschrift.

August 17, 1915.

Treatment of Chronic Cardiac and Renal Diseases with Acidylsalicoyl Derivatives of Theobromin.—Hoffmann refers to the original introduction into therapeutics of theobromin, which was followed by the mixture of theobromin-oodium and salicylate of soda, known for short as diuretin. Then came theophyllin, an isomer of theobromin, and called for short theocin. All these remedies are successful diuretics, and often one will succeed where another fails. The author, who began to try out these substances as far back as 1889, has tested recently the so-called acidylsalicoyl-theobromin, a true synthetic, which seems to embody all the advantages of its predecessors. He has treated 30 or more patients with nephritis, cardiac myodegeneration, mitral lesions and coronary sclerosis, the new synthetic unburdening the heart by its action on the kidneys even after digitalis preparations had shown their inadequacy to relieve the strain on the heart. The remedy in fact was tested especially in cases which did not respond to digitalis and the older diuretics. In but five cases did failure attend the use of the remedy, which as a rule

behaves as a synergist to the digitalis group. Nevertheless it is often able to do its work alone. It lowers a high blood pressure, which perhaps explains its power in true angina pectoris. Perhaps it should be regarded best as a potentized theobromin.

Nyctalopia at the Front.—Best states that justice has already been done by writers to day-blindness among soldiers, but that if we bear in mind that this war is largely one of might fighting, a corresponding literature on night-blindness has not been forthcoming. As a result of his own studies he has reached certain pertinent conclusions. Thus night blindness is favored by nocturnal activity, hardships, irregular meals, physical and psychical overexertion. In a small proportion of cases none of these factors was present. Essentially night blindness depends on some condition which compromises vision in general, such as anomalies of refraction or other objective condition first brought to light through trench warfare. The victims then find themselves unable to see what their comrades point out. The author finds no evidence of a special war nyctalopia. In 36 cases he found 4 of congenital or familial night blindness, while 21 had anomalies of refraction, chiefly myopia. In a small number of cases night blindness was connected with some local or general disease or with an affection of the eye itself; while in 2 cases there was apparently nothing to explain the condition. These soldiers really developed night blindness after trench life. A third victim without lesion was doubtless a hemeralope as well.

Ether-Saline Infusion in Tetanus.—Hercher describes a single case of recovered tetanus in which this remedy was tested, but the incubation period was 14 days, and the most that can be claimed is that the disease responded favorably to the treatment. The original wound, in the arm, was suspicious. The disease began insidiously as rheumatism, but the picture of tetanus was soon in evidence. Treatment was intensive—serum, magnesium, and morphine. The patient, however, seemed doomed so that a new resource was sought and found in the before-mentioned infusion. Fifteen cm. ether were added to 750 cm. of saline infusion, and the case at once took a turn for the better, the treatment being continued until recovery.

Deutsche medizinische Wochenschrift.

August 19, 1915.

Anatomical Changes in Hereditary Diseases, Especially Diabetes.—Ribbert mentions some familial diseases which are quite without anatomical changes—color blindness, hemophilia, certain psychoses, polyuria. In other cases anatomical alterations represent the totality of the affection—polydactyly for example. These types have nothing in common with acquired anomalies of the germ cell or with malformations due to amniotic adhesions. There are nevertheless doubtful cases which fall under none of these heads. We cannot say offhand in the absence of anatomical alterations that the cells of an embryo are constitutionally inferior because of arrested development. If, however, secondary degenerative processes set in we may postulate the existence of such inferiority, yet there is always a possibility of an exogenous disease factor. In regard to ordinary diabetes we can blame pancreatic organic disease, perhaps, but in congenital diabetes we do not find this mechanism. If there is any pancreatic alteration it is perhaps restricted to too few Langerhans islets. The author recalls a case of diabetes (not known to be familial) in a young man whose islets were so few that only one was found in 25 large sections. Heiberg and Weichselbaum have obtained the same find in diabetes in children. The condition could of course be congenital without being familial. Another explanation naturally obtrudes itself, to the effect that the number of islets was originally normal, but had been reduced by inactivity-atrophy because of functional incompetency. Another assumption is that some unknown irritant or injury has functionally weakened islets, which were unusually vulnerable. We can of course speak colloquially of "weakened" islets, as distinct from organic lesions of the pancreas, and of quite different import from greatly reduced number of possibly normal islets. "Weakness" may be made synonymous with vulnerability. These refinements, however, cannot aid in explaining familial diabetes which is known to follow Mendel's law. The author states that all future studies must distinguish between acquired and inherited diabetes.

Fatal Case of Pyorrhea Alveolaris.—Clemm relates the case of a man of 37, civilian, admitted with a so-called gum boil and buccal suppuration. The abscess was incised and H_2O_2 used freely as lotion and dressing. The temperature ran up in a couple of days to 105° F. No other suppurative focus could be located. There was a most foul odor from the mouth. All of the symptoms however, appeared to abate spontaneously. The cheek, which had swollen greatly, began to return to its normal size, the fever subsided to a remittent type, and the bad breath improved. Three loose back teeth which had literally swum in pus were now extracted from the right lower jaw. At intervals all the remaining teeth in this jaw were also removed, along with bone sequestra. The fever did not subside and eventually became high. The patient was now in a state of marasmus. The lower jaw continued to slough, pus formation increased, and death supervened under the picture of sepsis, with terminal pulmonary lesions. Death was explained by necrosis of the jaw, burrowing of pus and septicopyemia. The intensive implication of the jaw followed an ordinary case of Rigg's disease.

Effect of Athletic Training on Blood Pressure.—W. S. Middleton notes a proportionate decrease in both systolic and diastolic blood-pressure during the training period. With a period of rest succeeding the training period there occurs a rise of systolic and diastolic blood-pressure beyond the anteseason records. The blood-pressure reaction to the given test of fifty stationary running steps is scarcely altered by a period of training. As a basis for explanation for these phenomena several hypotheses are stated: The decrease of blood-pressure during training may result from an enlargement of the vessels to the skeletal muscles with a lessened peripheral resistance. Or this lessened peripheral resistance may result from a compensatory vasodilatation to accommodate for the increase in cardiac output and work from athletic training. From the vascular standpoint the secondary rise of blood-pressure after a period of rest would be explained by the logical assumption of a return of normal vasomotor tone, which in the presence of an hypertrophied myocardium, or an increased cardiac power, would lead to an increased blood-pressure from a relative increased peripheral resistance with an accompanying increase in systolic output. Moderate peripheral sclerosis from overstrain would likewise give increased resistance with a tendency to higher blood-pressure than normally existed in a given individual. The primary decrease in blood-pressure after a period of training may be the result of a temporary moderate cardiac dilatation. By a return of the normal myocardial tone with rest and the development of cardiac hypertrophy the increase of blood-pressure during this period may be explained.—*American Journal of the Medical Sciences.*

Insurance Medicine.

Goiter and Life Expectancy.—C. H. Mayo and H. S. Plummer say that the apparent prevalence and increase in goiter has aroused much interest in the subject during the past few years. Recording the dangers of surgical mortality will be of general benefit, since in the report of operative deaths lies the best incentive to avoid the dangers, low though they may be, of late operation by early treatment.

The defect of being born without a thyroid results in the unintelligent human dwarf who seldom reaches the age of puberty. These children are known as cretins and may be somewhat benefited by thyroid feeding. Most animals are fortunate in being endowed with a superabundance of each of the various ducts and ductless glands, which permits a wide variation in their functional activity and also permits the removal of large quantities of the gland without apparent loss to the system. It is estimated that the growing child needs one-third of the total thyroid generally found in normal individuals, while the adult seemingly may maintain perfect health with one-sixth of the gland. A minute amount of the secretion seems to act as a hormone which maintains the necessary stimulation of the other kinetic glands of the body with associated function. Some operators maintain that the total removal of the thyroid in the adult is harmless and is indicated in diseased conditions. We should caution against the total removal of the thyroid except in malignancy.

The four parathyroids so intimately connected with the thyroid in location and function should be preserved with equal care from injury at operation. Undoubtedly two, and possibly one of these glands, may be sufficient to maintain function; but the danger of creating a deficiency of thyroid and parathyroid secretion is doubled when the operation on the thyroid is extended to removal or partial removal of both lobes, unless care is exerted to keep in front of the posterior capsule. If accidentally removed the parathyroids should be reinserted in an adjacent location in the field of operation. Thyroid and parathyroid feeding should be combined with the administration of lactate of calcium to control muscular spasm. With actual loss of glands the outlook is serious. If due to loss of circulation later improvement is to be expected. While deaths from tetany represent but a fraction of 1 per cent., even this slight mortality is unfortunate because it is usually preventable.

Investigations of Rosenow and others who have made cultures of the crushed tissue of diseased thyroids show that bacteria can be cultivated from some of the glands. While very suggestive, the exact relationship of these bacteria to the disease has not yet been sufficiently investigated to make any assertions. Acute infections are very rare as is also tuberculosis. A late manifestation of lues is probably a factor in more cases than is generally supposed. The mortality from infections other than surgical is so slight as to hardly need consideration.

Malignant degenerations are very rare. Carcinoma is more frequent than sarcoma, while both together represent less than 1 per cent. of the operations upon more than 1,300 new cases of goiter seen at the Mayo Clinic in 1914.

Simple goiter or a simple increase in the size of the gland may occur at any period of life but is quite common at puberty, an edematous swollen gland containing watery colloid and gland secretion. Such glands are subject to fibrous, cystic, or calcareous degeneration. There is, however, a change that occurs after many years in such glands which produces a train of symptoms not unlike the worst symptoms of exophthalmic goiter. Such cases are more fatal than the average exophthalmic goiter. The mortality in these cases from operation is not less than 5 per cent.

Plummer calls attention to a point in support of this theory, to which little attention has hitherto been paid, that an individual aged 22 years, with an adenoid of the thyroid, has a definite chance of developing a train of symptoms during the thirty-sixth year so similar to the symptom-complex associated with hyperplastic thyroid that the best trained diagnosticians are constantly confusing the two conditions. Of 916 operations performed in the Mayo Clinic for simple goiters during the year 1914, 801 of the cases were female and 115 male. With regard to exophthalmic goiter some cases run an acute course to death in the first months, a slightly larger number in the latter half of the first year, at which time the most marked effect is shown on the heart, liver, kidneys, and nervous system. It is during this period that the operative mortality is highest. After the first year these cases fluctuate with severe exacerbations, down to a base line which is far above normal. A few patients apparently make a fair recovery with or without medical treatment; but relapse is common. As for the age incidence of exophthalmic goiter of the 386 cases seen in the Mayo Clinic during the year 1914 the greatest number of cases occurred between the ages of 20 and 30 and 30 and 40. Of these 386 cases 323 were females and 63 males. From a surgical standpoint operations often aided by medical treatment cure exophthalmic goiter in 70 per cent. of cases. About 16 per cent. of the remaining cases are notably improved. About 4 or 5 per cent. have been operated on when the degeneration of the essential organs had become permanent and there was little hope of improvement, but the progress of the disease has been checked. In younger individuals about 5 per cent. with the same type of degeneration slowly make a partial recovery on account of their youth. The immediate mortality in exophthalmic goiter is about 3 per cent. The mortality in simple goiter without complications is largely due to surgical accidents and need scarcely be considered. The mortality in degenerating simple goiter, the socalled thyrotoxic goiter, is high; we should place it at least 2 per cent. greater than exophthalmic goiter.

Relapses occur in about 10 per cent. of cases of exophthalmic goiter. The mortality from secondary operations is exceedingly low.

There is a relapse of an appreciable degree in about 10 per cent. of the cases of degenerating simple goiter. About 5 per cent. of patients have secondary operations.—Medical Section of the American Life Convention.

Insurance for Wife, Effect of Divorce.—The benefit accruing from a policy of life insurance upon the life of a married man, payable upon his death to his wife, naming her, is held in Filley *v.* Illinois L. Ins. Co., L.R.A. 1915D, 130, to be payable to the surviving beneficiary named, although she may have years thereafter secured a divorce from her husband, and he was thereafter again married to one who sustained the relation of wife to him at the time of his death.

Book Reviews.

SENESCENCE AND REJUVENESCENCE. By CHARLES MANNING CHILD of the Department of Zoology, the University of Chicago. Price $4.00. Chicago: The University of Chicago Press, 1915.

ALL who are interested in the deeper problems of biology, and especially zoologists who have followed the work of Prof. Charles Manning Child as it has appeared during the past ten years in various journals, will welcome the summary of his results just published by the University of Chicago Press under the title "Senescence and Rejuvenescence." Under this modest title are concealed the foundations of a distinct theory of biology.

The material for Professor Child's investigations has consisted chiefly of fresh water Planarians, a group of flat worms that under experimental conditions show extraordinary plasticity of structure. A piece of a worm may be reconstituted into a whole worm like the original, except in size. But no part can reconstitute parts anterior to its own level unless the head region is formed first. Each part dominates the parts posterior to it. The degree of dominance is associated with the rate of metabolism. The latter, as measured by the production of carbon-dioxide, is found to be parallel to susceptibility to poison, which is the test usually employed by the author.

New individuals, whether produced artificially or by normal reproduction, either sexual or by fission, show a higher rate of metabolism than do older individuals. Differentiation and growth are associated with an increase in the physiologically stable constituents of the cells of the body and a decrease in the rate of metabolism. This is the basis of senescence, and if continued leads to death. Rejuvenescence is a reduction of the stable constituents and an increase in the rate of metabolism. This takes place in starved planarians, in pieces separated from the body by cutting or by normal fission, and in eggs during the early stages of development; but not in germ-cells before fertilization. The mature egg or spermatozoon is an old cell, highly differentiated (in this the author differs from Minot). The sexual reproduction fertilization is the stimulus that starts the process of rejuvenescence.

The life-cycle consists of growth and differentiation alternating with reduction and dedifferentiation. But the rate of metabolism is not the same in all parts of the body. It varies progressively along certain axial gradients. The chief one of these is in the longitudinal axis of the body, and the highest rate is in the head. During normal development differentiation begins in the head; and, in general, a part having a higher rate of metabolism dominates and controls the process in adjoining parts having a lower rate.

These observations and inferences are among the more striking ones that form the basis for a theory of the organism that is neither vitalistic nor chemical, and is diametrically opposed to the "corpuscular" theory of Weismann. It is a physicochemical theory, in which the living organism is defined as "a specific complex of dynamic changes occurring in a specific colloid substratum which is itself a product of such changes and which influences their course and character and is altered by them." The organism is compared to a river. "From the moment the current begins to flow it is a constructing agent, *i.e.* it determines form along its channel, and from the same moment the structure already existing affects the flow of the current." While rejecting entirely the idea of a preformed and continuous germ-plasm, the author recognizes that orderly development and definite form are characteristics of organisms. These are accounted for by some form of stimulus arising in the dominant center of the organism.

While these views are interesting, stimulating, and in harmony with certain present-day ideas in biology, to the reviewer it seems rash to reject results obtained from the study of higher organisms, in which nature has analyzed the functions of the body. This seems especially true of the mass of evidence collected by a host of investigators, which goes to show that there is a germ-plasm resident in the nucleus of the cell, that it is multiplied at each cell-division, and that it is of so definite a value that the presence or absence of a group of definite characteristics of the body may be traced to the presence or absence of an individual chromosome in the germ-cell. We await with interest the fuller discussion of reproduction that Professor Child promises for another time.

A TEXT-BOOK OF MEDICAL JURISPRUDENCE AND TOXICOLOGY. By JOHN GLAISTER, M.D., D.P.H. (Camb.), F.R.S.E.; Professor of Forensic Medicine and Public Health in the University of Glasgow; Ex-President and Fellow of the Royal Faculty of Physicians and Surgeons of Glasgow; Licentiate of the Royal College of Physicians and Surgeons of Edinburgh; Examiner in Medical Jurisprudence and Hygiene to the Royal College of Physicians and Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow for Diplomas in Medicine and Surgery, and Examiner in Public Health for the Diploma in Public Health of these United Corporations; formerly Examiner in the University of Birmingham; Senior Medico-Legal Examiner in Crown Cases for Glasgow and Lanarkshire, etc. Third edition. With 137 Illustrations and One Colored Plate. Price $5.00 net. New York: William Wood & Co., 1915.

THIS is a volume of 857 pages of which the first 597 are devoted to the subject of medical jurisprudence, and the remainder to the subject of toxicology. Medical jurisprudence is dealt with in a manner strictly in keeping with the thoroughness with which this field has been covered in England. Stress is laid chiefly upon English principles and procedure, which while they may not answer all the needs of the American student, nevertheless give him a broad foundation in the general theory of medical jurisprudence. However, only a relatively small portion of the book deals with the English procedure. The main body of the work presents a detailed exposition of medical jurisprudence in its universal aspects and in its latest developments, including such subjects as personal identity, anthropometry, finger prints, identity of the dead, death in its medicolegal relations, wounds, blood-stains and their examination, impotence and nullity of marriage, etc. The concrete case reports contribute materially to the interest and lucidity of the text. These case reports constitute also an important feature of the section on toxicology. The book contains a large number of illustrations.

OVERCROWDING AND DEFECTIVE HOUSING IN THE RURAL DISTRICTS. By Dr. HARVEY B. BASHORE, Inspector for Pennsylvania Department of Health. Author of "The Sanitation of a Country House," "The Sanitation of Recreation Camps and Parks," "Outlines of Practical Sanitation." First Edition. First Thousand. Price, $1.00 net. New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Limited, 1915.

THE title of this book of 92 pages fully indicates its content and scope. The observations were made in a typical American rural farming community in which conditions almost as bad as those in city slums were found. The subject matter is discussed under the following chapter headings: Land Overcrowding, House Overcrowding, Defective Building, Overcrowded and Defective Schools, and Results. The effects of rural overcrowding and defective housing are summed up in lack of efficiency, disease, and premature death to many. A series of fifteen full-page reproductions of photographs accompany the text. The book is an original and valuable contribution to American public-health literature.

TASCHENBUCH DES FELDARZTES. II. Theil Herausgegeben von Generalarzt. Professor Dr. AD. DIEUDONNÉ, Geheimrath Professor Dr. M. V. GRUBER, Professor Dr. H. GUDDEN, Oberstabsarzt z. D. Dr. W. HASSLAUER, Privat-Dozent Dr. W. HEUCK, Stabsarzt Professor Dr. FR. SALZER, Oberstabsarzt Professor Dr. G. SITTMANN, Professor Dr. W. SPIELMEYER, Professor Dr. W. WEICHARDT. Zweite, neubearbeitete Auflage. Price, 4 Marks. Munich: J. F. Lehmann's Verlag, 1915.

A special wrapper informs us that this edition has incorporated the experiences of the present war. The book is of pocket size, and bound in flexible covers. Two features, always noticeable in works of this class, are in full evidence here. First, the clean cut, axiomatic statements concerning diagnosis and treatment, which as a rule serve to give character to such publications. Second, the wholly unsatisfactory attempts to supply effective data when such do not exist. This is seen in the specialties. If an ordinary army surgeon, perhaps with no special training could recognize and manage cases of—for example—dementia precox, according to the principles laid down here, there would be no need for psychiatrists.

Society Reports.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

Twenty-eighth Annual Meeting, Held at Pittsburgh, September 14, 15, and 16, 1915.

THE PRESIDENT, DR. CHARLES L. BONIFIELD OF CINCINNATI, IN THE CHAIR.

Further Experiences with Local Anesthesia in Herniotomy.—Dr. J. H. JACOBSON of Toledo, Ohio, said that at the Providence meeting of the Association in 1913, he reported twenty-eight operations for the radical cure of inguinal hernia performed under local anesthesia. Since that time he had made ninety-six operations by the same method. The following was a tabulation of all operations: 96 operations for radical cure of inguinal hernia; 6 operations for radical cure of strangulated inguinal hernia; 7 operations for radical cure of femoral hernia; 5 operations for radical cure of strangulated femoral hernia; 3 operations for incarcerated femoral hernia; 2 operations for incarcerated umbilical hernia, and 5 operations for incisional hernia, a total of 124. There had been no deaths. His further experience with this method of performing herniotomy had convinced him that whenever possible, such operations should be performed under local anesthesia. The only exception to this rule should be in herniotomy in children and where the operation must be performed in uncontrollable nervous adults. The latter exception in actual practice was not so frequent as one would think, for the reason that most nervous individuals could be controlled by carefully explaining to them the nature of the operation and the reasons for operating under local anesthesia. A preliminary hypodermic injection of morphine and scopolamine was usually sufficient to allay all nervousness and the operation could proceed even in nervous patients with the same facility as under general narcosis. In only three of the operations was it necessary to complete the operation with a slight amount of ether. These were among the earlier operations. Local anesthesia recommended itself for hernia operations because it insured the patient absolute safety. No other form of anesthesia gave the same degree of safety as did the modern Braun technique of local anesthesia. When a surgeon had mastered the few principles which were necessary for success in local anesthesia he would soon abandon all other anesthetics in herniotomy. He had never observed the slightest toxic effect from the use of the ½ per cent. novocain and adrenalin solutions which he had employed for these operations. The frequency of hernia in otherwise normal individuals should make it the most common of all surgical operations. This would be the case only when the entire surgical profession would give such patients a method which involved no danger to life and which gave a maximum of cures. These conditions were at the present time best fulfilled by the use of local anesthesia in such hernia operations.

Dr. JOHN W. KEEFE of Providence, R. I., said his experience was in accord with that of the essayist. He had done a number of hernia operations with the aid of local anesthesia. Recently he had been using morphine and scopolamine previous to using cocaine and adrenalin. He found the scopolamine occasionally made the patient so excitable that in a few instances he had had to defer the operation to another day. This might be due to some peculiarity on part of the patient. Most of the operations for inguinal hernia could and should be done under local anesthesia.

Dr. ALBERT VANDERVEER of Albany, N. Y., said he had gradually reached a point, he thought, when the majority of the profession were in favor of local anesthesia, and yet the subject was not definitely settled because it should receive a good deal of consideration not only from our State but our national associations. He did not believe a hernia operation should be undertaken in children under local anesthesia. He believed a general anesthetic was best for that purpose.

Dr. WILLIAM H. HUMISTON of Cleveland, O., stated that any one who had seen Dr. Jacobson operate under local anesthesia would be convinced that he was a master of that art. In following an exclusive method of anesthesia, one was inclined to make every patient submit to that form of anesthesia, and in his early work he soon found out that this was poor judgment. It was necessary to select our cases.

Dr. JACOBSON, in closing, said he did not think we ought to consider local anesthesia without adopting the modern technique of Braun, and we ought to eliminate cocaine on account of the disturbances following it and the danger attending it. When one became familiar with local anesthesia and the method of giving it, it would appeal to him. His plea was to get more of these cases of hernia on which to operate as we could assure these patients absolute safety.

A Case of Intestinal Obstruction and Volvulus.—Dr. RUFUS B. HALL of Cincinnati, reported a case of intestinal obstruction and volvulus, caused by a large gallstone. He emphasized the statement that the profession generally did not regard gallstones in which the patient was not a great sufferer, as surgical. These cases were treated by physicians most contentedly and hopefully, with very indefinite results so far as any permanent relief was concerned, being variously described by such vague terms as stomach symptoms, discomfort after meals, indigestion, neuralgia, gastritis, liver derangement, etc., and treated for years without any permanent benefit. He believed that they were surgical and he would recommend exploratory operation in all those chronic cases in which there was a clear past history of one or more acute attacks. If an exploration was made at that time, it would not be a serious operation and would avoid many of the serious complications that were likely to develop later. In those cases in which the stone, through ulceration, passed into the bowel, the patient was subjected to great danger, even if he did not survive. That any of them survived the many dangers attending this tedious process was marvelous. When intestinal obstruction occurred, it was so many years after the acute attack that the real cause was not recognized until revealed at the operation or autopsy. The long past history of gallstone was ignored or forgotten. He thought the advanced treatment of exploratory incision which he recommended for this very large class of suffering patients ought to be recommended by all men engaged in special abdominal surgery, and thereby educate the family physician to call consultation in these cases more frequently than was the custom at the present time.

Dr. HUGO O. PANTZER of Indianapolis stated that the case cited by the essayist brought to his mind one instance which was to him very instructive. The first case was reported by Dr. Elsner, Rochester, N. Y., about twenty odd years ago. In that case a stone of similar size to the one described by Dr. Hall following a history of gall-bladder trouble was attended by attacks of acute obstruction. The case, when seen, in each of the attacks, showed a different part of the abdomen to be the seat of obstruction, and when finally the stone was passed by the rectum the thing was easily explained. The stone created local irritation, and within the musculature the adjacent parts would open spastically, close upon it, and the obstruction was explained in that way. Under the influence of medication, and in one or two attacks without medication, immediately preceding the spasm relaxed and the stone went farther down. This was unusually interesting inasmuch as it was complicated with volvulus, and he believed Dr. Hall's case was about the only one of the kind ever reported.

Dr. FRANK D. GRAY of Jersey City said that all of us every now and then learned from our own experience and observation of others the importance of dealing with abdominal conditions promptly. If this particular case had been operated upon promptly there was no doubt that woman's life could have been saved, and the plea he would make was to give heed to the undoubted and persistent symptoms, go in, find the trouble, and relieve it.

Dr. FRANCIS REDER of St. Louis said this case was of interest from two points of view. First, what a gallstone could do; second, the promptness with which the patient died after the operation without regaining consciousness. An interesting feature was the cause of death which the essayist attributed to the violent peristalsis. There were other factors to be considered. The principal one was that of anesthesia which might be looked upon as a contributory cause of death in this case. He presumed it was a general anesthetic. The resisting power of the patient had been underestimated. He should say that the case was one for local anesthesia and for exploratory operation.

Dr. GORDON K. DICKINSON of Jersey City stated if 30 per cent. was our accurate diagnostic value in the abdomen, then operation should be done promptly, and more on suspicion than on an accurate diagnosis, more

on opinion that something was wrong than to wait until we felt that something was positively and surgically bad. In Europe, in Mexico, and in the abdomen, watchful waiting was bad policy. In going over his cases and studying them carefully he found that death in many of them was due to dilatation of the right side of the heart which came on quickly after an abdominal operation, partly due to the anesthetic, and partly due to the condition of the heart before he took the case. The fact that the abdomen was relieved of its pathology made him feel that possibly in the case of Dr. Hall there was a right-sided heart failure.

Dr. J. Henry Carstens of Detroit agreed with the essayist and with Dr. Gray that we did not perform these operations early enough. If we could make a diagnosis and resort to an exploratory operation promptly, we would never have so many of these cases go to the bad.

Dr. Magnus A. Tate of Cincinnati said the case reported by Dr. Hall reminded him of one he saw five years ago. A woman, sixty years of age, had been complaining of progressive pain and tenderness for a number of years. One day she was taken with severe vomiting, which kept up, the abdomen was distended, and he tried his best to persuade her that a section was necessary. She refused to undergo an operation. Later she was operated on, and a large stone, 2½ inches in size, was found in the intestine, about 6 inches from the gall-bladder. The intestine was gangrenous and ready to burst. In making the resection a portion of the contents escaped into the abdominal cavity. The patient went into a state of collapse and died about three hours after the operation.

Dr. John F. Erdmann of New York City said he had had five cases of intestinal obstruction from gallstone in the past ten years, and of this number four died. Strange to say, the recovery was in a woman, seventy-two years of age, upon whom he did an enterosotomy and appendectomy. She also had a large tumor of the right ovary which was mistaken for appendicitis.

Dr. Herman E. Hayd of Buffalo said he recalled a patient, a woman, seventy-nine years of age, who had practically no symptoms. So far as the passage of a stone was concerned, she never had an attack of violent pain, and yet the stone found was as large as a small hen's egg. He was called to see her when she was having fecal vomiting. She vomited for two days. Finally, he operated, removed the stone, and she lived five days after the operation. There was no history of ulceration nor of an inflammatory attack. The stone was found in the bowel and the symptoms were those of intestinal obstruction.

Dr. Albert Vander Veer of Albany, N. Y., stated that in his collection he had a specimen which he obtained many years ago. A patient whom he had attended some fifteen years previously, was taken very ill and had what he supposed was an acute jaundice. He recovered from this attack and lived fifteen years afterward in good health. At the time of death, he was allowed to make an autopsy. He suspected he had some malignant disease of the intestinal tract. He found a direct communication between the neck of the gall-bladder and the beginning of the transverse colon. He believed this man in his previous illness had passed through a form of sickness that had resulted in relieving the gall-bladder of gallstones, and they had passed out through the large intestine. The fistulous tract gave him no great inconvenience.

Dr. Charles L. Ill of Newark, N. J., stated of forty cases operated on by his brother and himself they found three large gallstones in the small intestine. In one case they found a mass between the small intestine and the gall-bladder. Three large gallstones were passed through ulceration into the intestine, caused obstruction, and killed the patients.

Dr. D. Tod Gilliam of Columbus, Ohio, said that when we spoke of being unable to find a gallstone or gallstones near the lower part of the ileum, there was reason for it. The upper part of the intestinal canal was larger in caliber than the lower, and a gallstone would pass down pretty well toward the entrance of the ileocecal region before it became inspissated, and the lower part of the ileum was less distensible than the upper part. This should teach us the lesson that whenever we found great distention of the abdomen along with obstruction, it should always remind us there might be gallstones at the bottom as a factor.

Dr. John Norval Bell of Detroit, asked the question, how do these large stones get into the bowel? The case he had would perhaps elucidate that in a measure. A woman, sixty-seven years of age, who had never had any pain, but simply heaviness and fulness, had a palpable tumor of good size. It was hard to determine its nature. On opening the abdomen he found it was a large thickened gall-bladder full of stones. There was one stone four times the size of the one Dr. Hall had described.

Dr. William Edward Darnall of Atlantic City said he recalled a case he saw a year or two ago on which he operated on the diagnosis of appendicitis with all of its symptoms, and when he got inside he found a small puddle of pus and fished out a stone about the size of a goose egg. It was about ⅛ inch thick, with a hard shell of calcium salts. This enterolith, which it was undoubtedly, had got several accumulations of bile salts which under some circumstances went on to a full gallstone. The question we wanted to think about was, what was the composition of the stone?

Cholecystectomy versus Cholecystostomy.—Dr. L. W. Swope of Pittsburgh said no absolute rule could be laid down to guide one in determining when cholecystectomy was preferable to cholecystostomy, yet there should be some way of ascertaining why there was so much higher percentage of cures after removal of the gall-bladder than after draining. From the former cases in the patients who survived operation and answered my inquiries he got a report of 96.8 per cent. cures, and the remainder suffered from symptoms probably indicating associated gastric or pancreatic disease. On the other hand, in cholecystostomy there were only 74.8 per cent. of cures, the remainder being no better and many of them worse than before operation. In considering the latter it was of course true that in many of them the disease was so advanced and adhesions so extensive that removal of the gall-bladder was out of the question because of its high mortality in such cases. There were still a large number where it seemed to be reasonable to suppose that better permanent results would have been obtained by removal of the gall-bladder instead of drainage. This argument received verification in the results obtained in the two-stage operation where for some reason he decided to drain the gall-bladder at the first operation and remove it four to eight weeks later. The question was how to decide intelligently between these operations. It was again a matter of mortality which was slightly higher in cholecystectomy than in cholecystostomy, 2.3 per cent. as compared with 2.5 per cent. The former was cut down by choosing the drainage operation whereas the conditions indicated increased risk from removal of the gall-bladder. The dangers of cholecystectomy included possibility of injuring the ducts, vessels and surrounding viscera from the manipulations necessary to free the adhesions. When adhesions were so extensive that the removal of the gall-bladder would be attended with marked traumatism and left large areas of raw surfaces to be covered, then because the primary mortality was so high and the hope that subsequent complications would not arise, was so uncertain, that he believed better results were obtained by drainage of the gall-bladder. While he believed that a diseased gall-bladder, like a diseased appendix, should always be removed when possible, still there were exceptions. Because primary removal of the gall-bladder opened up so many tracts for the possible extension of infection, and because exprience had shown that occasionally a patient did die from acute sepsis in infections of this kind, he was convinced that such a gall-bladder should be drained with as little manipulation as possible. Then at the end of four to eight weeks, if recovery was comparatively complete, the gall-bladder should be removed, as these were the patients who were left with a chronic infection which advanced so insidiously that years might elapse before return of symptoms; but when they did return the involvement of the upper abdomen was frequently too extensive to permit complete removal and ultimate cure. These cases also offered favorable sites for subsequent malignant degeneration. In advocating cholecystostomy in infective cases he did not include hydrops and chronic empyema of the gall-bladder in a quiescent state as cholecystectomy was safer where the infection had ceased to be active.

Dr. John F. Erdmann of New York City stated that last year he presented to the Association 300 and some odd cases of gall-bladder operations, with a mortality rate that to him was rather shocking because he did not feel that he had secured such a low mortality as he should have done. He was speaking more of the mortality rate in association with that presented by the

author of the paper. As to cholecystectomy versus cholecystostomy, he said that activity, efficiency and morbidity were the things all of us should consider to reduce the mortality to the lowest point. Anything that would increase efficiency must of necessity decrease morbidity, and cholecystectomy without any question limited morbidity and increased efficiency. As a result of his statistics last year he had been doing cholecystectomy practically in every case. There were some cases, however, in which on must do cholecystostomy.

Dr. C. S. FOSTER of Pittsburgh said that was an indication for taking out gall-bladders that were without symptoms. For instance, if one suspected the ducts to be enlarged and the glands enlarged down along the ducts, independently of pancreatic disease or of involvement of the viscera of the stomach, he knew that such a gall-bladder was infected and ought to be taken out.

Dr. JOHN W. KEEFE of Providence, R. I., said that we ought not to operate during the acute stage of inflammation in gall-bladder disease. Occasionally, we would have a perforation and have gangrene, and there would be a few cases in which it was necessary to operate during that period, but if one could keep away from operation and wait until convalescence was established, he would meet with greater success when he did operate.

Dr. FRANCIS REDER of St. Louis said that in regard to feeding a patient who was deprived of bile salts, on ox-gall, if one was reasonably certain that the patient's bile was in a normal condition one could feed that patient with his own bile by simply making him drink it. He would reject it, but by introducing the bile through a stomach tube the patient would retain it.

Unusual Contents of Inguinal Hernia.—Dr. CHARLES W. MOOTS of Toledo, O., reviewed the literature of hernia and reported the following case: Mrs. S., aged 38, resident of Detroit, family history unimportant. She had never suffered any illness necessitating her remaining in bed. She never had any suggestive urinary symptoms, furthermore, her first menses occurred at 12 years of age, were always painful, periods too frequent with profuse flow, the hemorrhages being increased the past year. About nine years previously she noticed a lump the size of a hickory nut in the region of the right internal abdominal ring. It remained about the same for eight years, when it came lower and appeared to double in size. At this time it also became very painful. Operation was performed August 22, 1914, under preliminary hypodermics of morphine and scopolamine, nitrous oxid and oxygen, and field-blocking anesthesia. He made the usual skin incision and then found that the mass could not be pushed upward into the inguinal canal as it was adherent to the labium majus. An elliptical portion of the labium majus was excised in order to free the mass which now gave him the impression that he was dealing with a kidney. However, it being almost beyond the point of identification, an opening was made in the peritoneum, when the right kidney space was explored and found deserted. It then occurred to him that it was well to know something at least of the left kidney. Sweeping the hand across the peritoneal cavity, the left kidney was found normal as to size, location, and feel. Dropping the hand into the pelvis he found what proved to be a parovarian cyst, 3½ inches in diameter, a subperitoneal fibroma the size of a walnut located on the fundus uteri, and a hydrosalpinx of the right tube. The exploratory incision into the peritoneum was then quickly closed, followed by a nephrectomy of the useless right kidney, and the inguinal canal closed in the usual manner. Time from starting the gas was forty-two minutes. A medium incision was then made, the parovarian cyst, the uterine fibroid, and right tube were removed, followed by the usual closure. The time of this latter operation was twenty minutes, making in all one hour and two minutes for the period of anesthesia. The kidney was composed of a mass of small cysts about ½ inch in diameter. The recovery of the patient was uneventful, and she left the hospital at the end of two weeks in fine physical and psychical condition.

The Surgery of the Appendix.—Dr. JOHN W. KEEFE of Providence, R. I., stated that in a series of 129 cases occuring in his service at the Rhode Island Hospital it was found necessary to drain in 65 cases, showing the tendency of the profession to delay operating. During four months he operated 52 times with one death; 50 per cent. of the cases were drained. The morbidity in these drainage cases should be avoided. The tendency to a long drawn out convalescence, to fecal fistula and secondary abscesses, was unfortunate to say the least. He operated on most of the cases shortly after they left the hospital. The Ochsner treatment was not understood by the profession and consequently had done great harm. Rapidity in operating was essential when the patient was prostrated. The surgeon should not attempt too much; open the peritoneal cavity, attend to the pathology found as quickly as possible, drain and close the wound, as far as the drain, with quickness. Stab-wound drainage was usually not necessary, but occasionally might be of service. The after-treatment consisted of the Fowler position, withholding the food, lavage of the stomach, if necessary, frequent rinsing of the mouth, tap water by rectum and small doses of morphia. On the third day the bowels were moved by enemata, and he had found eserine and pituitrin in some cases of value where distention of the abdomen with gas was troublesome. Appendicitis was a disease amenable to surgery. Early operation by a competent surgeon should be attended with no mortality. When he knew this to be a fact and realized how easy it was to remove an appendix in the first twenty-four hours of the disease, was it not regrettable to hear of so many patients dying from this affection? Both the physician and the laity were to blame. They must become enlightened and though much had been said and written on the subject it was our duty to continue to raise our voices and to cry out, "Don't kill with cathartics." Make the diagnosis early. Advocate operation before the end of the first day and see to it that a man well qualified to do surgery performed the operation.

A Prognostic Sign in Acute Suppurative Peritonitis.—Dr. HUGO O. PANTZER of Indianapolis, Ind., said that the presence within the abdomen in cases of peritonitis of a free or encapsulated serous or seropurulent fluid, which was practically without odor, by the side of encapsulated foul material, indicated a strong systemic defensive activity of distinct prognostic value. There were cases of peritonitis which by their violent symptoms and the conditions found at operation, included no apparent hope of recovery, and which notwithstanding made straightway for recovery. It was of prognostic interest to know the signs which at operation in a given case revealed this probability. In June, 1906, on a very hot summer day, which seemed to accentuate the gravity of the case there was brought to him a male baby of six months, which a few days before had become acutely ill and had at once and thereafter revealed the characteristic signs and symptoms of an acute general peritonitis of probable appendiceal origin. The temperature was 104°, pulse feeble and 170 to the minute. At operation there was found much free fluid within the abdomen, cloudy with pus, but odorless; and about the ileocecal coil were extensive adhesions enclosing an abscess containing about 45 c.c. of creamy and extremely foul pus and the gangrenous appendix. The case seemed utterly hopeless, yet it turned straightway to recovery. With three drainage tubes within the abdomen the very next day the child was found cooing merrily and taking its mother's milk, and from that time on it began to recover speedily. With many subsequent cases revealing a similar experience, it might now be set forth that such finding had a reliable prognostic value. The defensive material thus produced by Nature in single instances might vary in its characteristics. Notably it might be merely clear serum or quite cloudy, and it might be free within the abdominal cavity or encysted in one or more pockets. Conversely, the original morbid material might be variously encapsulated in one or more pockets, and even vary in degree or even kind of odor as pertaining to the several pockets in a given case.

Abnormality of the Sigmoid.—Dr. BUDD VAN SWERINGEN of Fort Wayne, Ind., reported a rare congenital abnormality of the sigmoid in a woman, 37 years of age, who had suffered from childhood with constination. Palpation of the abdomen elicited tenderness and tumefaction in both flanks. By the vagina the mass in the left side was felt to be very hard and larger than that on the right. A diagnosis of malignancy had been made by several consultants on this finding. The abdomen was opened by a median incision. The omentum was firmly adherent on the left side, but was finally loosened and packed back out of the way. The tuboovarian abscess on the right side was removed. The appendix, which was adherent to it, was also removed. In enucleating the left tube and ovary, which were very intimately adherent to the sigmoid, there was uncovered a cylindrical structure about 6 inches long, apparently coming out of the side of the sigmoid and entering the lateral aspect of the rectum. After freeing it, it was thought to be a diverticulum open at one or

both ends. As the main channel of the bowel was thought to be still uncovered the diverticulum was ligated at the sigmoid and rectal attachments and removed. The left ovary and tube were now enucleated and removed. Preliminary to closure of the abdomn water was run into the rectum, it being his custom to allow two quarts to run into the bowel. It was then found that the sigmoid and descending colon could not be filled and that he had evidently destroyed the only passageway between the rectum and colon. He therefore, anastomosed the rectum and sigmoid by the Noble method at the site of the former channel. The woman made a satisfactory but prolonged convalescence, and went home with a fecal fistula for which she was successfully operated May 11, 1915. His reasons for thinking it was a congenital defect and not a part of the sigmoid compressed by the exudate of a salpingitis and pelvic peritonitis were four, namely: 1. The history of lifelong constipation and necessity for taking cathartics. 2. The tube did not come off of the sigmoid at its end nor did it enter the top of the rectum. 3. The ballooning of both the sigmoid and the rectum showed a process which must have antedated the pelvic inflammation. 4. The walls of this tube did not correspond to those of a compressed tube, that is, they were not thrown into folds and by no kind of incision on or around the tube could its calibre be increased to that of normal bowel.

Some Observations upon Postoperative Ureteral Fistulæ.—Dr. HENRY DAWSON FURNISS of New York City said the proper care of ureteral fistulæ depended upon a knowledge of the natural history, a careful study of all the conditions, and selecting the treatment that was going to give results. He thought that he had been to conservative in attempting to save kidneys that were functionally of no value, and that in this so-called conservatism he had risked too much. It was useless and unwise to attempt a ureteral and vesical anastomosis in the cases where there was serious renal damage. The operation was attended with more risks than a nephrectomy and should success follow, the drainage into the bladder from an infected kidney was in itself harmful.

Mesenteric Thrombosis; Report of Two Cases.—Dr. WILLIAM EDGAR DARNALL of Atlantic City believed that infection played a decidedly more important part in the etiology of mesenteric thromboses than we had thought in the past. Recent studies went to show what a tremendous element infection was in all the ordinary types of embolism and thrombosis, such as occurred in the saphenous and pelvic veins, the lateral sinus, the uterine sinuses and other parts of the anatomy. It was only reasonable to infer, therefore, that the cases of acute mesenteric thrombosis were the result largely of some focus of infection, such as appendicitis, gall-bladder infection, ulceration of the intestine or even of metastasis from a distant focus of infection. The superior mesenteric artery was most often the seat of the trouble. Any other treatment than operative need not be considered. It was generally agreed that resection of the involved gut should be done, but many cases had been lost which possibly might have recovered if the anastomosis had been delayed and a secondary operation done later. The reason for this was that one could not be certain that the gangrene had reached its limit and would not extend farther and that the complete operation was apt to involve more time and trauma than the patient could stand. These patients were usually in bad condition when they came for operation. It was therefore better, according to Jackson, that the gangrenous portion of the gut should be brought well out of the incision, leaving full liberal margins at both ends. The gut should be resected and the ends of the same sewed into the wound which was walled off with gauze. With both ends of the intestine thus opened distention might be relieved and signs of further extension of the gangrenous process watched. At a later day, if the patient survived, the fistula might be closed and an anastomosis done.

Remove the Uterus Instead of the Ovaries for Incurable Cases of Menstrual Disorders.—Dr. J. HENRY CARSTENS of Detroit stated that all cases that required the establishment of the menopause should be subject to hysterectomy, leaving the ovaries. Vaginal hysterectomy was preferable, but if there were extensive adhesions and other obstructions that required celiotomy, then suprapubic hysterectomy could be performed, leaving one or two ovaries.

The Use of Sodium Citrate for Direct Blood Transfusion.—Dr. CHARLES B. SCHILDECKER of Pittsburgh said the use of sodium citrate for direct blood transfusion in human beings had been suggested by Hustin of France in 1914. In the Argentine Republic a number of investigators had had success with this substance. Lately in New York, Dr. Richard Lewisohn and Dr. Richard Weil had reported success by the use of sodium citrate in blood transfusion. At first he was afraid that the toxic effects of sodium citrate were such that it would not be advisable to use it. He was studying the effect of citrate blood transfusion and would report on that subsequently. In order to make transfusion a simple procedure so that it could be easily performed, an apparatus was devised for this purpose. It consisted of a glass stopper, graduated cylindrical container, so made as to have a side tube near the top. The bottom of the vessel was drawn to a tube about a quarter of an inch in diameter bent at right angles. Accompanying the apparatus were two glass cannulæ, one male and one female which fitted in and on respectively the end of the container. The method of performing the transfusion was as follows: Under all aseptic and antiseptic precautions, the male tube was inserted into the vein of the donor and the female tube into the vein of the recipient. The tubes were so made that they could be securely fastened in the veins. Bull dog clamps could occlude the veins at any moment. The apparatus was then connected with the cannulæ in the arm of the donor. Five c.c. of a 10 per cent. citrate solution were put into the vessel and the blood allowed to run, gently stirring with a glass rod to effect a good mixture of the blood and the citrate solution. The blood was allowed to run until the required quantity had been obtained. The clamp was then adjusted so that the blood flow ceased. The thumb was placed on the side tube and the apparatus removed from the female tube and adjusted on the arm of the recipient. The blood was allowed to run in. The whole procedure should not take more than ten minutes. The advantages of this apparatus were: (1) The whole procedure was visible. (2) No hurry was necessary. (3) The exact quantity of blood taken could be measured. (4) It did not require much experience to use it. (5) It could be used in a private office or dwelling; it needed no hospital surroundings. (6) The operation was not an unsightly procedure.

President's Address; Some Comments on Present-Day Tendencies in Gynecological and Obstetrical Practice.—Dr. CHARLES L. BONIFIELD of Cincinnati stated that one method of diagnosis strongly recommended by some operators in recent years seemed to him to be seldom needed. He referred to the opening of the uterus. The greater one's familiarity with intraabdominal conditions the less frequently he found it necessary to do an exploratory abdominal section. Hysterotomy would find more frequent employment in the hands of the general surgeon who had broadened his field to include gynecology than in the hands of a gynecologist who had studied at the feet of a master of the art. It was from the laboratory rather than from the operating room that further success in dealing with cancer was to be expected. The importance of early diagnosis and operation was thoroughly recognized by the surgeon, if not by the laity, and the radical and painstaking operations now performed had merely reached the limit as to thoroughness. Further experience with radium had pretty well demonstrated the position it should occupy in cancer therapy. In estimating the results of a given treatment of cancer it was to be remembered that cancer differed materially in the degree of its malignancy. Dr. Harvey Gaylord had called attention to the fact that some of the tumors with which he succeeded in inoculating mice had such a low degree of malignancy that even incomplete removal served to cure the animal. The surgical treatment of uterine fibroids in the hands of an operator skilled in pelvic surgery was now so successful and satisfactory, that any other form of treatment would have to show brilliant results to supplant it. Much interest had been shown in the toxemia due to colonic stasis. He had read two short papers on this subject before the Association, and he saw no reason for changing the opinions expressed in them which might be summarized as follows: (1) Preventive treatment was of prime importance; (2) medical and hygienic treatment brought relief in a large proportion of cases: (3) in a smaller number of cases some form of surgical treatment offered the only hope of relief; (4) ileosigmoidostomy gave the best results; (5) it was not usually necessary to remove that portion of the bowel whose function was eliminated by this operation. As to the administration of anesthetics, he preferred his anesthetics to be given by

some one whose knowledge of anatomy, physiology and therapeutics enabled him to meet emergencies that might arise without much direction or supervision on his part. The professional anesthetist was a useful member of the profession, but naturally liked to magnify his calling, so he provided himself with expensive and complicated apparatus that made the operating room look like the inside of a submarine. He did not claim that nitrous oxide was not a useful agent, and that there were cases where it was preferable to either ether or chloroform, but he did claim that it had not been proved that gas was safer than ether as the routine anesthetic for major surgical operations. Pituitrin had been introduced and twilight sleep was abroad in the land. It was claimed by some good observers that the physiological action of pituitrin was identical with that of ergot and that twilight sleep had benefited some sensational magazines more than it had parturient women. But the family physician of to-day was little better prepared to meet and grapple with the real problems of obstetrics than was his predecessor of a quarter of a century ago, and it was by the family physician that the majority of cases were attended. One of the main reasons for unsatisfactory progress was that obstetrics was inadequately taught at the medical colleges.

Newer Conceptions of Intestinal Stasis.—Dr. GEORGE W. CRILE of Cleveland said experimental research had shown that indol and skatol, the typical products of intestinal stasis, produced widespread changes in the brain, the adrenals and the liver; that one of the immediate effects on the adrenals was an increased output of adrenin; and that the iodin content of the thyroid was modified. In other words, indol and skatol produced effects similar to those produced by chronic infections, excessive emotion, or excessive exertion. The histological changes produced by all these conditions were identical. He, therefore, contended that intestinal stasis was an etiological factor in those diseases of which chronic infections, excessive emotion, and excessive exertion were etiological factors. In operative cases of intestinal stasis the procedure of choice was the resection of the cecum and ascending colon, making a lateral anastomosis between the ileum and the transverse colon near the hepatic flexure and buttressing the closed end of the ileum and the transverse colon against each other to prevent later dilatation.

Gas Pains.—Dr. GORDON K. DICKINSON of Jersey City referred to the varied terminology due to the etiology, and spoke of the improvement in technic changing the extent of the reaction. He referred to the physiology, normal and pathological, of the intestinal tract, and the causes of the gas syndrome, and made some comments on the relation of the same to shock. He also alluded to preventive measures and spoke of the treatment, such as position of the patient, enemas, proctoclysis, the use of Kemps' tube, etc.

A Contribution to the Conservative Surgery of Chronic Intestinal Stasis.—Dr. HAROLD D. MEEKER of New York City said that chronic intestinal stasis was a recognized factor in producing many pathological conditions. The existence of bands, folds or veils, which might interfere with intestinal function, challenged dispute. The problem confronting the practical surgeon to-day was not how these bands were formed, but rather how best to remedy the condition as it existed and to prevent re-formation. The surgical relief first offered was so radical, that many conservative members of the profession were frightened from further consideration of the subject. A few surgeons adhered to the Lane technic, but many had striven to modify it. These modifications served chiefly to prove the tolerance of the intestinal tract to abuse. Very little had been written on the therapeutic possibilities of conservative plastic surgery as bearing on this subject. Surgical interference was indicated only when mechanical interference to drainage existed.

(To be continued.)

"Smokers' Patches" in the Mouth. — Landouzy describes these as consisting of whitish lines or triangular patches extending from the juncture of the lips to the first molar. These are also known as smoker's commissural patches. They are found exclusively in syphilitics. Tobacco is merely the local irritant which causes the patches to develop in the predisposed.—*Presse Médicale.*

NEW YORK ACADEMY OF MEDICINE

SECTION ON PEDIATRICS.

Stated Meeting, Held April 8, 1915.

DR. WALTER LESTER CARR IN THE CHAIR.

Anti-Mumps Inoculation.—Dr. ALFRED F. HESS presented this communication, in which he stated that it was well known that an attack of mumps conferred immunity on the subject. This had been the general experience and it had been his in the Hebrew Infant Asylum. During the winter of 1912-13 there was an epidemic of mumps in the institution which included one hundred cases. This winter there had been a similar epidemic of eighty cases. None of the children who had the disease in the 1912-13 epidemic had the disease during the past winter. It was evident that since the organism causing mumps had not been isolated they could have no vaccine or serum, but in view of the fact that immunity was acquired by having the disease, it seemed that they might hope to confer immunity by the use of the blood of patients covnalescing from the mumps. The Hebrew Infant Asylum furnished a favorable opportunity for trying this experiment since they had the advantage of knowing the past history of the children with a considerable degree of accuracy, and knew just what diseases they had had. Twenty children who had not had mumps before were inoculated with the blood of convalescent children, using six to eight centimeters of the blood from the vein of the elbow of the donor and injecting it intramuscularly. These twenty children were divided into three groups; those of the first were inoculated with the blood of patients who had just recovered and in whom there was still some swelling of the parotid; a second group were inoculated with blood from patients about ten days recovered from the disease, while in the third group blood from children who had had the disease several years ago was used. The injections were made when the epidemic had reached considerable proportions. All the children were then exposed to the mumps in the mumps wards. In all of the wards in which the children were exposed mumps occurred to a considerable extent after these children were exposed, but not one of the inoculated children contracted the disease. In one ward eleven susceptible children contracted the disease, while not one inoculated child did so. The same fact was shown throughout the series. The results seemed to be the same whether the children were inoculated with the blood of those recently convalescent from the disease or those who had had it several years before. Dr. Hess said he felt that the epidemic had been limited as a result of this method of inoculation and was convinced that this method was a simple preventive of mumps in an institution. Of course, in choosing the convalescent donors they should be careful to exclude syphilis. The method was applicable in a family in which one child had the disease and it was desirable to protect others. As the incubation period of mumps was long, about eighteen days, the injection could be given to other children in the family with every prospect of averting the disease. The length of time during which the immunity lasted had not yet been determined, but it very likely lasted throughout the period of exposure. On the whole, it seemed better to take the blood of recent convalescents rather than that of children who had had the disease several years before.

Dr. SAMUEL FELDSTEIN of Brooklyn asked Dr. Hess whether he had any records of the inoculated cases as having been in beds adjoining the cases that contracted mumps.

Dr. GEORGE DOW SCOTT asked Dr. Hess if the blood of the patients having had mumps some months or years previous was less efficacious than the blood of patients who had recently had the disease.

Dr. WALTER LESTER CARR asked whether the children who were inoculated developed any constitutional disturbance or whether any local reaction was observed.

Dr. HESS, replying to these questions, said that there had been no local and no constitutional reaction. As to whether the blood from the more recent cases was more efficient than that from older cases it was difficult to say, but he felt inclinded to believe that blood taken from a case at about the end of the disease gave the highest immunity. As to the exposure of the inoculated children, they were kept in wards with children who had the mumps, and who were kept in bad while they had fever and after the fever subsided were up about

the wards mingling with the other children. He did not see how a more thorough exposure could have been made. Dr. Hess thought this method might be made use of in other infectious diseases in which immunity was conferred by one attack. Possibly it could be applied in measles, but not in so great a degree, and perhaps at some future time they might learn to apply it in scarlet fever.

Clinical Distinctions between Cerebral Intoxication, Meningism (Serous Meningitis), and Meningitis.—Dr. HENRY HEIMAN emphasized the importance of recognizing, if possible, the distinctions between these conditions. He said that cerebral intoxication was fairly frequent in severe infections. In the matter of cerebral complications pneumonia stood at the head of the list, while typhoid fever, influenza, scarlet fever, acid intoxication, and other diseases and conditions had a similar tendency to develop secondary meningeal symptoms. In practically all of these cases autopsy revealed no lesions of the cerebrospinal system. In distinguishing clinically between cerebral intoxication and meningitis it must be borne in mind that: (1) There was always an etiological factor to which the meningeal symptoms were secondary; (2) that the signs in cerebral intoxication were significant of a general cerebral irritation, while in primary meningitis there were in addition distinct focal signs; (3) that lumbar puncture was the most important and definite means of differentiating the two conditions. In intoxication the spinal fluid was sterile and clear; in meningitis bacteria would in most cases be found in the fluid, either by smear or culture, and the appearance of the fluid would be changed from the normal. The cytological examination of the fluid was also significant; in the intoxication cases no variation from the normal occurred, whereas in meningitis various changes were present, depending upon the type of infection, that was, whether it was meningococcal, pneumococcal, influenzal, tuberculous, etc. When the ordinary clinical and laboratory methods were not sufficient to distinguish between the two conditions, lumbar puncture was not only justifiable but necessary, even in the presence of acute infection, like pneumonia or typhoid fever. Meningism was a term first proposed by Dupré at the Medical Congress at Lyons, in 1894, to include all those cases clinically resembling meningitis, but in which lumbar puncture revealed a sterile fluid. The causes might be classified as infectious or toxic, irritative, reflex, or hysterical. Dr. Heiman said that in his opinion, the term meningism meant a greater degree of cerebral toxemia than was found in the condition called cerebral intoxication, and differed from it only in showing evidences of increased intracranial pressure and by a symptom complex which still more resembled true meningitis. Auto-intoxication and acidosis were among the most important diseases producing meningism, which was fairly frequently mistaken for meningitis in children. Here the differential diagnosis must be made by frequent observation and by lumbar puncture if necessary. Meningism might occur in the later stages of gastroenteritis, where the symptoms might be so marked as to point to a diagnosis of tuberculous meningitis. Of the irritative causes of meningism might be mentioned head injuries, some subacute and chronic ear conditions, and operations on the cranium or upon the venous sinuses. Under the reflex causes of meningism helminthiasis might be included as a possible factor. Hysterical meningitis had been mentioned rather extensively by the French, but Aporti believed that these cases were not hysterical or psychogenic in nature but rather toxic or infectious in origin. The points of difference between meningism and meningitis were: (a) the presence of one of the above-mentioned etiological factors in meningism; (b) the transitory character of the symptoms in meningism (that was their subsidence when the etiological condition improved); (c) the ophthalmoscopic findings (in meningism one rarely found ocular changes); (d) the bacteriological and cytological findings in the cerebrospinal fluid in meningitis. This latter must be regarded as the most important differential sign. Among other conditions which might simulate meningitis were pachymeningitis hemorrhagica interna, which was characterized by enlargement of the head, its distinguishing features being punctate or striated hemorrhages in the retina, and hemorrhagic fluid on puncture of the anterior fontanelle, while the spinal fluid remained clear. The etiology of this condition was supposed to be a preexisting hemorrhagic rhinitis of diphtheritic or streptococcic origin. Another condition that might be mistaken for meningitis was pachymeninigitis interna luetica. Encephalitis in early infancy could only be distinguished from meningitis by lumbar puncture.

Dr. L. E. LEFRETA said that certain it was that without lumbar puncture a diagnosis could not be made in very many instances. It was, perhaps, advisable to resort to lumbar puncture earlier and more frequently than had been brought out in the paper. The significance or the presence or absence of cerebral tâche and of Kernig's and Babinsky's signs in making a differential diagnosis between true meningitis and conditions simulating it might have been emphasized. If there was any doubt one should resort to lumbar puncture to see what the spinal fluid showed. In view of the fatality of true meningitis it was advisable to make a lumbar puncture early, for if one found a turbid fluid there was a good chance that it might be due to the meningococcus or to the influenza bacillus, for both of which the serum treatment was available. Where the infection was due to the pneumococcus or to the streptococcus secondary to a streptococcus infection in some other part of the body the prognosis was hopeless. In cases of severe malnutrition, meningismus might be met with and here the marked retraction of the neck, the great irritability, and the hydrocephalus made the case appear to be one of meningitis. In these cases of malnutrition, the fontanelle was deeply sunken, and while this was rarely true in tuberculous meningitis it was of good prognostic significance. As the child improved the fontanelle filled and the retracted neck soon came to its normal position. A distinction must also be made between poliomyelitis with symptoms simulating meningitis and true meningitis, and here the spinal fluid cell count and the globulin content and the way they changed offered a means of making a differential diagnosis.

Dr. FENTON B. TURCK said he thought sufficient emphasis had not been placed on the fact that in young animals and in children the bacteria passed readily into the walls of the intestinal tract; they passed through the submucosa, between and never through the cells, and were destroyed there or in the blood. While they did not form toxins within the lumen of the intestines when passing through the mucosa into the wall, they produced a distinct anaphylaxis. Dr. Turck said he had recently seen several cases that presented the symptoms of meningitis, but on microscopical examination and cultures, organisms were found of the *B. coli* groups, sometimes in symbiosis with cocci in the blood and urine. In these cases it was the native bacteria that were at fault. Three or four cases within six weeks mistakenly diagnosed as meningitis was quite a large number, and the examinatien showed at once that the invasion was from the intestinal lumen. The use of vaccines in these cases offered great advantages, together with the administration of the deficient internal secretions, elimination of the infection from the intestines, and the use of alkalies to overcome acidosis. This system of treatment, together with the withdrawal of food, or giving only arrowroot, had been very effective.

Dr. MORRIS STARK said that it seemed to him that with these three conditions it was simply a question of degree. Dupré, who first discussed meningism, discussed it from the standpoint that in this condition there were no lesions, but that the symptoms were the result of irritation of the meninges, and he came to the conclusion that there was some actual change in the spinal fluid, a chemical change, or a change in the leucocytes. In the very fulminating cases the reason one found no germs might be that the patient died before pus formation had had time to take place. One should also take into consideration the difference in reaction to irritation. Different groups of children reacted differently; the spasmophiliacs were sensitive to a marked degree to meningeal irritation and then there were children who did not respond so easily. In the cases due to intoxication from the intestinal tract, the results were probably produced by bacteria in the spinal fluid, but the changes were so unimportant that they were undetected. Retraction of the neck was a very common symptom in all manner of sickness in babies, and in making a diagnosis of meningitis it became a question of the degree of retraction and the amount of force necessary to overcome it.

Dr. ROYAL STORRS HAYNES said that in reference to serous meningitis complicating indigestion he would like to call attention to the fact that there was a type of cases in which the fontanelle was not retracted, as Dr. Le Fetra had correctly indicated to be the rule, but, on the contrary, the exudate caused a distinct distention and the fontanelle was hard and without pulsation. He had seen such a case with Dr. Le Fetra in

which the child had been ill with gastrointestinal intoxication and showed the symptoms of meningitis. The fontanelle was full, hard, and showed no pulsation. While considering the advisability of lumbar puncture the child began to improve and pulsation returned to the fontanelle. It was interesting to correlate this case with a full fontanelle and symptoms of meningitis with those cases in which the fontanelle was sunken.

The Surgical Treatment of Disease of the Stomach in Children.—Dr. ANGELO L. SORESI presented this communication. He stated that the main reason why surgery on the stomach resulted in so many failures in children was that the attending physician referred the patient to the surgeon when already in a hopeless condition. Surgery should always be a late resort, but the attending physician should keep in mind the possible necessity for surgical intervention and refer the patient to the surgeon in time. In injuries of the stomach intervention should be immediate when the child was brought to the surgeon immediately after the wound was inflicted; if he was brought later the expectant treatment was better, because many wounds of the stomach in children healed spontaneously. Expectant treatment was imperative if the child was first seen many hours after the accident. In experimental work wounds of the stomach in which the stomach was cut clean through with the scissors for about the length of a centimeter, the mortality of absolute noninterference was about 30 per cent.; the mortality of intervention after twenty-four hours was 80 per cent.; the mortality after three hours was zero. Foreign bodies did not often cause serious trouble in the stomach for the reason that when they passed into the stomach they generally passed into the intestine and were expelled. However, they might locate themselves in the lower part of the esophagus and require removal through the stomach. Medical treatment was absolutely powerless if the foreign body caused serious trouble, such as hemorrhage, perforation, or occlusion. Stenosis of the esophagus near the cardia was caused by the passage of caustics or might be congenital. If the passage of sounds through the mouth could not be effected, the indications for surgical intervention were not doubtful. Stenosis of the pylorus was a condition peculiar to young children and was more common than was generally supposed. Generally it came on suddenly in well-nourished children born of healthy parents. At times the symptoms in the beginning were slight, but in others the symptoms were very definite and one could note the peristaltic movement of the abdomen. The loss of weight was very remarkable and rapid at the beginning, then became slow and progressive. The appearance of a tumor on the pylorus was not an absolutely reliable sign of stenosis. Stenosis of the pylorus could only be mistaken for spasm of the pylorus or some kind of intestinal obstruction. By referring to the anatomy of the stomach one could not fail in making a diagnosis. If no bismuth passed through the pylorus after three hours one could feel sure that he was dealing with a true stenosis of the pylorus. The question whether one was dealing with a real spasm of the pylorus or with a growth of the pylorus was exceedingly difficult to answer. The spasm might cause a hypertrophy of the muscular coat so that the spasm would be the real cause of the increase in the muscle. It would seem that the condition was not congenital but acquired, and that it could not be remedied by medical means, although these should always be exhausted before resorting to surgery. Children stood operations poorly. Anesthesia in children was of the greatest importance and only the most expert anesthetists should administer anesthesia to children. Speed and thoroughness were absolutely essential to good results. Gastroenterostomy was the operation of choice up to the present time, but it was not a physiological operation. Dr. Soresi described an operation which he had devised to conserve the physiological relations of the stomach and duodenum. A piece of the ileum about three centimeters in length was severed from the rest of the intestine. With a seroserous suture close to the attachment of the mesentery on the side that naturally came in contact with the pylorus without twisting the pedicle, it was secured over the pylorus, half on the stomach and the other half on the duodenum; it was then cut longitudinally about two centimeters from the suture line, so that it became a large square piece, opening itself and showing the mucosa. The stomach and duodenum were also cut longitudinally, parallel with the seroserous suture line, leaving a margin of about two centimeters, as was done for the intestine. This incision was started from the duodenum and must be about six or eight millimeters longer than the length of the seroserous suture, extending therefore three or four millimeters on the stomach and duodenum. A through and through suture with catgut No. 0 was started alongside of the seroserous suture and continued all around, until the opening made in the stomach and the duodenum was closed. This suture done rapidly would check all bleeding. The seroserous suture was then continued all around and the procedure was completed. It was evident that between the stomach and duodenum there was now a large passage, lined with perfect mucosa, so that possible contractions would not affect the easy passage of the contents of the stomach into the duodenum. Animals showing the advantages of this method of operation were exhibited. They were in perfect condition one year after operation. In fact, they were in much better condition than dogs operated on at the same time with gastroenterostomy, with occlusion of the pylorus or leaving the pylorus patent. One of the essential points in surgery of the stomach was that the surgeon should never put his hand into the abdomen and should use as little retraction as possible, because the hand of the surgeon could not be sterilized and putting it into the abdomen caused trauma and infection which resulted in adhesions. The laparotomy incision should be made about one-half a centimeter from the linea alba between the xiphoid and the umbilicus for at least five centimeters. In stenosis of the pylorus the surgeon had to make a good permanent passage between the stomach and the duodenum. The operation resorted to in these conditions was Loreta's, which consisted in stretching the pylorus with the finger. Gastroenterostomy by the method presented was better than Loreta's operation, jejunostomy, or the different kinds of pyloroplasty. The gastroenterostomy should be a posterior one if possible. Dr. Soresi gave a lantern slide demonstration of his technique.

Dr. JAMES T. GWATHMEY said the general principle had been accepted that chloroform was not an appropriate terminal anesthetic in children under nine years of age unless accompanied by oxygen, but one could initiate the anesthesia with chloroform and then continue with other anesthetics in such a way that the anesthetic was practically devoid of danger. The American statistics of about half a million cases showed that it was satisfactory to begin with essence of orange, then follow this with chloroform for the second stage and then change to warm ether vapor. By using this sequence the patient could be brought out of the anesthetic without struggling or vomiting, but if the anesthesia were initiated with ether there would probably be both. With gas and oxygen the anesthesia could be continued with children of any age. The element of time must be taken into consideration, especially with children, and while the surgeon must do his work carefully and without hurry, he should not lose sight of the fact that the child should not be kept under the anesthetic longer than necessary. As a rough general rule it might be stated that children should not be kept under an anesthetic longer than one hour.

Dr. LEON T. LEWALD said that with reference to the question of diagnosis he agreed that repeated examinations with the Roentgen ray offered the safest and surest way of determining between spasm and true stenosis of the pylorus. There were several ways of making this distinction, but if nothing was passing through the pylorus in from one to three hours after the administration of the bismuth meal this was abundant indication for surgical interference. Dr. LeWald said he had seen gastroenterostomies in children that were successful and the children were well nourished afterwards.

Dr. WILLIAM H. STEWART said it was well known that foreign bodies passed safely through the digestive tract. The only indication for interference was when the body swallowed occasioned clinical symptoms. Undoubtedly the *x*-ray was a great help in making a differential diagnosis between pylorospasm and true stenosis, but he questioned whether if no bismuth was found passing through the pylorus after three hours that that was sufficient evidence that one was dealing with a true stenosis. Such an *x*-ray finding would have to be verified by a number of examinations. In some cases in which nothing passed the pylorus for three and one-half hours after the administration of the bismuth, a re-examination after the administration of an antispasmodic showed the bismuth passing through the pylorus. Dr. Stewart said he would like to ask Dr. Soresi if he had made any observations on the stomachs

of dogs after gastroenterostomy with reference to the emptying of the stomach. He thought about 50 per cent. of the bismuth meal passed through the pylorus and about the same amount through the stoma. With reference to what the speaker said of the susceptibility of the bone to infection, some men were saying that the death knell of Lane's plates had been sounded. He had watched Dr. Lane do his operation and the vital point in his technique was that at no time did the operator's hands come in contact with the bone.

Dr. FENTON B. TURCK said Cailli had reported the case of a child having spasm of the intestine and obstipation lasting three weeks. All the symptoms of mechanical obstructon were present. An exploratory operation showed that the condition was purely spasmodic, so the wound was closed, a systematic course of treatment was carried out, under which the child recovered. Some had ventured to state that a purely spasmodic condition would not last as long as three weeks, but the speaker had observed the condition to last for a long time in spasmophiliac children and it represented a type of fatigue, a delayed period of relaxation following contraction, which continued for a long time and was mistaken for true stenosis. It was possible for bacteria to pass from the mother to the fetus and to lodge in the pylorus and set up irritation which might result in a congenital mechanical obstruction, due to hypertrophy of the muscle and stenosing pylorus. Dr. Turch said one should be careful to avoid the mistake of making a diagnosis of real obstruction, which rarely existed.

Dr. SORESI, in closing the discussion, said that in his paper he had insisted on repeated *x*-ray examinations, and stated again that in order to be certain that one was dealing with a real stenosis of the pylorus and not with a spasm, the *x*-ray examination should be repeated several times, and that surgical intervention should not be resorted to until all medical means had been exhausted. With reference to the emptying of the stomach after gastroenterostomy in animals, if the pylorus was patent, it could be seen with the *x*-ray that a great amount passed through the gastroenterostomy opening which might be due to the fact that in the passage of food from the stomach through the pylorus it has also to pass in descending to the intestines over the gastroenterostomy opening. In animals it was seen that if the pylorus was patent the dog was in perfect shape, ate and acted normally, but if the pylorus was excluded the dog got thinner no matter what kind of food or how much was given to make it fat. This might be explained by the fact that the digestion in the stomach of the dog was exceedingly slow, and when the pylorus was excluded and the gastroenterostomy opening was made the food passed very rapidly and digestion was not complete. In human beings this did not occur because the digestion of food in the stomach was not so slow as in animals; that was not if the food or a part of it remained in the stomach a certain time after, even if it had to pass through the gastroenterostomy opening. Dr. Soresi again insisted on the avoidance of trauma through the bad practice of introducing the hands into the abdomen. He exhibited a number of specimens showing the results obtained by the reconstructon of the pylorous, and the effect of the presence of unabsorbable material in the stomach and intestine, demonstrating that when such material was present the scar tissue became much thicker.

Early Localizing Symptoms in Tuberculous Meningitis.—C. O. Hawthorne states that occasionally tuberculous meningitis has an abrupt onset, and that this may take the form either of localized palsies or of localized convulsions. Such experiences are hardly likely in themselves to suggest tuberculous meningitis, seeing that the palsies and convulsions of this disease are usually, not early, but late features of the clinical history. The diagnosis in such circumstances may review the possibility of an intracranial tumor or of an attack of encephalitis; or again, and perhaps still more likely, at least in regard to convulsions, an explanation may be hoped for in the direction of "reflex irritation" arising from such influences as troublesome dentition, digestive disturbances, intestinal parasites, and so on, such a view of the position being facilitated, perhaps, by the temporary character of the convulsive or paralytic events. There would seem, therefore, to be some practical value in illustrations of the statement that a localized paralysis or a unilateral convulsive seizure may mean the clinical beginning of tuberculous meningitis.—*British Journal of Children's Diseases.*

Therapeutic Hints.

An Antiseptic Powder for Infected Wounds.—Mouchet and Malbec use a powder prepared as follows: Five grams of iodine are dissolved in 100 c.c. of ether and then 100 grams of powdered red cinchona are added. The resulting mass is triturated until the ether is completely evaporated. The powder is then passed through a fine sieve. It has a pleasant odor and costs less than one-sixth of the price of iodoform. The authors claim that its antiseptic power is equal to that of iodoform. A powder with 10 per cent. of iodine is indicated in gangrenous wounds.

Pyorrhea Alveolaris.—Cryer recommends the following as an antiseptic mouth wash:

℞ Acidi borici, ʒj.
Phenolis, ♏xij.
Glycerini, f ʒj.
Olei menthæ piperitæ, ♏vj.
Aquæ destillatæ, q.s. ad f ʒvj.

Sig.: Use as a mouth wash in full strength or dilute with an equal quantity of water.

Dandruff, Seborrhea of the Scalp.—Schamberg strongly recommends the use of sulphur ointment two or three times a week and on alternate nights the use of a lotion of resorcin. The ointment prescribed is:

℞ Sulphur praecip., ʒj.
Adipis benzoat. ʒij.

The lotion:

℞ Resorcini, ʒij.
Spirit vini rect.,
Aq. cologniensis,
Aquæ, āā fl ʒij.

A dram of glycerin may be added if the scalp becomes too dry. If more stimulation is desired 30 grains of β-naphthol should be added to the lotion.

Pruritus Vulvæ in Pregnancy.—Kelly tells of Ashwell's and Meig's recommendation of the following prescription for the relief of pruritus vulvæ, especially in pregnant women:

℞ Sod. biborat., ʒss.
Morph. sulphat., gr. vj.
Aq. rosæ dest., ʒviij.

M. Sig.: Apply three times a day to the affected parts with a piece of lint, after first washing with tepid water and soap and then carefully drying the parts.

Flaischler recommends the local application of a 20 per cent. or even a 50 per cent. solution of silver nitrate.

Suprarenal Extract for Intractable Hiccough.—Segal reports a case of hiccough that lasted for eleven days. It began three days after an attack of renal colic. Large doses of bromide, chloral, chloroform, and cocaine were in turn given, but without bringing relief to the patient, who suffered great pain because of the violence of the hiccough. Finally adrenalin was given in a dose of 10 drops of a 1-1000 solution, when the hiccough immediately became less frequent and on a reptition of the dose ceased entirely and did not recur.—*Journal des Praticiens.*

Bismuth Carbonate for Chronic Colitis.—Sandstein, in a persistent case of chronic colitis, which resisted all other medicinal and even surgical treatment, obtained relief by giving half ounce doses of bismuth carbonate twice daily, giving in all five ounces by weight.—*The New Zealand Medical Journal.*

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Original Articles.

OBSERVATIONS ON PANCREAS STONE COLIC.

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THE occurrence of pancreatic stones is generally considered rare, and still rarer their recognition during life. As I have had the opportunity to observe two cases of this disease, I deem it of interest to discuss the subject.

The literature on this subject up to 1902 is contained in an article by F. P. Kinnicutt.[1] In it there are short reports on cases of pancreatic lithiasis, described by Capparelli,[2] Lancereaux,[3] Leichternstern,[4] Lichtheim,[5] and Minnich,[6] and a detailed description of a new case observed by Kinnicutt himself. The latter case was in a female patient, 42 years old, who at first was thought to be suffering from gallstones, but later was considered a case of pancreatic lithiasis on account of recovery in the stool of small stones (the size of a pea), consisting principally of calcium phosphate and carbonate, without a trace of cholesterin or bile pigment. The case is of additional interest, as beside the pancreatic stone gallstones were present. For after a severe attack, associated with icterus, the patient passed a true gallstone containing 92 per cent. of cholesterin by analysis.

The latest literature may be readily grouped into three classes: (1) Cases in which pancreatic stones were found at autopsy; (2) cases in which pancreatic stones were found at operation; (3) cases observed clinically, (*a*) without, (*b*) with the presence of undoubted pancreatic stones.

I will now review the literature according to this grouping.

Allen[7] reports a case of pancreatic calculi. Patient, female, 30 years old, suffered first from jaundice, later from frequent attacks of epigastric pains appearing in the left hypochondrium, and lumbar region in biweekly intervals. At first there was no sugar, later sugar appeared in the urine for a short while. There were great emaciation, slight fever, and at times leucocytosis. An exploratory incision revealed the presence of two pancreatic cysts with calculi. Patient died five days after the operation. The autopsy showed a greatly atrophied pancreas and calcareous particles throughout its duct. At the orifice of Wirsung's duct there was a stone the size of a small marble, almost entirely obstructing its lumen.

Phillips[8] describes a case of chronic pancreatitis with calculi. Patient suffered at first from chronic jaundice, the liver was found enlarged and the gall-bladder could be palpated. At operation an enlarged gall-bladder was found, but no stones. The pancreas was enlarged and hardened, the head compressing the biliary duct. Patient felt better for a while, although the icterus remained; then she developed sugar in the urine and began to lose in weight. Later on she became comatose and died. At autopsy fibrosis of the pancreas and numerous calculi were discovered.

Atkinson and Hirsh[9] described a case of pancreatic lithiasis in a man, who, six years previously had a fall from a horse followed shortly by a hemorrhage from the stomach. Four years later he began to suffer from epigastric cramps and nausea; at that time an elongated hard mass about 10 cm. in length and one cm. in width could be felt in the epigastrium, which was thought to be connected with the pancreas. The urine at that time was normal. About one year later sugar occurred in the urine and all the symptoms of a severe diabetes mellitus appeared, also fatty stools and emaciation. During the course of the disease the diagnosis of a severe pancreatitis was made. The patient died soon after and the autopsy revealed a sclerosis of the pancreas with a calculus in the duct of Wirsung.

Rindfleisch[10] observed three cases of pancreatic stones in 2,000 autopsies. In one case (a widow) severe colic with jaundice and swelling of the liver were present followed by diarrhea, slightly increased temperature, and peritonitis with fatal outcome. The autopsy showed a pancreatic calculus the size of a pea obstructing the duct completely. The same stone also pressed upon the common duct, causing occlusion with stagnation of bile, subsequently cholecystitis and perforation.

In the second case, also a woman, diabetes had been present for three years, together with tuberculosis of the lungs. There were no colics and no diarrhea. The patient died in an attack of sudden heart weakness. At autopsy a very atrophic and hardened pancreas was found. The parenchyma was traversed by very tough white connective tissue strands; in the head as well as the tail of the pancreas a stone, the size of a cherry, was found. These stones were white and somewhat hard.

Keuthe[11] describes a case of atrophy of the pancreas with the formation of a concrement in this organ. During life it was possible to make the diagnosis with some certainty of chronic pancreatitis; steapsin was absent in the stool, steatorrhea and a positive nuclear test were present, sugar was also occasionally found in the urine. The patient died of pneumonia and the post-mortem showed a complete atrophy of the pancreatic tissues and some yellowish white concrements the size of lentils, in the pancreas.

Pfoerringer[12] published a case of pancreatic stone. The patient was a man suffering from severe colics in the left side of the abdomen, which were

thought to be due to nephrolithiasis. *X*-ray examination showed a marked shadow on the left side, but somewhat nearer to the vertebral column than is usual for kidney stones. The patient died and a pancreatic calculus was found at the post-mortem.

Heiberg[13] reports two cases of pancreolithiasis, in which during life severe diabetes mellitus was present; in one case there were also fatty stools. In both pancreatic concrements were found at autopsy.

Ruth[14] describes the following case: the patient, a woman, was suffering from severe colicky pains, which were considered due to gallstones. At operation liver and gall-bladder were normal, the pancreas, however, was studded with small calculi; the largest being over 2 inches in length and weighing 280 grams. Ruth was successful in removing most of the stones and by draining of the pancreas in curing the patient.

Link[15] reports a case of chronic pancreatitis with calculi. Patient, female, suffered from attacks of pain centering on the left side just under the ribs, and was tender there constantly. No diarrhea; no free fat in the movements. Pain somewhat relieved in lying. The urine was free from sugar or albumin. An exploratory laparotomy showed a symmetrically enlarged pancreas. The head was as large as a man's fist, and the body was the size and shape of a man's wrist. It gave the same sensation to the touch over its entire extent as of a bag filled with sand. Link opened the dilated duct of Wirsung, which was found to be filled with small facetted stones along its entire length. The stones were removed and the duct drained. Patient made a good recovery.

Zesas[16] reviewed thoroughly the literature of pancreatic stones (comprising 70 cases) and came to the following conclusions: Glycosuria and steatorthea are frequent and constant symptoms of pancreas stones. Jaundice may be present or absent. Attacks of colic in the upper abdomen and the finding of concrements in the feces belong to the initial stage.

Skaller[17] reports four cases of his own of pancreatic calculi, one of these, occurring in a woman, is described in more detail. Numerous elongated concrements, consisting mainly of calcium salts were found in the stool. Skaller considered the prognosis favorable.

Friedman[18] published a case of chronic pancreatitis, probably caused by pancreatic stones: there were disturbances of the pancreatic function (lack of trypsin and very little steapsin in the feces), severe colic-like pains in the left abdomen, frequently sugar in the urine, and beside that a shadow on the *x*-ray plate in the region of the pancreas. The patient was operated upon, the pancreas was laid open, and the ducts were thoroughly explored, but beside a chronic pancreatitis, no concrements were found. The patient died shortly after the operation and even at the autopsy no stone could be found in the pancreas.

Glaessner[19] described four cases of pancreolithiasis; in two the diagnosis was assured, in these after the attacks concrements were found in the stool the size of a lentil and consisting of calcium carbonate. Alimentary glocosuria is frequently present. Therapeutically Glaessner recommends oil with large quantities of akaine fluids. He believes the affection to be of rather frequent occurrence.

Dowd[20] recently described a case of pancreatic abscess with numerous calculi. About thirty small concrements of pea size were found in the abscess cavity. They consisted principally of cholesterol.

From this literature we can see that pancreatic calculi are rare, but occur more frequently than was thought formerly. I will now give a detailed history of my own two cases.

Case I.—*Probable Pancreolithiasis.*—September, 1904. Henry P., 44 years old, has been suffering for a year from severe epigastric pains, occurring periodically, and associated with dyspnea. The attacks appeared without any known reason and disappeared after 1 or 2 days, the patient then feeling fairly normal. The attacks occurred every 2 or 3 months. During the attack there were considerable prostration, aversion to food, sometimes vomiting. Generally there was no fever. The patient was examined by me for the first time shortly after an attack. The thoracic organs were normal. Palpation of the abdomen revealed nothing abnormal. The only definite sign was an increased tenderness on deep pressure in the epigastrium. The urine showed the presence of about 1 per cent. sugar (fermentation test) and no albumin. Examination of the stomach contents showed normal conditions. In one week the sugar disappeared even with a liberal carbohydrate allowance.

In December of the same year the patient had another attack of a similar nature (epigastric colic, dyspnea, and fright.) The urine voided during the attack contained sugar, but no bile pigment. Morphine relieved the attack quickly and the patient resumed his work.

In February, 1905, he had another attack, accompanied this time, however, by a severe chill. The disease ran a more severe course, fever was present and on the second day of the trouble slight jaundice developed. The urine contained sugar and a trace of bile. The liver was slightly swollen. Four to five days later the pains suddenly subsided. A few days later the urine was free from sugar and the patient has been well since, without having had any more attacks.

As to the diagnosis of this case, the occurrence of the sugar in the urine during the attack made an affection of the pancreas very likely; the localization of the pain and the dyspnea also favored this view. The abrupt periodical occurrence and the sudden disappearance of the symptoms may be ascribed to a mechanical obstruction (calculus). The diagnosis of pancreolithiasis is also strengthened by the fact that the patient after this last and severest attack never had another one. Probably the stone was passed and thus complete recovery resulted.

Case II.—Mrs. G. A. R., 37 years old, suffered for the last nine years with distress after meals and periodically recurring colic-like pains in the epigastrium. Six years ago she was jaundiced and ill in bed for six weeks. She recovered but continued to suffer at frequent intervals from epigastric distress and colicky attacks. Appetite was fair, bowels slightly constipated.

December 3, 1914. *Present Condition:* Physical examination of the thorax revealed nothing abnormal. Stomach was slightly dilated extending to about two fingers' widths below the navel. The right kidney was movable in the first degree. There was no distinct pain on pressure anywhere in the abdominal cavity. The gastric contents on December 11, 1914, one hour after an Ewald test meal showed the presence of HCl and an acidity of 72, no blood. The duodenal bucket, given December 12, revealed permeability of the pylorus (bile stain from 60 cm. on), no blood stain. The digestive test capsule, given on December 14, reappeared after 44 hours; every thing had disappeared except the thymus; nuclei were present. Neither in the gastric contents nor in the feces was any trace of blood ever found.

On December 16 a calculus of the size of a medium-sized pea, not quite round, somewhat facetted, of a dirty whitish appearance, and with a roughened surface, was found in the stool. This calculus was handed for examination to the chemical laboratory of Dr. F. Sondern. His report, for which I am greatly indebted to him, was as follows: "Half of the stone was taken for analysis: weight 0.05 gram. Composition: chiefly calcium car-

bonate with traces of organic matter. Cholesterin and bile pigments could not be demonstrated." (See Figs. 1 and 2.)

December 18 the duodenal contents were examined after tea and sugar: golden yellow clear, alkaline;

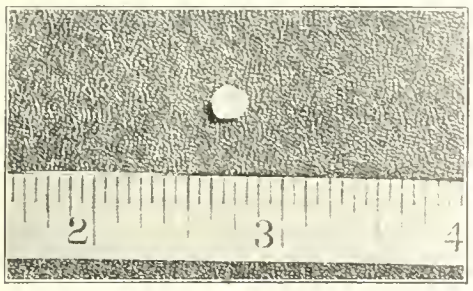

FIG. 1.—Pancreatic stone found in the stool; natural size

trypsin = 3 mm., steapsin = 4 mm., amylopsin = 8 mm. Patient was given alkalies and advised to try medical treatment before underoging an operation, but she was also told, that in case there should be a severe attack to return to the hospital and if necessary, be operated upon. Her condition not improving and the attack recurring in a more severe type, patient returned to the hospital on January 28, 1915.

In view of the persistent attacks and the absence of any signs of ulcer of the stomach or duodenum, the diagnosis of a calculus presumably from the gall-bladder was made. The chemical analysis of the stone found in the feces, however, showed an entire absence of cholesterine or biliary pigment and showed that it chiefly consisted of calcium carbonate. This pointed against a biliary and rather for a pancreatic calculus. In harmony with this the duodenal contents obtained showed clear bile while in cholecystitis due to gallstones it is usually turbid. The diagnosis therefore before operation was that of pancreatic stone. An operation was now advised and performed by Dr. Stetten on January 29, 1915. At the laparotomy no signs of any abnormality of the pylorus or duodenum were found. The gall-bladder was enlarged, but normal in appearance and contained no concretion whatever. The pancreas was also somewhat enlarged, but no stones could be palpated by the search. A cholecystostomy for drainage of the gall-bladder was done, and the patient made an uneventful recovery, and remained free from attacks up to the present. The findings at the operation and the subsequent course tend to substantiate the diagnosis of pancreatic calculus.

Epicrisis.—If we study the two cases just described we may gather the following points as to

Diagnosis.—Colic-like pains, occurring periodically in the epigastrium, associated with a transient glycosuria are probably caused by a pancreatic stone. The sudden disappearance of the symptoms favors the assumption of the passing of the stone.

The occurrence of a calculus in the feces, consisting mainly of calcium carbonate and phosphate without cholesterin or bile pigment, points to the

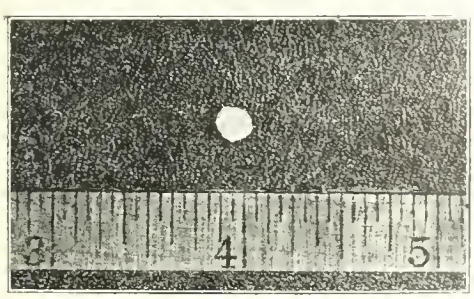

FIG. 2.—Transverse section of the stone shown in Fig. 1, natural size.

pancreatic origin of the stone. At the commencement and for a long time to come the process may not at all interfere with the functions of the pancreas. Only later the presence of a calculus may lead to changes of the pancreatic tissue, which again causes an impairment of the function of this organ. One can see from this what is also clinically confirmed, that a disappearance of the pancreatic function belongs to a later stage of pancreolithiasis and cannot be made use of in any early diagnosis.

The occurrence, however, of sugar in the urine during an attack, is of prime importance, although an absence of this symptom would not militate against the diagnosis of pancreatic stone.

Treatment.—As in all other diseases an early diagnosis offers the best opportunity for successful treatment. Just as in gallstone colic rest during and immediately after the attack is of most importance. The patient is kept in bed, placed upon a light diet, warm applications are made to the abdomen and if the pains are severe, opium or atropine or both may be given.

Shortly after the attack frequent small meals and the drinking of alkaline waters are indicated. If these measures should not be successful and the attacks become more frequent or if they become more severe and are attended with a slight rise of temperature, an operation should be advised in order to examine thoroughly the gall-bladder and pancreas. If a stone is found it ought to be removed. If this is not the case—frequently with small stones it is impossible even with the pancreas directly under our fingers to feel them—drainage of the gall-bladder should be done. This must also be done when stones have been found and removed, as one cannot be sure that small stones have not remained hidden. The drainage of the gall-bladder exerts a beneficial effect upon an existing pancreatitis, which we generally find associated with the calculi. Through free drainage the liver and pancreas are eased and the latter organ returns to normal activity.

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20 EAST SIXTY-THIRD STREET.

IMPOTENCE IN THE MALE.

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Definition.—Impotence in the male is that condition in which the man is unable to perform the sexual act. It may be either complete or partial. In the former he is absolutely unable to perform the act, while in the latter, he may still be able to have a more or less complete erection, but either the erection is so weak that it subsides at the moment of intromission, or even before intromission, or, in addition to this weakness, there may exist such a hyperirritability of the parts or sexual centers, that the entire process of erection and ejaculation lasts but a very short while and is finished at the moment of intromission, or a very short while after intromission or even before the penis has had an opportunity to enter the vagina.

Impotence in the male must be strictly differentiated from sterility in the male. In sterility there is an impossibility of impregnating the female, while in impotence there is an impossibility of performing the sexual act. The sterile man, is not necessarily impotent. He may be fully able to properly perform the sexual act, but on account of an old double epididymitis with occulsion of both vasa, not one drop of his testicular secretion can reach his penis. In bad cases of hypospadias and epispadias the man may have proper erection and ejaculation, but, on account of the abnormal opening of his urethra, not one drop of his semen enters the vagina, and sterility is the result. On the other hand it is also possible for a man who is partially impotent not to suffer from sterility. He may have premature or very rapid ejaculation and only be able to deposit his semen at the very entrance of the vagina, without even real intromission, and still pregnancy may result. As a general thing, however, the impotent man is also sterile, inasmuch as (except in very exceptional cases) he is unable to deposit his semen deep enough into the female genitalia to cause impregnation.

I believe the old classification of impotence into impotentia coendi, and impotentia generandi, the former designating impotence of coition and the latter, impotence of impregnation, has been the cause of much confusion. It is far better to limit the term impotence to define impossibility of performing the sexual act, and sterility to impossibility of impregnation.

Impotence may be classified according to its pathology into (1) Organic Impotence, (2) Functional Impotence, and (3) Psychic Impotence.

I—ORGANIC IMPOTENCE.

Definition.—Is that condition in which the impotence is due to some anatomical defect in the sexual organs.

Etiology and Pathology.—Any condition which may cause a lack of development of any portion of the sexual apparatus, or an atrophy or degeneration of these parts is an etiological factor in this form of impotence. Among such conditions may be mentioned mumps, which in bad cases may cause a complete atrophy of both testicles so early in life as to preclude the development of sexual powers. Injuries or other conditions which may result in complete castration before puberty will also interfere with the development of sexual sense and power. Lack of development or absence of the penis, either congenital or by destruction of this organ through injury or disease must result in impotence, although the sexual desire may still be present. In certain forms of spinal syphilis as well as in locomotor ataxia the erection centers may be completely destroyed and impotence will follow. Injuries to the spinal cord may cause impotence, either by direct destruction of the erection center or by destruction of those fibers which convey the impulses to and from these centers to the peripheral organs. In the same way injuries to the cerebrum may likewise cause impotence. Severe injuries to the urethra may result in such distortion and shortening of the urethra, that it is impossible to stretch in erection, resulting in curvature of the penis and impotence. Cicatricial contractions of the tissues of the penis, as the result of burns, or other traumas may also mechanically interfere with erection.

It must however be emphasized that while complete absence of the penis must of necessity lead to impotence, yet a small undeveloped penis does not *necessarily* lead to that result. There are many cases on record in which men with almost rudimentary penes were able to perform the sexual act more or less properly. The same may be said of hypertrophy of the penis. There are indeed very few penes, no matter how large, in which intromission is not possible. Sturgis[1] gives an extreme case mentioned by Hyrtl, of a Swiss smith whose penis was the size of a child's body. Of this case Sturgis remarks "Clearly such an unlucky wretch would be compelled to a life of celibacy, for no mortal vagina would be capable of receiving such a membrum virile." It is also remarkable how much of the penis can be destroyed by ulceration or other causes without resulting in impotence. Among other curiosities which may have that effect may be mentioned peno-scotal fusion, and bifid penis, while neoplasms of the penis may, from their size, render the person impotent. Plastic exudates either in the corpora cavernosa or corpus spongiosum may also interfere with erection. Shortness of frenum has likewise so interfered with erection that impotence resulted until relieved by operation.

Among other conditions interfering with intromission may be mentioned enormous hydrocele, large scrotal hernia and elephantiasis. In these conditions the penis may be so enveloped by the surrounding parts that it appears absent, and cannot protrude enough for intromission even in erection. After gangrene of the penile integument or after destruction of portions of the penis from chancroidal ulcerations, scarring and contraction may result to such an extent as to interfere with erection. Among the rarer conditions causing organic impotence may be mentioned horny growths of the penis, elephantiasis of the penis and scrotum, prepucial calculi, ossification of the penis, and lastly fracture of the penis, either as a result of coitus or of "breaking" a chordee.

Walsh[2] reports an unusual condition causing impotence in the male. In these cases erection was normal but there was absolutely no ejaculation. Nocturnal pollutions, however, did occur, and massage of the prostate produced a normal appearing fluid which contained actively motile spermatozoa. On attempting to introduce the posterior urethroscope an obstruction was experienced in the posterior urethra. The posterior urethra was dilated by sounds until the urethroscope could be introduced. It was then seen that there had previously existed a band of tissue connecting the two ejaculatory ducts, which was torn by the sound dilatations. After this the patient became perfectly normal.

The explanation given by Walsh is that during erection, the posterior urethra, or at least that portion adjacent to the ejaculatory ducts should be capable of distention to receive the contents of the ducts. On account of the presence of the band of tissue, however, this was impossible. The fluid could not enter the urethra and ejaculation was impossible. During sleep, however, when the penis is not at all or only partially erected, there is no tension put on the urethra causing the mouths of the ejaculatory ducts to close, and consequently the seminal fluid escapes easily. The same held good in massage of the prostate.

Horseback riding as well as bicycle riding may cause impotence if done excessively and for a prolonged period of time. Moderate exercise in this regard has no such effect.

Symptoms.—The chief symptom is the impotence itself. In many cases partial erection can take place, and in some cases erection takes place but is exceedingly painful. As a result of any form of impotence there often follow a whole train of nervous symptoms, in some cases bordering on insanity and not infrequently leading to suicide. But as these symptoms are common to all forms of impotence, whether organic, functional, or psychic, they will be described later on.

Diagnosis.—The main point in the diagnosis is to find the original cause, for after all, impotence is but a symptom of some other disease.

Prognosis.—This depends upon the etiological factor, and the possibility of removing the impediment by operation or other means. Many of the causes just mentioned are very easily remedied by operation, while others are clearly beyond our control.

Treatment.—A glance at the various etiological factors will indicate the method of treatment in many of these cases. One point should be emphasized, however, in the management of cases with small or rudimentary penes. For some of these cases, ingenious apparatus have been invented enabling the penis to enter the vagina, especially if the woman be instructed to take an astringent douche before coitus. It has also happened that after frequent coitus with the aid of such apparatus, the penis has actually increased in size and developed sufficiently for coitus without any artificial aid.

II—Functional Impotence.

Definition.—Functional impotence is that form of impotence in which there exists no *gross* pathological change in the structure of the sexual apparatus, but in which the mechanism of copulation is disturbed through an interference with the function of the sexual centers of the nerves and peripheral endorgans.

In this class of cases, there is found neither the absence of important organs nor the marked pathological conditions mentioned under organic impotence. Generally speaking, the sexual organs are sound. I have emphasized the word "gross," to indicate that the condition is not without a pathological basis, and that, in a not infrequent number of cases, the endoscope will reveal areas of congestion, inflammation or even erosions in the posterior urethra, and in many of them an examination will show congestion of the prostate and seminal vesicles. The condition must be considered functional, however, because these lesions do not act by imposing a mechanical impediment to either ejaculation or erection, but act purely reflexly upon the sexual centers.

Impotence is physiological before puberty as well as in old age. It may also be considered physiological after a normal coitus, although some men are able to repeat the act many times.

It must be emphasized, however, that Potency or Sexual Vigor is a *relative* term, and that there are some men who can indulge in coitus every night and keep this up for a very long time, while others, can only indulge once or twice a week. A man belonging to the latter class would by no means be considered impotent or suffering from sexual weakness. We must, therefore, take the entire history of the case into consideration before deciding whether a man is losing his sexual vigor.

Etiology and Pathology.—The normal act of coitus consists in the following sequence of events, and in the harmonious relationship of the various factors. In the first place there must be the libido, or desire for sexual intercourse, then there must be the erection of the penis, then ejaculation and finally the orgasm. The absence, or disturbed relationship of any of these factors, constitutes impotence, either partial or complete. Moreover, not only must the normal sequence of events occur, but also the relative time for each factor must be observed for normal coitus. Thus, if ejaculation comes too quickly, before erection is complete, or too slowly, that is long after erection has subsided, or if erection does not last long enough, or if the whole process of coitus goes very quickly, or any other condition in which the time allowed to each factor is relatively out of proportion, impotence may be said to exist.

In order to understand the pathology of organic impotence, as well as the influence of various etiological factors in the production of the same, it is necessary to have a clear idea of the mechanism of normal coitus. This will be considered under two heads, first the mechanism and sequence of events as they take place in the endorgans (*i.e.* the testicles, epididymi, vas, seminal vesicles, ejaculatory ducts, prostrate and penis) and secondly, the sequence of events in the sexual centers and nerves.

Mechanism of Coitus in the Endorgans.—As soon as the libido is aroused, either by the sight or contact of a woman, or from peripheral irritation of the penis, an impulse is sent to the erection center in the lumbar portion of the spinal cord, which arouses it into activity. The center, now aroused, sends impulses to the arteries and muscular structure of the penis. In the quiescent state, the arteries of the penis are in a state of contraction, allowing no more blood than is necessary for nourishing the parts. The musculature is also in a contracted state thus obliterating all trabeculation. The impulses which are sent out from the erection

center are vasodilator in character, thus allowing the arteries to dilate and fill up with blood; they have also the effect of relaxing the musculature, and so causing the formation of large trabecular spaces. As a result, the corpora cavernosa become engorged with blood. The muscles surrounding the penis, however, are thrown into contraction, which has the effect of compressing the veins of the penis, and the resulting congestion adds still further to the engorgement of the parts. The fibrous investment of the penis is put on the stretch by the increase in volume of the organ, and this also adds to the compression of the veins and the consequent engorgement of the penis. The influx of blood, however, has more to do with erection than the compression of the veins; this is proven by the fact that in priapism, which may continue for a very long time, sometimes for days and even weeks, no gangrene results.

As soon as the organ becomes rigid, the action of its suspensory ligament aided by the erector penis and the accelerator urinæ muscles causes it to become elevated. Finally all the perineal muscles come into play to complete the erection, and now the organ is hard and tense. The testicles at the same time are drawn close to the abdomen through the contraction of the dartos and the muscular fibers of the cord.

As a result of the active congestion, the mucous glands of the urethra pour into the urethra an alkaline secretion to neutralize any acid urine which may have been left therein, and which would be inimical to the vitality of the spermatozoa.

As a result of the muscular action upon the testicles, aided by the peristalsis of the musculature of the epididymis and the vas, the spermatozoa are pressed out of the epididymis into the vas and into the ampulla.

As coitus proceeds the contents of the seminal vesicles are squeezed by muscular action into the ejaculatory ducts, the muscles of the prostate also contract, squeezing out the prostatic secretions, and at the height of the orgasm the contents of the seminal vesicles mixed with the spermatozoa which have just been extruded from the testicles, are pushed through the ejaculatory ducts into the posterior urethra, where they mix with the prostatic secretion, and the entire product, the semen, is driven from the bulbous urethra through the penis by the contraction of the entire perineal group of muscles. The squeezing of the contents of the seminal vesicles plus the testicular contents into the posterior urethra, causes the extreme of pleasurable feeling known as the orgasm.

It may be noticed that in the above description of the physiology of coitus, I have *not* mentioned that the semen, after it has reached the posterior urethra, is prevented from going into the bladder by the erection of the verumontanum, which by its erection closes off the posterior urethra from the bladder. This statement has been passed on from, I do not know how many years back, until the present time, and may be found even in some of our latest text-books. Like so many statements, it has simply been copied from one work into another without investigation or challenge.

Since the advent of modern improved posterior urethroscopes, however, it has been noticed that in many cases the verumontanum may be exceedingly small; in fact I have seen it in some cases no bigger than a pimple, and nevertheless no interference with the act of coitus is experienced. Moreover, Rytina[3] has reported a series of casees, in which for various reasons he had removed the entire verumontanum, without any sexual difficulty being experienced by the patients.

Nervous Mechanism of Coitus.—In the description of the sequence of events which take place dur-

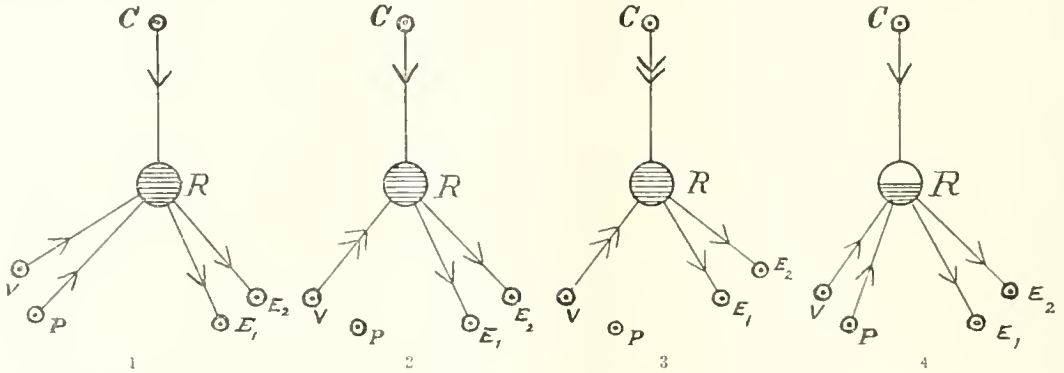

Fig. 1.—Diagrammatic scheme of the nervous mechanism of normal coitus, impotence and pollutions. *C*, cerebrum; *R*, erection center; E_1, sympathetic ejaculation center (which causes the expulsion of the secretions of the sexual glands); E_2, spinal ejaculation center (which controls the striated muscular fibers); *P*, glans penis; *V*, seminal vesicles. The single arrow indicates an ordinary impulse; the double arrow, a very strong impulse. The transverse lines in *R*, in 1, 2, and 3 indicate that *R* sends out impulses to E_1 and E_2 *only* after having been completely filled up with impulses, while in 4, we see that *R* sends them out before it is completely filled up with them.

ing normal and pathological coitus in the sexual centers and nerves, I have closely followed that given by Groag[4] as being of especial clearness.

We may represent the various conditions diagrammatically as follows (Fig. 1, Nos. 1-4): From C (cerebrum, *i.e.* libido) impulses are sent to R (erection center) which sends them to the dilator nerves until complete erection results (*i.e.* dilatation of blood vessels of penis, etc.). Now R receives from P (glans penis during friction) continuous new impulses which serve to strengthen and keep up the erection. Besides sending the receiving impulses to the dilator nerves, R has also the function of keeping back a part of the impulses it receives until the cells of the erection center are filled to their utmost tension (Reitzspannungsvermögen) and then only to send the impulses to E_1 (sympathetic ejaculation center, which causes the expulsion of the secretions of the sexual glands) and also to E_2 (spinal ejaculation center, which controls the striated muscular fibers). The impulses that come from P to R (through friction of the glans penis) may be weaker, in proportion as the impulses that come from V (distended seminal vesicles) are stronger. In other words, with markedly distended seminal vesicles, we can get normal coitus even if

there is less friction of the glans penis, for enough impulses are coming from the seminal vesicles to fill up R. As soon as R is so filled up with impulses from C, P and V that they overflow to E_1 and E_2, ejaculation occurs.

We may now briefly describe the nervous mechanism of normal coitus according to the above diagrammatic scheme, and later on the pathology of impotence according to the same scheme. The seat of the libido is in the cerebrum, and it may be aroused by the sight of a woman, contact with a woman, or by spooning, erotic literature, or through any of the senses and in numerous other and different ways. Once the libido is aroused, and the person is prepared for normal coitus, an impulse is sent from the cerebrum (C) to the erection center (R) in the lumbar enlargement of the spinal cord. This center sends impulses through the dilator nerves to the penis, as a result of which impulses, the penis becomes engorged with blood and erection occurs as previously described. As the penis enters the vagina, the friction of the glans penis (P) sends additional impulses to the erection center (R). The erection center (R) is also getting impulses from the distended seminal vesicles (V). In the normal condition of affairs, it is only when the erection center (R) has been completely filled up with these impulses from the cerebrum (C), the penis (P) and the seminal vesicles (V) that it sends out impulses to the ejaculation centers (E_1 and E_2) and allows ejaculation to take place. In other words the erection center (R) has two functions, first, to receive impulses from the cerebrum (C), the penis (P) and the seminal vesicles (V), and secondly, to hold back these impulses till the proper time and then send them to the ejaculation centers (E_1 and E_2), so that ejaculation should come just at the proper time and not too soon.

I have gone somewhat minutely into this diagrammatic description of the nervous mechanism of normal coitus, because it is only by having a clear idea of this mechanism that we are enabled to understand the pathology of impotence. We will now take up the various etiological factors, and show how they cause impotence, by disturbing one or more of the functions of the above factors of normal coitus, or by disturbing the relationship of the various factors. The various etiological factors to be discussed will be, acute impotence from excessive coitus, coitus interruptus (withdrawal), masturbation, sequelæ of gonorrhea, ungratified sexual excitement (prolonged spooning, etc). The pathology of many of these etiological causes will be found to be very similar.

Pathology of Impotence from Excessive Coitus.—This is the simplest form of functional impotence and consists in an exhaustion of the erection center (R). If, shortly after a completed coitus a repetition of the act is attempted, stronger excitation is necessary to accomplish erection, and still stronger and more intensive to produce ejaculation. With every repeated attempt at coitus, the necessary increase in excitation rises in proportion with the number of attempts. This can be readily appreciated from our diagrammatic scheme. After one or several attempts at coitus, the seminal vesicles are empty, and the erection center (R) thus receives no impulses from them (V), the friction of the glans penis during coitus is also less and less powerful, and so few impulses come from there (P), and the erection center (R) must therefore depend almost entirely upon the impulses it receives from the cerebrum (C) in order to cause erection and also in order to get enough impulses to become distended so that it can send them out to the ejaculation centers (E_1 and E_2) for ejaculation to take place. The erection center (R) is now in a state of absolute exhaustion, and needs a certain length of time to recuperate. After this recuperation, everything is normal again. This is the acute form of impotence in a normal person. Finally the most intensive excitations fail to cause an erection and naturally also an ejaculation.

Pathology of Coitus Interruptus.—In the normal condition of affairs, as soon as the libido has been aroused, and the impulse has been sent from the cerebrum (C) to the erection center in the lumbar enlargement of the spinal cord (R), thus arousing it into activity, there occurs a normal working hyperemia of this center. This working hyperemia is being increased during coitus by continuous stimulation of impulses from the glans penis (P) and seminal vesicles (V). As soon as this center has been stimulated to its maximum, it sends its impulses to the ejaculation centers (E_1 and E_2), ejaculation takes place, and with this event, there results a diminution and final disappearance of the hyperemia of the erection center. Normally, there now ensues a condition of rest for several days and the center has plenty of time to recuperate. Sexual intercourse is not generally indulged in for several days, and the erection center is not bothered with stimulating impulses from either the cerebrum, seminal vesicles or other sources. (In this description I leave out of account the increased sexual activity which follows the first months of wedded life). Normally, also, the same condition holds good in the endorgans. During coitus, the seminal vesicles which were distended empty themselves more or less completely, the prostatic urethra, which during coitus is also hyperemic, becomes deplethorized with the normal act of ejaculation, and the parts soon regain their normal condition of blood supply.

What is the condition of affairs in coitus interruptus? The following description of the pathology does not apply to one single act of withdrawal, but only to those cases where the practice had been kept up for a long time, months or years.

With the interruption of the act of coitus, ejaculation is incomplete, the erection center (R) is not thoroughly deplethorized, on account of the incomplete ejaculation. It thus remains more or less hyperemic. The seminal vesicles do not so compeltely empty themselves as in normal coitus, and they consequently become distended much sooner than after a normal coitus, and the desire for coitus is thus experienced much earlier than after a normal coitus. The hyperemic condition of the prostatic urethra, which under normal conditions disappears with the complete ejaculation, remains more or less in part, and after the practice had been kept up for a long time, a condition of chronic congestion of these parts supervenes. The frequent distention of the seminal vesicles leads to increased desire for coitus, and increased coitus still further keeps up the hyperemic condition of the erection center, leaving less time for it to recover itself. The chronic congestion of the prostatic mucous membrane, has the effect of continually sending impulses to the sexual centers, even in the absence of coitus, and thus the hyperemic erection center is being constantly bombarded with impulses until

finally it is at first in a state of hyperirritability and finally of exhaustion. While in a state of hyperirritability, the slightest impulse it receives from the cerebrum, at the very commencement of coitus, causes it to respond so rapidly that it at once sends the impulse to the ejaculation centers and ejaculation takes place, at the very commencement of coitus, just as the penis has entered the vagina (rapid ejaculation) and in a later stage, even before the penis has had an opportunity to enter the vagina (premature ejaculation). In other words the center has lost its power to hold back the impulses till the proper time. This is graphically illustrated in Fig. 1, No. 4. Finally the center becomes completely exhausted, and fails to respond to any stimulus either from the cerebrum or other sources; it refuses to send out any impulse at all, and we thus get, as a final stage, not only no ejaculation, but also absence of erection.

It is very interesting, if we take a careful history of one of these cases, how the symptoms follow exactly the pathology just described. We first get a history of rapid ejaculation, less and less time is consumed in the coital act, the erections may however still be strong; then we get premature ejaculation, next a weakness in the erections, the patients at this stage complain that the organ just about gets stiff, but ejaculation takes place at once with an immediate decline of the erection, and finally, as a last stage, they can neither get erection at all nor any ejaculation. We note that there is nothing mysterious about all this, and that it is exactly what would occur in any other endorgan under similar conditions.

It must not be imagined, however, that every case goes on to the final stage. The process may be stopped at any stage by proper treatment and a discontinuance of the practice. The length of time necessary to reach each stage varies considerably in different individuals. I have seen the final stage reached after but six months of withdrawal and on the other hand, have seen patients indulge in this practice for many years, before any ill effect was noticed.

Pathology of Impotence following Masturbation.—As a matter of fact, masturbation is very infrequently an etiological factor in impotence, especially when we consider the frequency of masturbation. The man, who has never suffered from gonorrhea, and finds himself impotent, is very apt, following quack literature, to blame it on his youthful errors, errors which may have been committed ten or more years previously. I will not deny, however, that the confirmed, untreated masturbator, who marries with the idea that sexual intercourse will cure his masturbation, may find himself impotent.

The pathology in these cases is similar in many respects to that of withdrawal. There are lacking, however, the impulses from distended vesicles, for the confirmed masturbater does not give his vesicles a chance to become distended. The chief cause of the exhaustion of the erection center (R) comes from the terribly congested prostate and prostatic urethra, which has been for years bombarding the center with reflex impulses. There are in addition two other factors, which contribute toward the production of impotency in these cases. One is that the frequent manipulation of the penis has so hardened that organ that the ordinary friction of coitus (even if he is able to get his penis into the vagina) is not sufficient to arouse the more or less exhausted sexual centers. Another factor comes into play where psychic masturbation has been the predominant type. Here, also, the sexual centers have been so dulled, that it is only the most vivid pictures that the imagination can conjure up which are sufficiently strong to arouse them into action, and the ordinary acts of coitus are not sufficiently powerful to arouse either the desire or the ability for coitus.

Pathology of the Sequelæ of Gonorrhea as a Cause of Impotence.—While most German authorities lay great stress upon the sequelæ of gonorrhea as a cause of impotence, and many American writers follow their example, from my professional experience, I cannot at all subscribe to this opinion. Here again we must take into consideration that gonorrhea is such a very common disease, that in proportion to its frequency, impotence is a very infrequent complication. It might be better were it otherwise. If every man attacked with gonorrhea would become impotent, for a while at least, it would not only greatly limit the spread of the disease, but would also be a most powerful deterrent from illicit coitus.

As a sequence of severe and especially ill-treated gonorrhea, there often remains granulations, ulcerations, vegetations, and areas of congestion and erosions in the posterior urethra, especially in the region of the verumontanum. Sometimes there is also present a chronic inflammation of the prostate and seminal vesicles, which are found to be distended with purulent and other secretions. As a result of these pathological conditions, the erection center is being reflexly bombarded with impulses from these parts, and irritability and exhaustion of the center may result. The treatment of the posterior urethra, and of the prostate and seminal vesicles, generally brings about a cure.

One must be careful, however, in interpreting the results of treatment in these conditions. It often happens that the most gross pathological conditions which are seen through the posterior urethroscope are *not* the cause of the trouble, while the insignificant areas of congestion and erosions are. Very often, by removing the gross pathological lesions, we also cure by the same application or cauterization the insignificant lesions, and are thus apt to consider the cure due to the removal of the gross lesions. As a matter of fact, however, the most gross lesions may be seen through the posterior urethroscope without in any way giving any symptoms, sexual or otherwise, whereas, in other cases, a very small area of congestion in the region of the verumontanum may be the cause of the most marked nervous and sexual symptoms.

Pathology of Ungratified Sexual Excitement as a Cause of Impotence.—Ungratified sexual excitement comes into play as an etiological factor in impotence, only if it has existed for a relatively long period of time. Under this heading comes especially the temporary impotence following long engagements, in which the parties see each other very frequently and do much "spooning" and this goes on for a period of one or more years. Very often the man is continent, and often this continence is put down by some authors as a cause of impotence. As a matter of fact, the man in this case is not at all continent, in the scientific meaning of the term, he only abstains from the coital act of intercourse. We must remember that scientifically, the act of intercourse begins with the first caresses and flirtations, and that coitus is but the final stage of intercourse and not the whole thing. The man in this case really goes through all the preliminary stages of

intercourse, stopping just short of coitus. In many of these cases, the man works himself up in his passion till the point of ejaculation, but this he psychically inhibits, till the erection goes away, and then he starts in again. It is in this way the man can keep up the spooning process for hours at a time.

As a result of this practice kept up for a long time we get a chronic congestion of the posterior urethra, just like in masturbation, but in addition we have the presence of an almost continuous state of distention of the seminal vesicles, unless they are relieved by an occasional pollution. As a result of all this, exhaustion of the erection center must take place in time, in the same manner as has been described in the previous condition. This condition is represented in Fig. 3, showing the double arrows (excessive strong impulses) coming from C and V.

Finally, as etiological factors in functional impotence, we must mention a group of cases in which the pathology is obscure. To this group belong impotence from diabetes mellitus, acute febrile conditions, various forms of acute and chronic poisoning, chronic debilitating conditions, and some authors include herein such conditions as obesity and chronic nephritis.

Concerning chronic nephritis as a cause of impotence, Blum remarks as follows: "We find in many text-books impotentia coendi noted in the symptomatology of chronic nephritis. A specific inhibition of the cerebro-sexual center might be exerted by the urinary poisons retained in the blood, in analogy with other chronic intoxications. I myself, have been obliged in many cases, in which the patient complained of diminution or extinction of the sexual need, to declare chronic nephritis to be the cause. It is one of the fundamental rules of diagnosis, that we examine the urine in every case of impotence; we often come in this way, to the great and painful surprise of the patient, to an explanation of the fatal symptom."

I doubt very much whether ordinary nephritis causes impotence. As a matter of fact, I know of many men with undoubted chronic nephritis who are not in the least impotent. I have in mind at present a young man of 21, who when a child had a severe attack of diphtheria from which he almost died and which left him with a chronic nephritis, with very high arterial tension, etc., but who is very passionate sexually and not in the least impotent. Another case is that of a man of 55 with very bad kidneys, who still enjoys to the full the use of his sexual apparatus. The author quoted above cites cases where the patient complained of impotence, and where a urinary examination showed the presence of nephritis which had been unknown to the patient. He, therefore, concludes it to be the cause of his impotency. Yet time after time has it occurred to me, as well as probably to most physicians, that patients came for entirely different complaints, and a routine urine examination disclosed an unsuspected nephritis, in which there was absolutely no suggestion of impotence present. When we take into consideration that chronic nephritis is not by any means a rare disease, we must not be surprised that we find it present in a certain percentage of our impotence cases. Of course, in the last stages of nephritis with marked cachexia and uremic symptoms this condition may cause impotence just as in the case in any other debilitating disease, but I am convinced that ordinary cases of nephritis are not responsible for impotence. Blum himself seems to correct his first too general statement when he adds at page 551: "It is not surprising that in the advanced stages of nephritis with severe uremic phenomena and outspoken cachexia as well as in diabetes, sexual impotence should occur, when the exhaustion of the patient has reached a high degree." This is an entirely different state of affairs from that of an apparently healthy man coming into the office for impotence, and in which a routine urinalysis discloses nephritis. In diabetes, however, it is different. Here the disease itself seems to be the direct cause of the impotence.

Many authorities put down oxaluria as a cause of impotence. I have paid particular attention to this and have had the urine of all of my impotence cases examined, not only in the routine manner, but especially for oxalates. My experience shows, however, that oxaluria is only very infrequently found in impotence.

Symptoms of Functional Impotence.—The symptoms of impotence may be divided into local and general.

Local Symptoms.—I have previously remarked that, for normal coitus, there must be a certain sequence of events, which must proceed, in perfect harmony and proper relationship of one to the other. These events are the libido, the erection, the ejaculation and the orgasm. In impotence there may be either an absence or weakness of any one of these factors, or a disturbance in the relationship among them. We may, therefore, systematically discuss the symptoms of impotence as they effect the factors just mentioned.

1. Disturbance of the Libido.—This will be considered under psychic impotence.

2. Disturbance of Erection and Ejaculation.—Although for purposes of treatment it will be necessary to consider these two factors separately, it is more convenient at present to consider them together. The symptoms have partly been discussed in giving the pathology. It must be remembered that the patient may come to us at any stage of the disease, and that for a proper understanding of his condition, we must go into his past sexual history most minutely in order to appreciate the proper sequence of events.

In the classic type, as illustrated by the impotence of withdrawal, the patient first notices that the time consumed in coitus is not as long as it previously was. His erections are perfectly strong, he can enter the vagina, the penis remains erect for the necessary length of time, but the time between intromission and ejaculation is less. Often the penis remains erect for some time after ejaculation and may even come out in the erect condition. This must not be interpreted as an increase in the strength of erection, but as a normal erection with an abnormal or shortened period of ejaculation. The erection appears longer only in proportion to the ejaculation. Gradually, the length of ejaculation becomes shorter and shorter, at the same time as the period at which ejaculation commences after intromission also becomes markedly diminished, so that at a later stage, although the penis is erect, and enters the vagina, the ejaculation takes place immediately after intromission, or at the very moment of intromission. The patient now notices that not only is the ejaculation very rapid, but the erection itself does not last as long as usual. He will tell you that he has the desire, his penis becomes erect, but just as soon as he enters the vagina ejacu-

ation takes place at once with the decline of the penis. "The whole thing is over in a minute" is a common expression. As the disease progresses, at the very commencement of sexual excitement, the penis becomes erect, but before he can enter the vagina (often while putting on a condom) ejaculation with immediate decline of erection ensues. Finally, the penis becomes only partially erect, but goes down at once without any ejaculation at all. Later on, although libido is present, there is neither erection, ejaculation or orgasm.

It must be remembered that the patient does not of his own accord tell us the classic history as just related, but if the physician knows what symptoms to expect he will by proper interrogations get a complete history from the patient, depending upon what stage he is in. It must also be remembered that the first symptoms may come on some time after withdrawal has been stopped, and while the patient is indulging in natural coitus. He may not consider withdrawal as an etiological factor, and will not mention it, or even deny it, unless properly questioned in this regard. He may even tell you that previously, while indulging in withdrawal, his coitus was better than at present. The reason for all this is easy to understand from a consideration of the pathology. It takes some time for the centers to become exhausted, and every act of coitus, even natural coitus aids in the exhaustion process, once the pathological conditions previously mentioned are forming. So that, while he was practising withdrawal, the process had not yet reached the final stage. As long as he remains untreated, especially while irritating the parts by even natural coitus, the pathological processes will progress to complete exhaustion and impotence.

It has been customary to classify functional impotence as either paralytic on the one hand, or due to irritable weakness on the other. The general idea seems to prevail that they are separate and distinct conditions, and represent a directly opposite conditions of affairs. My experience, however, in carefully investigating the sequence of events, as well as a consideration of the pathology of impotence, has long ago convinced me that this classification is improper, and that the two conditions are but different stages of the same disease. If we carefully question patients who are suffering from so-called paralytic impotence, we will find that this condition was preceded by a stage of so-called irritable weakness. In other words, before they became totally impotent, they suffered from rapid and premature ejaculations. The pathology just gone into also explains this fully; we get first, irritation of the erection center, and finally exhaustion. It is very important to bear in mind, for purposes of treatment, that both so-called irritable weakness and paralytic impotence are one and the same.

The statement is repeatedly made, that irritable weakness should be treated by sedatives such as bromides, while paralytic impotence requires stimulants such as strychnine. Later on I will show under the heading of treatment the fallacy of this method, and prolonged clinical experience likewise proves this method of treatment to be fallacious.

There is, however, a form of rapid ejaculation which is entirely different from the form just mentioned, and which can be readily distinguished from it, if we go carefully into the sexual history. Under this heading belong those cases of healthy adults who, with no history of neurasthenia, no history of excessive masturbation or other sexual excesses, yet, after a long period of continence, have such strong sexual desire that the entire process of coitus takes but little time. They have normal libido, normal erection, normal ejaculation and normal orgasm. The whole picture represents *power* not *weakness*. It is simply an intense desire for coitus in a powerful man, who goes at it so powerfully that he is quicker than under ordinary circumstances. The condition may be likened to a swift race horse which can outrun all his competitors. The picture is entirely different from that of the man with feeble rapid ejaculation, diminished libido and lack of satisfaction from the act. In this case there is intense satisfaction from the coital act. Many men get into this condition every time they have coitus with a new acquaintance.

3. Disturbance in the Orgasm.—The exact seat of the orgasm is not known, but for various physiological reasons it is believed to be due to the queezing of the fluid through the ejaculatory ducts into the posterior urethra, through muscular action. In rapid ejaculation the orgasm is either diminished or may be entirely absent, for the following reasons: When the erection center sends its impulses too rapidly to the ejaculation centers, the impulses which are sent out by the ejaculation centers are also weaker than normal. Therefore, the squeezing out of the fluid through the ejaculatory ducts becomes less intense and the orgasm is either diminished or absent. The patient obtains no pleasure from coitus, and his partner also suffers, on account of the too short time of friction for her to get her orgasm. It is very often this lack of experiencing the orgasm that is the chief reason why the patient seeks medical advice.

Besides the symptoms mentioned above, there is an important group of cases, whose symptoms cannot be consistently classified with any of the preceding groups. Cases where there is an entire diminution of the whole process of coitus. To this class belong men, who are otherwise healthy, never suffer from neurasthenia, but in whom the sexual functions appear very late, and last only a short time. They rarely masturbate, rarely have pollutions, have very slight libido and easily remain continent. They sometimes marry for economic or other reasons, and are impotent, but do not worry very much about their condition. These men would never seek a physician were it not that they are driven there by their wives.

I cannot emphasize too strongly the necessity of recognizing the etiological basis of this condition. There is a congenital lack of sexual desire and power, which is the cause of the easy continence and the impotence in these cases. It must be recognized that these cases are *born and not made*, and that the continence is due to the same lack of sexual vigor as the impotency. I emphasize this fact, because some authorities, reasoning entirely from the previous history, but in a superficial manner, desire us to believe that the long period of continence is the cause of the impotency. I believe with Sturgis[1] and many other prominent authorities, that continence is never a cause of impotence. By continence, however, I mean not only abstinence from sexual coitus, but also abstinence from any of the factors which arouse the sexual passion (spooning, etc.). Absolute abstinence from all such factors is perhaps an impossibility, especially in large cities, which abound in erotic literature, erotic shows and moving-pictures, etc.,

but even in these cases of relative abstinence, impotence never occurs. It is only in those cases heretofore described, where, on account of long engagements, a man will fondle a girl for hours, and keep this up every night for months at a time, that *temporary* impotence might result.

Besides the local symptoms just mentioned, due to and part of the impotence itself, there is a series of local symptoms which are generally mentioned in connection with impotence, but which have really nothing to do with it. In most of the cases, the same pathological condition in the posterior urethra, the prostate and seminal vesicles, which is responsible for the impotence, is also responsible for the other symptoms. It is just as logical to consider the lancinating pains of locomotor ataxia to be due to the impotence which is also present in locomotor ataxia, as to consider the symptoms about to be described as symptoms of impotence. In both cases, both are simply due to the same underlying cause.

But, while appreciating that such symptoms are *not* symptoms of, but only symptoms often accompanying impotence, it is well that they should be mentioned here and for the following reasons: After all, we are called upon to treat the patient rather than the disease. Very often the patients complain much more about these accompanying symptoms than of the impotence. Very often also, these accompanying symptoms precede the complete exhaustion of the sexual centers for a long time, and by bearing these facts in mind, and going into the history in detail, we may sometimes arrive at a diagnosis of incipient impotence, and be able to treat the same, before the patient has really appreciated the gravity of his condition. Sometimes, too, these accompanying symptoms give us a clew to the pathological processes at work which not only cause them but which also cause the impotence.

Prominent among these symptoms may be mentioned *frequency of urination* and also *burning on urination* as well as *pain, mostly at the end of urination; vesical tenesmus, incontinence of urine*, as well as *difficulty of starting the stream of urine and dribbling* after urination are also occasionally met with. All these symptoms are due to the congested and irritated condition of the mucous membrane of the posterior urethra, as well as to the general hyperemia of all the pelvic organs which is found after a long period of withdrawal or masturbation. *Pollutions*, either nocturnal or diurnal, as well as *defecation and urination spermatorrhea* are very often accompanying symptoms of impotence.

General Symptoms.—There is a long train of symptoms, too numerous for description, which is common to all forms of impotence from whatever cause, and which may be described under the general term of sexual neurasthenia. Of this character are pains in the legs, pains over the eyes, in fact pains in any and every portion of the body. General weakness, headache, vertigo and almost any kind of or combination of symptoms is met with. As a practical point in interpreting these symptoms, care must be taken not to blame everything on the sexual neurasthenia, but to look out for possible errors in refraction, or errors in digestion, etc., as their cause.

Besides the above constitutional symptoms, there is another long list of *psychic* symptoms which has been very graphically and artistically described by German and French authors. I will not attempt to give here a graphic description of the miseries and psychic emotions of the impotent man, but will simply state that this condition is at times the cause of the most extreme unhappiness, and not infrequently leads to suicide. In fact, it has been pointed out by those who have investigated the subject that not a few of the mysterious suicides, committeed by apparently happy and contented men shortly after marriage, were due to their discovering that they were impotent.

Diagnosis.—For a proper diagnosis of functional impotence, it is necessary to take the entire sexual history of the patient into consideration. It is not sufficient to say that the patient is impotent; he knows that himself; but we must diagnose whether it is the erection center that is at fault, or the ejaculation center, the libido or a combination of all of them. It may even at times be necessary to interview or even examine the wife. This is especially important in the newly married. In one case that came under my observation, where a patient had been under treatment by several other physicians for some time for impotence, an examination of the wife by me revealed the fact that she was suffering from vaginismus, for which reason the husband could not enter, in spite of fairly strong erections. Sometimes other malformations about the female genitals prevent the penis from entering, until the poor man finally becomes discouraged and may be rendered temporarily impotent from his ineffectual efforts.

In every case of impotence we should examine for locomotor ataxia or other nervous condition which may cause it.

Prognosis.—The prognosis varies considerably in the different conditions. It is generally good in men below 45 who have been able to perform normal coitus before their present impotency. It is very poor in cases of congenital lack of sexual desire and vigor. Wherever a man has always been sexually weak from the very commencement of his sexual life, and has superimposed upon this congenital weakness the evil influences of withdrawal or excessive masturbation, the prognosis is poor. It is also not good in men past 50, or in men with a neurasthenic history to which the evils of sexual neurasthenia have been added. The prognosis is very good in those acute forms of impotence due to overindulgence in coitus, as well as in impotence from ungratified sexual passion, and in the ordinary cases of impotence from withdrawal or excessive masturbation in which there is no underlying condition of general neurasthenia. The prognosis is naturally poor in the confirmed sexual invert.

Treatment.—In order to treat properly the condition under consideration, we must have a clear conception of the pathological state of affairs and the causes which produce them. What then is the condition of affairs in the ordinary case of functional impotence? There are hyperirritated or exhausted sexual centers depending upon the stage of the disease, and a chronically inflamed posterior urethra with congested or inflamed seminal vesicles and prostate. The first indication is absolute sexual rest in order to give the exhausted centers time to recuperate and to remove every cause of irritation, which includes the treatment of the diseased posterior urethra and prostate and seminal vesicles, for as has been shown heretofore, these diseased organs are constantly bombarding the sex-

ual centers with impulses, even in the absence of sexual intercourse.

The first indication is met, by not only abstaining from coitus, but from every act which might excite the sexual passion. The husband should not sleep in the same room with his wife if possible, certainly not in the same bed. He should especially be cautioned against spooning, for if not told, some men have the impression that they can indulge in any sort of sexual play so long as they omit actual coitus. The length of time he should abstain from coitus varies in different cases. As a general rule it may be said that young and vigorous men should be kept continent for from three to six months, while men past 45 should be allowed coitus much sooner for fear of a complete dying out of the sexual passion.

Besides the abstinence from coitus, the patient should also abstain from all alcoholics, as well as from tea, coffee, eggs, and oysters, for all these stimulate the sexual apparatus and centers.

At this time nothing is so useful as the internal administration of the bromides in large doses. At least 15 grains should be given three times a day well diluted after meals. The object of this is to quiet the irritated centers, and at the same time to remove all sexual desire for the time being. This should be given even in the paralytic stage of the disease and not reserved for the cases of irritable weakness only. The large doses of the bromides should be kept up for at least two months in young persons and for one month in older patients,and then gradually reduced. It has been said that the administration of bromides may lead to impotence. Possibly the prolonged administration for years which may be necessary in epilepsy or other chronic nervous affections may have this result, but certainly for the limited time given above, no such result can occur. The patient should be fully informed of the object of the treatment or else he is apt to be discouraged and tell you that his condition is getting worse instead of better. He will inform you that before he started treatment he had some sexual desire, while now he has none. As a matter of fact, this is just what is wanted and is the main object of the administration of the bromides. The patient should therefore be informed of these facts at the very start.

At the very commencement of treatment, in fact at the first examination, we should inform ourselves of the condition of the prostate, seminal vesicles, and urethra, especially the posterior urethra. For this purpose a routine genito-urinary examination should be made, including a search for stricture and an endoscopic examination of the entire urethra. A routine urine examination should be also made to rule out diabetes as a possible etiological factor. In many of these cases we will find areas of congestion or other pathological conditions in the region of the verumontanum. The prostate and seminal vesicles will also often be found enlarged and sensitive.

For the treatment of these pathological conditions in the posterior urethra nothing succeeds so well as the instillations of weak silver nitrate solutions through the Bangs sound syringe, just as in cases of masturbation. The instillations are given every five days, starting with a 1 3000 solution and increasing to ½ per cent. The size of the sound is also increased till the largest possible can be taken. Should there occur at any time too much irritation from the instillations, as evidenced by urethral discharge or very intense burning, the strength of the silver solution should be reduced. Of course, if the endoscope reveals any gross pathological condition in the posterior urethra, such as cysts, vegetations, or similar conditions, these should be removed either by puncturing or other intraurethral operation, which is very feasible through the modern posterior urethroscope. After the very acute condition of congestion has been removed by the above instillations, a few direct applications of very strong silver solution (10 to 20 per cent.) can be made advantageously to the diseased areas through the urethroscope.

I have often been asked how the application of silver nitrate to the verumontanum could possibly cure impotence. To this I must answer that the application of silver nitrate to the *normal* verumontanum can only do harm, but he who has looked through the modern endoscope and has seen the pathological conditions present can readily understand how the removal of these conditions can have a beneficial effect upon the coital act. I desire especially to emphasize the fact that the treatment is not psychic, although the introduction of the lighted endoscope cannot help having a psychic effect on the patient. The treatment and the good results of the treatment are due solely to the removal of the pathological conditions present. The indiscriminate application of strong caustics to the verumontanum, practised years ago as a cure for impotence, has deserved the severe censure which it has received, but the rational treatment of the diseased areas which can be so distinctly seen through modern instruments, is of distinct benefit to the patient.

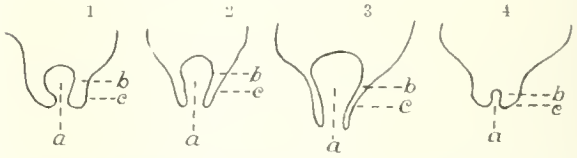

FIG. 2.—Diagrammatic pictures of the normal and diseased verumontanum. 1, Normal; 2, moderately enlarged; 3, greatly enlarged; 4, atrophic; *a*, verumontanum; *b*, lateral sulcus; *c*, urethral wall.

One must have considerable experience in posterior endoscopy, however, before he can recognize what is pathological and what is normal. The verumontanum, like the trigone of the bladder, is *normally* redder than the surrounding parts, and the inexperienced observer is likely to consider the normal verumontanum to be congested or inflamed. The same holds good also concerning its size. We must remember that the normal verumontanum varies greatly in size and shape in different individuals. In the colored race, for instance, where all sexual organs are markedly developed, I have noticed that the verumontanum is much larger than in white persons. I have evolved the following rule as a guide: we must not go by the absolute size of the verumontanum but by its size in relation to the posterior urethra in which it is found. In other words, a verumontanum, which almost completely fills the prostatic urethra, showing little if any signs of lateral sinuses, that is to say, if it almost touches the walls of the urethra on either side, is to be considered considerably enlarged. One can easily appreciate how such a verumontanum must keep on tickling the walls of the prostatic urethra even in the absence of coitus, and also how irritating it must be when rendered more congested during the coital act.

It must be remembered that the posterior endoscope only shows the pathological condition of the posterior urethra, and that similar pathological conditions are found in other conditions such as masturbation, satyriasis, etc. In other words, *one cannot make a diagnosis of impotence by merely looking through the endoscope.*

At the same time that we are treating the pathological conditions in the posterior urethra, we also treat the enlarged, congested and sensitive prostate, and seminal vesicles, by *gentle* massage every five days. *Gentle* massage is an art, which it requires much practice to obtain. It is a pity that any manipulation of the prostate is designated by the term massage. This is really a mistake. When we manipulate the prostate in cases of gonorrhea in order to get out its secretions for diagnostic or therapeutic purposes, we are justified in using quite hard pressure, but this process ought really be called expression instead of massage. Such procedure is entirely different from what the one now under consideration should be. It must be remembered that the object of the manipulation is not to squeeze out every drop of secretion from the prostate, but to relieve the congestion, and to help the exhausted muscles of the prostate to regain their tone. In other words, massage in the same sense in which that term is used when applied to other portions of the body. Using powerful pressure on the inflamed and sensitive prostate is no more massage of that organ than punching a man in the belly would be considered massage of the abdomen.

This combined treatment, to wit, agstinence, restricted diet, bromides, intraurethral treatment, and prostatic massage should be kept up for several months depending upon the age of the patient, the stage of the disease, and also the reaction to the treatment. During this time, his general health should receive the closest attention. A liberal and easily digested diet, largely made up of cream and other fats should be ordered. Constipation must be relieved, as it tends towards interference with the return pelvic circulation and thus makes for local congestion. Tonics and out-door exercises should be ordered where feasible. A very useful adjuvant is cold baths, or cold spinal douches. These are to be taken only in the morning and never at night. Hot baths are positively injurious.

If at any time frequent pollutions occur, we must at once suspend massage of the prostate, otherwise this procedure is to be kept up at increasing intervals, until that organ is no more congested and its sensitiveness is gone. One must have some experience, however, in deciding these points, as we can always squeeze hard enough even on a normal prostate to cause pain.

When we have decided that the sexual centers have fully recuperated, and observe that the posterior urethra, as well as the adnexa, are normal, we stop the bromides and turn to sexual stimulants. I have tried most of the drugs recommended, but have gradually narrowed down my medical armamentarium to two drugs, namely strychnine and yohimbin. Strychnine nitrate is to be preferred, although where this is not obtainable, the sulphate acts almost as well. I have become convinced that those who have not obtained good results from this drug have not administered it in the proper way or dosage. Many years ago, that great clinical observer, Abraham Jacobi, stated that the dose of this drug for children is generally put down as much too small, and I have come to the same conclusion in regard to its use in adults. Where coitus is indulged in during the night, I order 1/20 grain of either strychnine nitrate or sulphate to be taken at 5 P. M., 7 P. M., 9 P. M. and 11 P. M. Although the patient thus gets gr. 1.5 in six hours I have never noticed any bad effects from it. At first there may be some headache, but this soon passes off, and the patients frequently tell me that they sleep much better than before. It should be stated here, that strychnine has no direct effect upon the sexual desire. All it does is to make the penis stiff so that it can enter the vagina, and remain in the erect condition during coitus. Frequently the penis even remains stiff after coitus is completed, and comes out in an erect condition also. Yohimbin acts very well within certain limitations. It must not be given as long as precipitate ejaculations are present, or where frequent pollutions complicate the impotence. It is not to be given continuously, but should be given for from one week to two weeks at the utmost, in doses of one tablet three times a day. Its chief application is after a long period of sexual continence, and when the erection center has been completely rested. The rested center will now react splendidly to this drug and the first and much feared coitus will be successful. Some authors recommend it to be given subcutaneously. Lissman[5] reported excellent results with the epidural injection of yohimbin solution, even in cases where the tablets had failed. I have had no experience, however, with either the subcutaneous or epidural method of administering yohimbin. But given in tablet form at the right time and within the limitations above mentioned, it has generally worked very well.

I desire to record here some experiments I have made with tincture of cantharides in cases of impotence. It is well known that this drug, if taken in large enough doses, may cause priapism, for which reason it had often been given for the purpose of bringing on erection. The drug is, however, a very powerful irritant to all mucous membranes. If taken internally, in sufficiently large doses, it causes a gastroenteritis, a nephritis and an intense inflammation of the mucous membrane of the bladder and urethra. It is by causing this inflammation of the genitourinary mucous membrane that the erections are brought on, and death has at times resulted from its use for this purpose.

Several years ago, it occurred to me, that if cantharides has this effect, what is the necessity of administering it in poisonous doses, thereby causing gastroenteritis, nephritis and cysitis in order to bring a sufficient quantity of the drug into contact with the mucous membrane of the urethra in order to cause erection, when by means of the endoscope or with the syringe the drug may be applied directly to the urethral mucous membrane? Accordingly, I started my experiments with very weak solutions, and gradually increased the strength until it became evident that about 50 per cent. or at most a 75 per cent solution of the tincture of cantharides was as strong a dosage as could be given by instillation. I even made direct application of the pure tincture of cantharides to the verumontanum, and, while irritation was produced, as shown by burning and frequency of urination, there was never the slightest indication of erection. No harm resulted to the patients from these experiments. Cantharides given internally may possibly be excreted with the urine in some peculiar chemical combination, or may form some chemical combination in the

blood, which is excreted in such a form as to irritate the erection center and thus cause the priapism. A search through medical literature for some explanation as to how cantharides is excreted threw no light upon the subject. To those who have access to physiological laboratories it might be interesting to work out this problem, or the experiment may be tried by giving rabbits or other animals poisonous doses of cantharides, and then collecting their urine to ascertain what effect this urine may have if applied directly to the posterior urethra.

The treatment of those cases in which there is a congenital lack of sexual vigor is very unsatisfactory, and all we can do is to conserve whatever power they have by warning them against excessive coitus and withdrawal.

It is very important to impress upon patients that the best we can do is to get their organs into normal condition, but that we cannot so educate their organs that they can abuse them without coming to grief. In other words, if we have succeeded in curing the impotence which was caused by coitus interruptus, the patient must be made to understand that if he resumes the practice he will surely relapse, and the same is true of the other eitological factors.

III. Psychic Impotence.

Definition.—Psychic impotence is that condition in which the impotence is caused by inhibitory influences from the higher centers. While in organic impotence the trouble is with the endorgans, and in functional impotence it is generally the sexual centers which are at fault, in psychic impotence there are healthy endorgans and healthy centers, but the actions of the centers are interfered with by inhibitory influences. Groag justly calls attention to the fact that the term has been very unhappily chosen, inasmuch as some of the other forms of impotence are also partially psychic and he, therefore, suggests the term Inhibition Impotence instead.

Etiology.—Any act of factor which can influence the imagination may be the cause of the inhibition. Among the more common factors may be mentioned fear of venereal disease, fear of pregnancy, fear of being caught in the act, fright, disgust of the partner, fear of being impotent on account of youthful masturbation, etc. Among the unusual causes may be mentioned joy, as in a case reported by Roubaud where a man became impotent on hearing that he won a large sum of money in the lottery; marital indifference, as in a case mentioned by Sturgis,[1] in which the wife considered the conjugal act to be vulgar and indecent, and during coitus indulged in running comments upon the performance; superstition is reported in a case by Hammond, where a man believed his wife had given him a certain glance to make him impotent while away from home; the celebrated case mentioned by de Caux, in which a mathematician was always diverted from coitus by a certain geometric problem coming up at the psychic moment.

Pathology.—In ordinary coitus, as soon as the libido is aroused an impulse is sent from the cerebrum (*C* Fig. 1, page 12) to the erection center (*R*) and erection occurs. In the condition under consideration the libido is normal, and even may be very powerful, but inhibitory impulses are sent from other cerebral centers to *C* preventing it from sending impulses to the erection center (*R*). In those cases where erection has already commenced, the inhibition is transmitted further from *C* to *R*, thus stopping the forming erection.

Symptoms.—There are two forms of psychic impotence: (1) Misdirected libido, (2) inhibited libido.

1. Misdirected libido.—(*a*) Sexual perverts. Normally, the libido of a mature man is directed towards a female. If, however, the libido is directed toward any other source, the person is a pervert. Sometimes such men marry for social or economic reasons, but the presence of the wife does not excite in them the libido, and they are impotent. The seat of the trouble is probably in the cerebrum (*C*).

(*b*) Impotence of the roué. On account of too frequent coitus these persons find no longer pleasure in normal coitus, and therefore seek for stronger and stronger methods of excitement in order to cause erection (Mol's excitement hunger). According to our diagrammatic scheme, the impulses from *C* (cerebrum) to *R* (erection center) are too weak during normal coitus to excite *R*, so that a strengthening of the impulses, through the addition of new psychic excitements, is necessary.

(*c*) Relative Impotence. Under this heading may be mentioned those cases where the husband, after many years of married life, becomes impotent with his wife, though perfectly potent with other women. To this class also belong those curious cases, where men are potent only with certain types of women, either blondes or brunettes or other physical characteristics, and are impotent with all other types of women. Also those cases in which the man can only indulge in coitus if the woman has a certain kind of dress on, or her hair done up in a certain way. Groag[1] rightly remarks that the term has been very unhappily chosen, as the two previous kinds of impotence just described are also cases of relative impotence.

The three forms of impotence due to misdirected libido just mentioned are sometimes classed under functional rather than psychic impotence.

2. Inhibited Libido.—The symptoms have already been partly described with the etiology. The person has normal or even intense libido, but just at the exciting moment either the erection fails to occur, or if it has started it suddenly ceases. At each further attempt the same thing occurs, and may even be worse. The same train of neurasthenic symptoms may follow this condition, as has been mentioned in the other forms of impotence. As far as the patient is concerned he is just as unhappy as if the impotence were caused by the most pronounced organic or central lesion.

Diagnosis.—The diagnosis can only be made by a careful consideration of the patient's history together with a most careful genito-urinary examination, as well as a general examination. Cases which at first blush seem to be obvious cases of psychic impotence may on careful examination turn out to have a definite organic or functional etiology. The most important points in the diagnosis are the presence of normal libido, the absence of organic defects or diseases, the absence of a history of coitus interruptus or other unnatural sexual excitation, and the presence of a definite psychic history.

The *prognosis* is generally excellent.

Treatment.—The treatment is entirely psychic, but this does not mean that the patient should be neglected. It is a grave mistake to tell the patient there is nothing the matter with him, or even to

laugh at him. For this reason as well as for proper diagnosis it is well to carefully examine him, because the thoroughness of the examination impresses the patient and helps toward the cure. Endoscopic examination in which the patient sees the lighted instrument enter the canal and appreciates that the physician can see everything inside is especially impressive. Electricity has here its greatest value. It is this form of impotence that has been cured by anything varying from a bread pill to Christian Science. Hammond has been successful by giving the patient some indifferent pills, telling the patient that he may sleep with his wife, but under no circumstances indulge in coitus until all the pills have been taken. Very often the patient breaks the rule and finds himself potent. It may be necessary to instruct the wife and have her assist in the coital act, and by her common sense in many ways also. In the case of the mathematician above referred to his wife cured him by making him partially intoxicated before coitus. A change of scene or even different lodgings has resulted in a cure.

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IMMUNIZED MILK IN THE PROPHYLAXIS AND TREATMENT OF TYPHOID FEVER.

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About two years ago I published (*N. Y. Med. Journal*, Oct. 11, 1913) a brief preliminary report of my observations, that cows and goats immunized with dead cultures of the typhoid bacillus, according to the methods of Pfeifer, Kolle and Wright, developed in their milk specific antibodies, agglutinins and precipitins, that feeding this milk to animals or human beings would convey passive immunity and protection against the typhoid bacillus, and that I obtained positive evidence that ingestion of this milk would cause the production of specific antibodies in the circulation, so that the blood, at first negative, would subsequently respond to the agglutination test. These observations justified, in my opinion, the assumption "that immunized milk would provide protection against typhoid infection, a prophylactic like anti-typhoid vaccination, without its risk and the usual symptoms of discomfort." I mentioned that immunized milk seemed to be a rational remedy for treating typhoid fever, especially in the earliest stages, deserving preference to ordinary milk.

I was working in a sparsely settled country district, about 150 miles distant from New York City, with limited facilities. In the closing sentences of my report I asked for the co-operation of hospitals and physicians, *offering to deliver*, daily, the needed quantity of immunized milk, free of expense, to all desirous of testing the merit and practical value of immunized milk. I furnished to a number of applicants about twenty quarts of immunized milk a day for a period of from one to three months, but the results were a great disappointment, a waste of time and money.

Some accepted the gratuitous supply for many weeks, but never reported their observations. It is very doubtful if ever any tests were made, and I could not obtain a satisfactory answer to my queries. Others furnished careless and incomplete reports, lacking essential details, utterly useless, only fit for the waste basket. Not one of the reports supplied dependable data; all were valueless. I mention this probably not singular experience to illustrate the difficulties, the obstacles, encountered in attempting to present a subject fairly and truthfully.

The criticism of probable lack of judgment and care in the selection of associates is answered by the fact that both individuals and institutions have a good reputation. Dr. Benjamin Corwin conducted a series of tests at the Kings County Hospital, Brooklyn, which had to be discontinued before satisfactory results were obtainable, owing to the variable condition of the milk supply. The investigation is about to be resumed with immunized milk from cows kept in the vicinity of the hospital.

Knowing my observations to be true and well founded, I made many efforts to induce other competent and conscientious workers to test the effect of immunization upon milk, and the transmission of antibodies into the alimentary canal, but my attempt to win support for my proposition encountered undivided skepticism. All were imbued with a firmly rooted conviction that the intestinal wall constituted a solid barrier to the passage of antibodies, that none would pass the intestinal mucous membrane, except that of very young animals, the latest possible period being the second week of extrauterine life.

However, in the end, time, persistence and truth are bound to succeed. To-day I am able to state that the essentials of my first preliminary report are verified by other observers by evidence which must be accepted beyond a question of doubt.

Yoshinaga of the University of Tokio (*Z. f. Bacteriology*, Bd. V) inoculated goats and reports the subsequent appearance of agglutinins, precipitins and opsonins in the milk; that the milk responded to the Gruenbaum-Widal test; that it contained well-marked bactericidal properties; that feeding this milk afforded protection and resistance against the typhoid bacillus; that the blood contained the specific antibodies.

Dr. W. H. Park, director of the New York City Board of Health Research Laboratories, tested the effect of immunization upon cows and calves five to six months old. His reports are as yet unpublished. I am, however, permitted to state that the milk, as a result of immunization, responded to the agglutination tests; that the feeding of this milk to practically adult animals caused the presence of antibodies in the circulation, the transmission of passive immunity, the passing into the blood of antibodies by way of the intestinal canal.

These tests proved the correctness of my observations, that inoculation of the parent animals caused the appearance of specific antibodies in the animals' milk, that feeding this milk to mature animals provided the subsequent evidence of antibodies in the circulation; a complete chain, a perfect circle of proof.

The effect of immunization upon milk, the transmission of antibodies by way of the intestinal canal must be accepted as proven. Any failures to con-

firm this are due to errors in technique, incomplete immunization, deterioration of the milk, etc.

What is the practical value of immunized milk? This is a pertinent question. The value of anti-typhoid vaccination is undeniable. There is abundant evidence that anti-typhoid vaccination causes a reduction of the morbidity, also the mortality of those who become infected in spite of inoculation, but it is quite probable that similar results will follow the use of immunized milk.

Immunized milk is absolutely safe and harmless, while anti-typhoid vaccination often causes more or less severe systemic symptoms. In about one-third of all cases anti-typhoid vaccination is followed by a rise of temperature, a general malaise lasting two to three days. Ten per cent of the vaccinated patients become quite ill, are forced to keep their beds, and for almost a week are utterly incapacitated for work.

These observations, of which the literature contains several reports, pertain to young men in exceptionally excellent physical condition, mostly soldiers in active service. It is more than probable that the universal use of anti-typhoid vaccine would not be void of danger to health, if not to life. We know even now that many individuals, those most in need of protection, must be excluded from anti-typhoid vaccination because it is dangerous and contraindicated on account of physical defects; to these immunized milk offers a safe and simple method of protection.

Immunized milk is an excellent medium to provide general immunization for typhoid fever at trifling expense and without risk. It causes neither local nor systemic ill effects. It is fatal to but one organism, viz., the typhoid bacillus. Drinking one quart of immunized milk per day for a period of about two weeks provides adequate protection for two months. Immunity, however, can be prolonged indefinitely by drinking one or two quarts of immunized milk every ten days to two weeks.

The data are, of course, not final, and to obtain precision much additional experience is required. It should, however, not be overlook that facts regarding anti-typhoid vaccination are by no means definitely established. Estimates of the time limit of protection vary from two months to two years; the majority accept one year as a fair average.

Wade and McDaniel (*Am. Journal of Public Health*, February, 1915) report 177 cases vaccinated with anti-typhoid vaccine, and found that the Widal reaction following vaccination is of short duration. In but a very small percentage the reaction persists after six months (in 16.3 per cent), and by the end of one year the evidence of agglutinins in the body is reduced to 11.7 per cent. According to Moon (*Journal for Infectious Diseases*, December, 1914), the absence of the Widal reaction not necessarily indicates an absence of protection. Moon believes that the immunization effect of anti-typhoid vaccine lasts for about two years, but beyond that time should not be relied upon. The only proof in our possession is the fact that typhoid fever still claims a large annual sacrifice of lives.

Louis J. Dublin, Ph.D., statistician of the Metropolitan Life Insurance Company, estimates the number of deaths in the United States from typhoid fever to be not less than 20,000 per annum, to which must be added another 8,000 deaths due to sequel. The yearly average of sickness is 198,000 cases (*Am. Journal of Public Health*, January, 1915). Besides an efficient prophylactic, immunized milk will probably prove itself to be a valuable aid in the treatment of typhoid fever, especially in the early stage of the disease. Immunized milk should be used at the very onset, even before a diagnosis is possible, and should be given in every suspicious case; it may succeed in aborting the disease, preventing the infection by augmenting the body's natural defenses. It will provide the needed antibodies to destroy the invading host, neutralize the bacterial toxins at a period when the body is not as yet prepared to cope with the infectious organism. The use of immunized milk in the treatment of typhoid fever rests upon sound scientific principles; it deserves a careful and extended practical test.

Why not use immunized milk in preference to ordinary milk? It contains the specific antidote for the typhoid bacillus, which by feeding the milk is conveyed into the intestinal canal in direct contact with the invading host.

There is every reason in favor of immunized milk, and no possible argument against it. Patients ought to be afforded the opportunity to obtain its advantages, to profit by its assistance in the combat against the disease. The production and distribution of a dependable immunized milk requires the facilities of a well-organized dairy. I have arranged with a responsible concern to provide and deliver a high-grade immunized milk at a reasonable price. I will personally supervise the immunization of the cows, and to guard against errors, each bottle will bear a special label as suggested and permitted by the Department of Health. I hope that in course of time dairies in other cities will arrange to supply immunized milk.

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SECTION OF THE POSTERIOR ROOTS OF THE SIXTH TO TENTH THORACIC NERVES FOR THE RELIEF OF SEVERE GASTRIC CRISES IN LOCOMOTOR ATAXIA.

By FREDERIC W. BANCROFT, M.D.,

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The following is the report of a case admitted to hospital September 20, 1911:

C. F., aged 33, U. S. printer (working with Babbitt metal and lead). He has complained for two years of stomach trouble with attacks of vertigo and weakness in the legs.

Family History.—Father living, aged 56, good health. Mother died at 51, paralytic stroke. Brothers, five died in infancy; one at 11, of an infantile disease. Sister, one during childbirth, three died in infancy, cause unknown. Has two maternal uncles who are chronic alcoholics, both advanced in years, and enjoy excellent health. Wife died at 23, through accident; has one child living, in good health, age 5.

Personal History.—Born in New York City 33 years ago; at school until 13, selling papers on the street for three years. Been on the New York *Sun* since, as sterotyper, working always with hot metals, largely composed of lead. Alcohol, none except two or three beers a week. Tobacco, smokes and chews freely. Appetite, good. Bowels, regular. Weight, 125 pounds. The patient had an operation at St. Gregory's Hospital, nineteen months ago; he says "They removed 8 inches from stomach, it being too large"; good recovery after one month. At 14 he had gonorrhea with chancre (hard) and two buboes. Was treated with santal and injections for six months.

Present Illness.—Cramps in stomach, February 19, 1909, with vomiting of a greenish, slimy liquid as well as undigested food; no blood, but sharp shooting pains, causing localized distention, with sensation of tumor masses; during twenty-four hours the vomiting was projectile in type, the attacks coming with no relation to time of eating. He was very weak after these at-

tacks, headaches most severe, radiating from the back of the head around forehead; complete loss of appetite, and on trying to walk, all objects would turn black. Then he would go to bed for two or three days, eating nothing, getting little or no sleep. Attacks irregular, two or three months apart, increasing. Loss of control of bowels and bladder has increased, but he has never lost entire control. Memory and eyesight, as well as hearing good. Sexual power diminished six months ago.

At the start the diagnosis was lead colic; treatment gave temporary relief, but there was a recurrence four months later. Six months later he entered St. Gregory's Hospital, and was operated on, as before stated, the diagnosis being dilated stomach. No relief followed, irregular attacks occurring as before. Salvarsan was given on February 11, after a diagnosis of tabes dorsalis had been determined on; he gained 8 pounds in weight after this, and pains were diminished. On March 11 his wife died, and the shock of this caused an attack that lasted twenty-four hours, and thereafter the attacks became so frequent and left him so weak, that he had to quit work entirely. He was at the Neurological Institute in May, 1911. The Wassermann was made and was positive. The patient was given mercury subcutaneously, but no improvement followed. He remained at the Institute one week, and continued the mercurial treatment until September. At Bellevue the Wassermann was negative, then an *x*-ray examination was made but it disclosed nothing. During the past eight months he has noticed a stagger in his gait and increasing diplopia; has had shooting pains in legs and back for past five years, relief from which is obtained by hot baths.

General appearance, of medium frame, fairly well developed and nourished, skin and mucous membranes of fair color. Attitude, stands and sits in a slightly stooping position: gait, nothing characteristic; weight, 103.

Mental Status.—Attention easily obtained and retained; memory good. Orientation time and place, normal. Intelligence, fair. Association of ideas, past and present is good. Speech is rather slow pitched, no scanning or tremor. Sleeps poorly.

Reflexes.—Cutaneous, abdominal; UM and L, all present; cremasteric, absent; interscapular, gluteal, and anal, present; no plantar response; patellar and Achilles, absent; elbow and wrist, normal; no clonius or Oppenheimer-Gordon syndrome; bulbucavernous absent.

Pain sense diminished in muscles, testicles, and eyeballs; general tolerance to pain. Faint, indistinct band of hyperesthesia to pin and cotton wool is present between third and seventh ribs to the anterior axillary line. Thermal and localization seems good. Touch less than 5 c.c. apart, two points not differentiated. Pressure and pain almost absent.

Complicated sensory functions.—Postural is markedly diminished, in upper and lower extremities, active and passive movements fairly distinct; ataxia is marked in lower, slight in upper extremities. Stereognosis good.

Musculature is flabby, resistance good. Incoordination of upper extremities slight, of lower more marked. Romberg present. No fibrillations, twitchings, flaccidity, or mechanical restrictions. Control of bladder and rectum is slight, frequency of voidings is increased. Trophic disturbances of skin or bone are absent. Vasomotor response normal.

Cranial Nerves.—1st, 5th, 11th, and 12th normal; 3rd, 4th, and 6th, eye movements, good in all directions; slight lateral and vertical nystagmus, on extreme movement; no von Graafe, pupils dilate 4 mm. in diameter, equal, normal position, do not react to light, or in accommodation.

Chest.—Marked supraclavicular depression, slight infraclavicular expansion; slight increase of tactile fremitus in the right upper side, and slight dullness, whispered voice markedly increased in right Apical region. Heart normal in size, shape, and position; sounds good, no accentuations. Pulse, 90; volume small, force poor, and not well sustained.

Wassermann Reaction.—German Hospital, February 11, positive; Neurological Institute, May 11, positive; Bellevue Hospital, September, 11, negative.

Diagnosis.—Tabes.

Upon admission to the surgical ward of the Central Hospital, the patient was having intense attacks of gastric crisis, which would last from two to four days. During this time he had to be under the influence of morphine, which, even then, did not relieve the intense pain in the epigastrium. During these attacks, the skin over the lower thoax and epigastrium was markedly hyperesthetic; he would vomit everything, including water, for 36 to 48 hours, the amount of fluid lost was often very great.

Operation was performed in February, 1914, in the Central Neurological Hospital, on Blackwell's Island, under gas and ether anesthesia.

A laminectomy of the 6th, 7th, 8th, and part of the 5th thoracic vertebræ, was performed. The dura was exposed and opened. As in this region the posterior roots come off about three vertebræ above their point of exit, it was possible to section the 6th to 10th roots. The posterior roots are larger than the anterior, and there is a slight technical difficulty in identifying them, as they lie close together, before leaving the dura. After excision of about 1 to 1.5 cm. of the roots, the dura was sutured with fine "O" catgut and the muscles sutured over the posterior part of the vertebæ. The skin was closed with interrupted sutures of silkworm-gut.

In regard to the technique of the operation, I should advise an osteoplastic flap, in preference to a laminotomy, but this was impossible, with the instruments available. Sections of the dorsal roots were taken for microscopical examination.

The patient had an acute dilation of the stomach for three days, but after that, he made an uneventful recovery. He complained of very little pain and did not vomit after the first three days while in the surgical ward. He was later transferred back to the neurological ward, where he is at the present time. Since that time, however, he has had no attacks of gastric crisis; he has had some moderate pain in lower abdomen, but no crisis. He vomits about once a day, usually in the morning, but during the rest of the time, is able to eat about what he wishes. His general condition is about the same as before the operation. There is a linear scar over his back. He is able to bend his back and move it without difficulty. On palpation, there is a groove in the place of the excised spinous processes. There is a definite area of anesthesia in the distribution of the excised spinal nerve roots. His condition is improved but he is not cured.

The sections taken for microscopical examination, were stained by hematoxylin, eosin, Cajal method and the Marchi. Dr. Tilney, of Columbia University, very kindly made the following report of the sections: "Some of the finer fibers in the root appear degenerated. The axis cylinders are fragmented and in addition to this there is a distinct increase of the comitus element of the perineurium. This latter character is the most prominent departure from the normal condition. The Cajal preparations may be interpreted in the same way, the coarser neurofibrils appearing perfectly continuous throughout the section, while there are numerous finer fibrils of a fragmented variety. In this interpretation, the reservation must be made that silver impregnations are prone to be incomplete, and consequently the fragmented condition of the finer neurofibrils may be the result of imperfect impregnation."

In gastric crisis there is intense nausea with severe pain in the upper abdomen, worse in the epigastrium and under the costal margins. This is usually accompanied by a hyperesthesia of the skin over the lower thorax and upper abdomen.

The epigastric reflexes are markedly exaggerated. The vomiting may be almost constant. Forster reports a case who vomited 8 liters of fluid during 24 hours and another who lost 6 pounds in 24 hours. In a few cases blood is vomited; this is usually due, however, to diapedesis rather than to any gross lesion. There may be severe salivation and increase of the bronchial secretions. The urine is usually decreased. There is often a rise in temperature. Between attacks there may be complete cessation of pain and vomiting. The attacks may follow so rapidly upon one another that a condition named by the Germans "status kriticus" may develop, with constant pain, nausea, and vomiting, followed by rapid inanition.

According to Newman, L. R. Muller, and Head the course of the sensory fibers of the stomach is through the celiac axis, through the great splanchnic nerve and the rami communicantes to

the dorsal roots of the sixth to ninth thoracic nerves. The dorsal roots take also the sensory fibers from the epigastrium. The sympathetic fibers of the gall-bladder pass through the seventh to tenth posterior roots, and those of the intestines through the ninth to twelfth posterior roots. Siding has reported a case of severe gastric crisis, with a herpetiform eruption over the areas supplied by the sixth to ninth nerves. Roux has found that the fine nerve fibers which connect the dorsal roots to the cells in the sympathetic ganglion are particularly degenerated in tabetic subjects; while the strong medullary fibers, originating in the intervertebral ganglion, are not diseased to any appreciable extent.

On the other hand, other authors state that there are sensory fibers from the stomach passing through the vagus nerve. Eppinger and Hess have concluded that gastric crisis is explained by irritation and later paralysis of the autonomous system (vagus nerve); their work has been carried on experimentally. Forster claims that, if it were due to vagus irritation there would be no skin hyperesthesia, and laryngeal crisis and heart symptoms would be present. He thinks there is one type of gastric crisis associated with laryngeal crisis and vomiting without gastric pain, that may be due to vagus irritation or to direct injury to the vomiting centers in the medulla.

Abbe and Bennett, in 1888, first conceived the idea of section of the posterior roots for pain. Their case was one of neuralgia of the brachial plexus. Later, Giordano operated on a case for the relief of sciatica.

In 1900 Mingazini proposed the intradural resection of the posterior sacrolumbar roots in a case of tabes with severe lightning pains in the legs.

In 1906 Atlas and Cotte, in a case of severe gastric crisis with vomiting, opened the abdomen, dissected the solar plexus free from the celiac axis and stretched it. The attacks of crisis stopped immediately.

Forster, in 1908, advised sectioning the posterior nerve roots in severe cases. He considered that the irritation of the dorsal root fibers manifests itself in the severe pain and vomiting, in the tremendously increased hyperesthesia of the skin, of the epi-, meso-, and hypogastrium, and in the exaggeration of the epigastric reflex. As a rule, the pain and hyperesthesia appear first, while the motor disorders, as vomiting, occur later.

Forster performed the first rhizotomy for gastric crisis, resecting the sixth to tenth posterior roots. There was no return of crisis before the patient's death, nine months later, from tuberculosis. Guleke has performed the operation. He, however, does not open the dura, but divides the nerves after they leave the dural sac. Franke, in March, 1910, advised severance of the posterior roots by avulsion of the intercostal nerves, without opening the vertebral canal. He reported a case with complete recovery.

In an excellent article in the *American Journal of the Medical Sciences* in 1913, Fraser reports a case with a thorough review of the literature. I have quoted liberally from his text. At that time 30 cases had been reported. Of these 9, or 30 per cent., were completely cured, 16, or 56 per cent., much improved. Several of the reported cases have been very gratifying in their results, the patients having gained weight, and their general condition having improved; in one case reported by Kuttner, the patient gained over 40 pounds.

The author's case has shown a very definite improvement, as the intense crisis has disappeared entirely. While one year is not a sufficient length of time to determine the permanent result of the operation, it shows that there is a certain definite demand for the operation when all medical therapy has been exhausted. With the improved treatment of tabes dorsalis, with salvarsanized serum injected intraspinally, the demand for such a procedure must, however, be very limited.

In the type of case that resists all therapy and where the suffering is intolerable, it offers relief from an otherwise hopeless condition.

8 East Fifty-fourth Street.

THE INTELLIGENT TREATMENT OF DISEASES OF THE SKIN.

By WILLIAM S. WALSH, M.D.,

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While it is true that our knowledge of dermatology is at the best very meager, there is no reason whatsoever why the general practitioner, especially, should throw down his hands in hopeless despair when he is called upon to treat an apparently incurable dermatic trouble. And though it is the wont of the average practitioner to confess his ignorance of diseases of the skin, still if he were to study his cases of this nature as thoroughly and painstakingly as he does those diseases more applicable to the realm of internal medicine, he would very often find that the dermatoses which he previously regarded as incurable, if not capable of being totally eradicated, were, at least, susceptible of improvement. But, sad to state, the busy doctor, conscious of the fact that his more erudite brethren, the specialists, are still forced to acknowledge their frequent therapeutic defeats, and underrating his own ability, is wont simply to prescribe one or more of the various ointments or lotions applicable in any skin lesion and to dismiss his patient with the unscientific and often erroneous statement that the disease will disappear of itself.

In every disease of the skin, save probably those whose etiology and specific treatment are definitely known (and they are few indeed), a thorough physical examination of the patient is indispensable if intelligent treatment is to be instituted. If we were to regard the lesions of the skin as merely a symptom rather than a disease, greater progress would be made, but, unfortunately, the majority of us still believe in the old adage to the effect that there's a salve for every sore. There may be specific ones to be sure, but the number of such can be counted on the finger ends, and very often the local application which cures one disease in one patient aggravates the same condition in another.

Not only is a physical examination necessary, but a chemical examination of the body secretions, and excretions as well, for even though the pathological conditions that may be found may not prove to be a direct causative factor of the disease, it is proper to assume that the disturbed metabolism indicated by the abnormal findings tends to aggravate the diseased condition of the skin, and so renders local treatment unsuccessful. It is true that the same pathological conditions, such as we may find in

some patients, may be present in others who betray no sign whatsoever of a diseased skin. But we must remember that all persons do not react similarly to the same irritant or disturbed function. All persons exposed to diphtheria do not take the disease, and by the Schick test we find that these persons have antitoxin enough in their blood to ward off infection. So also is the case in many other of the diseases we encounter in general practice, and for lack of better knowledge we say they possess an immunity. And if the term immunity is applicable and seems to explain the insusceptibility of certain people to such general diseases, it is also applicable to the field of dermatology. For instance, why are some men able to handle *Rhus venenata* and develop no dermatitis while others are severely affected? Why should the ingestion of strawberries cause an urticaria in some people? Why should not quinine, belladonna, and other drugs cause rashes in all instead of a few? And again, why should an anacidity of the gastric juice cause in some an eczema, an erythema, or an acne, and be the only manifestation of such a disturbed state of the system, whereas in others there are no skin lesions but marked subjective sensations? We may attempt an explanation of all this, but when all is said and done an answer but begs the questions.

But at any rate the necessity of a routine examination of all skin patients is incumbent on those who attempt to treat them, and it is my intention, by taking up a few of the common dermatoses, to show its importance and to demonstrate the prompt relief that is afforded when the disturbing states are removed.

One of the most universal of the diseases of the skin the practitioner is called upon to treat is acne, and it is claimed that there are very few persons who do not suffer from it to a greater or lesser degree during adolescence. Gilchrist claims that the acne bacillus is the direct cause of the disease and that the constitutional symptoms so often found in association with acne are a result and not a direct etiological factor. Other observers lay stress on staphylococci and streptococci. Be this as it may, there is no doubt that a depraved condition of the system, if not an exciting factor, is, at least, potent in aggravating the disease and in retarding a cure. The disturbances of the general health which favor the development of the disease are anemia, constipation, menstrual disorders, digestive disturbances, malnutrition, local irritations, etc. Of digestive disturbances, that of anacidity is the most frequent (40 per cent. of all cases), and prompt disappearance of the acne is produced by the internal use of hydrochloric acid, solely, when this disorder exists. It must be remembered that subjective symptoms of gastric disturbances are not often complained of, which demonstrates the necessity of the physician's determining the presence or absence of hydrochloric acid for himself. But apart from the organs and portions of the body already alluded to above, there are others that merit close attention. The great power for acne, of the mouth, throat, and nose is least appreciated. Murray[1] as far back as 1899 directed the attention of the profession to unilateral and bilateral erythematous and acneiform eruptions occurring on the face, which were cured speedily by removal of associated pathological conditions of the nose, usually spurs. Diseased conditions of the tonsils are capable of producing erythemas and acnes, and I have known such diseases to prove rebellious to all local treatment until unmistakable disease of the tonsils caused the latter's removal, whereupon the disease of the skin spontaneously disappeared. Holland's[2] recent experiences will help to confirm the fact of the disease-producing powers of abnormal tonsils. Unhealthy conditions of the mouth are also to be taken into consideration. Of these pyorrhea alveolaris deserves most attention. While the scientific dermatologist has long appreciated the power of this disease in causing acnes and other skin diseases, either primarily or secondarily, labor should now be doubled by the report of Dr. Chaplin[3] of Savannah, Ga., who accidentally cured a case of that most resistant of all the chronic inflammatory dermatoses, psoriasis, by specific treatment of a pyorrhea in a psoriasitic. Since the publication of his article two more apparent cures of psoriasis have been reported in the Cincinnati *Lancet-Clinic*, in both of which cases there was a Riggs' disease present in addition to psoriasis. This does not mean, however, that every case of psoriasis can be cured by emetine, but it does go to show the power for ill that diseased states of the mouth have upon the skin.

Besides the upper air tract and the parts already discussed, the state of activity of the kidneys should be taken into consideration. A careful perusal of Bulkley's[4] article will help prove its worth. Should an examination of all these parts throw no light on the possible etiology of the disease there are other avenues left open before we give up the ghost and confess our ignorance of proper therapeusis by saying the disease will disappear in time. True, it does so in the majority of cases, but cases of over twenty-five years' duration are by no means rarities. If we cannot institute appropriate internal treatment we can at least direct local medication with good results if such medication is intelligent. What treatment is best is, of course, a matter for the physician to determine; it is my purpose here to try to impress upon the reader the importance of deranged constitutional conditions in relation to acne, which disease is curable, opinions to the contrary notwithstanding.

Urticaria is another disease that is common and often does not receive intelligent treatment. The ascribed causes of this disease are indeed many. It may be caused by local irritation, by remedial agents externally and internally administered, by foodstuffs, etc. Recent studies tend to show that urticarias resulting from internal causes are for the most part due to the presence of betaimidozolylethylamin, which is formed in the intestinal canal as a result of decomposition of protein foods. While it is true that certain individuals are extremely susceptible to attacks on the least provocation, it is perfectly possible to lessen this susceptibility and prevent recurrences of the disease. To do so it is necessary for the physician to give his patient the same time, study, and careful attention as he would a case of typhoid fever. Whatever perversion of metabolism the examination reveals should be remedied. If the urticaria seems dependent upon an anacidity it is to be cured in this way. Defective elimination, disturbances of the liver, of the nose, mouth, kidneys, etc., should all be sought for. The majority of attacks will, it is true, respond quickly to a hypodermic injection of adrenaline-chloride solution, but we are not doing our best toward the patient unless we prevent further at-

tacks. It is claimed, and is generally true, that the most rebellious urticaria is cured if the patient abstains from albuminous food for two weeks, the diet consisting of tea, coffee, lemon juice, grape juice, potatoes, green vegetables, rice, cereals, bread and butter. After the expiration of two weeks the proteid diet is gradually resumed. While it is hard to impress upon a patient the necessity of such a diet, a careful explanation of the reasons why it is instituted, and a careful writing out of the foodstuffs permitted, rather than a cursory recital of them, will work wonders. There are indeed some cases that defy the most careful and scientific treatment and for which no etiological factor can be ascertained, but these cases are relatively few; and if absolute freedom from the disease cannot be obtained, at least lessening of the number and the intensity of the attacks is most always possible. It is such cases as the latter in which we fall back on an acknowledgment of our ignorance by stating that they are neurotic in type. It is true that urticaria sometimes depends on the presence of nervous disease such as hysteria, and that reflex nervous factors such as phimosis, rectal worms, etc., may be etiologic factors, but careful examination of all patients will, most often, demonstrate a pathological condition for the disease's presence, which will lessen the great number of the so-called nervous types.

And now a few words concerning that most prevalent of all skin diseases, namely, eczema. Constituting 30 or 40 per cent. of all diseases of the skin, it is necessarily the one which we are most often called upon to treat. If practitioners, or specialists even, were curing this affection, so many so-called eczema cures would not be advertised and sold. Extensive treatises have been written upon it, and are still being written, but the last word has not yet been said. Any modern work on diseases of the skin will devote at least five or six pages to its etiology with four or five times that many to its treatment, but all summed up, the etiology of the disease is often obscure and its treatment difficult, sometimes impossible in the present state of our knowledge. What has been said concerning acne and urticaria also applies to eczema, as the same factors causing these diseases are just as capable of causing an eczema. A fact that needs be impressed on the ordinary practitioner is that infantile eczema is practically always a manifestation of a metabolic disturbance, and while local treatment may be used as an adjunct, it is in no way curative. Many dermatologists send their young patients to the pediatrist who, after regulating the diet, returns them. This method of treatment can well be copied by those unfamiliar in solving the exact dietetic disturbance that is causing the skin lesions of their infant patients. Another fact to be borne in mind is that drugs very often cause eczema and other skin diseases. A recital of them is unnecessary, but if we form the habit of asking every patient whether or not he has been taking drugs we shall not so often err in diagnosis or mistake the proper treatment. I am thoroughly convinced that gastric examination of all patients suffering from eczema is to be recommended. A majority suffer from anacidity, some from hyperacidity. I have known one patient to travel the rounds of doctors and specialists alike and to be pronounced incurable. Examination of her stomach contents revealed hyperacidity. Upon the administration of 5 gr. of sodium bicarbonate after each meal for two weeks the eczema disappeared, without any local treatment whatsoever. I have also known skillful men to prescribe, to no avail, treatment for eczemas due to diabetes. You may imagine their shame and chargin when the necessity of urine examinations was gently but forcibly impressed upon them by some doctor whose fame was but a tiny star compared to theirs. I have also known eczema of years' duration to be dependent upon a diminished output by the kidneys, remediable easily after the cause was ascertained. Therefore, the necessity of chemical examinations should no longer be urged. Occupation is also a question that should be asked, for I know of patients who have traveled the rounds and cure was not obtained because the cause was not removed. I may cite Pusey's case of the lady who took an interest in gardening and whose eczema of the hands was found to be due to poisoning by primroses. With the occupational forms of eczema we are all more or less familiar—the necessity of either proving or disproving occupation as a factor needs always to be considered. Often cases will come to our attention that are indeed baffling, and seemingly incurable. There is always a cause, however, which we may or may not be able to determine. No one would think that a displaced kidney was capable of producing persistent eczema, but that such is so is proved by Abramitcheff who reports such a case cured by wearing a suitable belt; furthermore, the eczema always recurred when the belt was removed. My friend Dr. Dobson of South Carolina has told me of a case of chronic eczema of years' duration which was cured by the removal of an appendix operated upon because of an acute exacerbation of what was evidently a chronic process, not producing symptoms. Such rare cases may be recited *ad infinitum*, but the moral to be learned from them all is that a painstaking examination will, in the majority of cases, throw light upon what we now regard as a dark subject.

I have tried to make plain the pitfalls we encounter in treating diseases of the skin. And I reiterate the necessity of thorough examination of all patients suffering from such diseases—even at the risk of being considered an extremist. Skin complaints are very serious matters for patient and physician alike, and if we considered enough the mental wretchedness of such patients, probably pity would enter our souls and stimulate us to do the very best that is in our power for them, instead of temporizing with uncertain remedies. The dermatoses do not kill of themselves, it is true, but they make life miserable, almost unbearable. And, finally, I wish to make a plea for more research work in connection with these diseases. Practically the only advance we have made in this field of endeavor has been in diagnosis, but diagnosis is of passing moment to the patient. What we need is specific therapeusis, and this we can obtain only by research.

REFERENCES.

1. Murray: Medical Record, March 25, 1899, p. 422.
2. Holland: *Journal American Medical Association*, March 13, 1915, p. 903.
3. *Dental Cosmos*, Feb., 1915.
4. Bulkley: Medical Record, Nov. 22, 1913, p. 921.

14 Candace Street.

Metric System Approved.—The National Association of Retail Druggists has approved the ultimate adoption of the metric system as the official standard of weights and measures in this country.

DIFFERENTIAL DIAGNOSIS BETWEEN CEREBRAL HEMORRHAGE AND SOFTENING DUE TO THROMBOSIS.

By GORDON BURKE, M.D.,
AND
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A. C., an American housewife, 66 years of age, was brought to the ward in coma. A friend said she had been found unconscious on the floor of her room two days previously and had remained so ever since. No further history could be obtained.

Physical examination showed a well preserved white woman, lying in deep coma; respirations stertorous; pulse about 100; systolic blood pressure 170, diastolic 100. There was conjugate deviation of the eyes and head to the right with paralysis of left side of the body and face. Right pupil reacted to light and accommodation; left pupil was fixed; ptosis of the left upper lid. Reflexes were present and normal on the right side of the body, except the abdominal, but all were absent on the left side. Babinski, Oppenheim, Chaddock, and Gordon signs were all absent. Coarse bubbling râles were heard over both lungs posteriorly and over upper lobes anteriorly. Heart was a little enlarged and slightly arrhythmic.

Spinal puncture revealed a murky red fluid under normal pressure, tending to become clearer. Blood showed 19,000 white cells with normal differential count. Urine had a specific gravity of 1.022 and showed a large amount of albumin with a moderate number of epithelial and pus casts, many hyaline and granular casts, and some epithelial and pus cells. No sugar or blood could be detected.

During the two days following entrance and preceding death the temperature rose to 103.8° with pulse staying relatively low. Respirations went to 40 a minute. A divergent strabismus developed which later became a conjugate deviation once more. Blood pressure rose to 210 systolic and 120 diastolic. The rest of the findings, such as reflexes, etc., remained the same. The patient continued in deep coma, though with purposeless movements of right arm and leg, until her death on the third day after entrance. Diagnosis was "Cerebral hemorrhage."

Postmortem examination showed a thrombosis of the right midcerebral artery with an area of softening involving the region of the basal ganglia in the posterior limb of the internal capsule and the inner and lower part of the occipital lobe. In addition there was a marked nodular syphilitic arteriosclerosis most marked in the descending thoracic aorta where there were several islands of ulceration. Just above the bifurcation of the aorta senile arteriosclerosis was found. There was a marked hypertrophy of the left ventricle with an acute fibrinous pericarditis and a moderate amount of fluid.

The deep coma, high blood pressure with high tension pulse, conjugate deviation of the eyes and head, elevated temperature, hypertrophy of the left ventricle (as shown also by the autopsy), and the presence of albumin and casts in the urine—all these findings are considered typical for cerebral hemorrhage, which therefore had to be diagnosed in this case. No adequate history having been obtainable, the diagnosis was made from the clinical picture alone. Yet the postmortem examination showed brain softening due to thrombosis of the right middle cerebral artery.

It seems evident that the differential diagnosis between cerebral thrombosis and hemorrhage is in many cases impossible and can be made with only a slight degree of probability.

Bacteriology of Gastroduodenal Ulcer.—Rosenow and Sanford find good evidence that streptococci are not merely accidental secondary invaders of the tissues, but are commonly the original cause, as well as the important factor in preventing the healing of the ulcer. —*Journal of Infectious Diseases.*

Medicolegal Notes.

Hypothetical Question—Insufficiency.—In an action for the death of a passenger who, suffering a stroke of apoplexy while on a street car, was carried thereon for five hours, hypothetical questions were put to medical experts, on which they gave the opinion that had the plaintiff's intestate had proper care within one or two hours after his first attack his life could have been saved. The questions assumed that the deceased was in good condition, or apparently in good condition, on boarding the car, and contained no reference whatever to conditions shown by the plaintiff's witnesses to have existed, especially to the hardened condition of his arteries and the condition of his kidneys indicated by the presence of albumen and granulated casts in his urine. It was held that the omission was error.—Middleton vs. Whittridge, New York Court of Appeals, 108 N. E. 193.

Authentication of X-Ray Photograph.—In an action for damages for injury to a hand crushed by a wagon a medical witness for plaintiff produced an *x*-ray blueprint, and, in reply to the question whether it correctly showed the position of the fingers in the palm of plaintiff's injured hand at the time of trial, said that it explained the reason of the deformities he had found. It was held that the admission of an *x*-ray blueprint to show the part of the hand injured, without other evidence that an *x*-ray picture was taken of plaintiff's hand or that the one produced was a picture of the hand, was incompetent and, in view of the large verdict of $1,500, reversible error.—Kossoff vs. Kufferberg, New York Appellate Division, 154 N. Y. Supp. 149.

Practising Medicine—Holding Out as Being Able to Diagnose or Treat Diseases.—New York Public Health Law (Consol. Laws, Chapter 45) section 160, subdivision 7, defines the "practice of medicine" as consisting in holding one's self out as being able to diagnose or treat human diseases and offering such treatment, and section 174 makes one practising or advertising the practice of medicine under a name other than his own guilty of a misdemeanor. A duly registered physician, who transacted business under the duly adopted trade-name "The Standard Pharmacy Company," and at whose office a caller was examined, given a prescription, filled and paid for at the desk, without charge for the medical service, and whose office contained signs indicating that he was engaged in the manufacture of certain remedies, that he employed a consulting physician to whom patrons might go for free medical advice, whose booklet of advertisements contained a coupon for consultation and free advice, and whose cards for free examination, inscribed "Medical and Surgical Office of the Standard Pharmacy Company," requested its physician to make examination and give medical advice to the bearer without charge, was held to be practising medicine unlawfully by holding himself out under his trade-name as able to diagnose and treat diseases, and as offering and undertaking to do so.

The Court said: "This factor of holding out apparently underlies all the important cases in which the defendant has been held for violation of the law. There have been laid before me, without objection, by the respective counsel, extracts from the record in these cases. In People vs. Woodbury Dermatological Institute, 192 N. Y. 454, 85 N. E. 697, the advertisements announced that 'the Woodbury method succeeds, because it entirely removes these dead cells;' 'we perfect baggy skin;' 'we correct unshapely noses,' etc.; 'we remove freckles,' etc.; 'by methods of our own, we extract these dead cells;' 'all remedies prescribed by us are scientifically prepared in our private laboratories.' In the case of People vs. Doctor Weeks Medical Institute, 126 Appellate Division, 950, 111 N. Y. Supp. 1134, in which the judgment against the defendant below was affirmed on the authority of the Woodbury Case, 124 Appellate Division, 877, 109 N. Y. Supp. 578, the advertisements read: 'We treat all private and chronic diseases;' 'we cure by the best of medical ability;' 'Dr. Weeks' Medical Office, specialist for nervous and chronic diseases;' 'we cure all cases we undertake.' In People vs. Samuel Gross, decided in the Court of Special Sessions in November, 1911, the defendant was the proprietor of an institution known as the Workingmen's Medical Aid Society. One of the circulars contained the statement: 'It is the object of the Workingmen's Medical Aid Society to furnish reliable medical service to members and their families.'"—People vs. Warden, New York Appellate Division, 152 N. Y. Supp. 977.

MEDICAL RECORD.

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RHEUMATIC HEART-BLOCK.

THE interruption in the conduction paths of the heart leads to total heart-block, which in most instances is ushered in by the Adams-Stokes symptom-complex. The condition may be permanent or temporary, depending upon the anatomical substratum. If gummata, tumors, scars, fatty infiltrations, or calcium deposits occur in the region of the conducting system, a complete restitution to normal is not conceivable. On the other hand, there may occur transient leucemic or acute inflammatory infiltrations of the myocardium which may give rise to a heart-block that is similarly transient. To this type belongs the so-called rheumatic heart-block which is caused by the presence of the small-celled infiltrations known as Aschoff's bodies in the region of the conducting bundles. These bodies may be disseminated throughout the myocardium. Rheumatic myocarditis is almost always associated with an endocarditis.

Disturbances of the conducting mechanism of the heart during the course of a rheumatic myocarditis are not extremely uncommon. Instances have been reported by Gerhardt and others. Of great rarity, however, are the cases of total heart-block occurring in the course of acute articular rheumatism. The first recorded case was that described in 1905 by Mackenzie; the condition was transitory. Of extreme interest is the case reported by Cowan, Flemming and Kennedy. The patient was a young woman who complained of pains in the joints and in whom a sudden onset of heart-block was soon followed by death. At autopsy foci of round cells were found in the bundle of His. A similar case was that reported by Pardee, with the chief difference that a febrile rheumatic attack of three months' duration preceded the rapidly fatal incidence of heart-block. Of the five undoubted cases of rheumatic heart-block so far reported, three resulted in death. In none of the cases was the typical Adams-Stokes syndrome observed, although with the onset of the bradycardia there occurred dizziness, malaise, dimness of vision, and other symptoms of cerebral anemia.

An exhaustive review of this entire subject is presented by Tibor von Podmaniczky in the *Zeitschrift für klinische Medizin*, Vol. 82, Nos. 1 and 2. He also reports two interesting cases of his own. The first was that of a soldier twenty-two years of age who entered the hospital one week after the onset of an attack of acute articular rheumatism. Six days later as he was getting out of bed he suddenly became dizzy, "saw black before his eyes," and experienced a sensation of disconfort in the region of the heart. The symptoms lasted for only a few minutes. Physical examination made immediately afterward showed, in addition to a slight cyanosis of the lips and finger-tips, a radial pulse of 32 and a jugular pulse of 94. The following day the inequality disappeared.

This was a case of transient rheumatic heart-block, comparable with those reported in the literature, but not presenting the complete classical picture of the Adams-Stokes syndrome. The latter is always associated with a distinct danger to life, for according to Hering, the attacks of syncope, apnea, and epileptiform convulsions occurring in this symptom-complex are the result of a temporary cerebral anemia. During the transition from the normal cardiac action to the condition of heart-block there is a stage of complex cessation in the activity of the ventricle before its automatic contractions are again established. This pause has been observed to last as long as thirty seconds. In the above case the atropine test was not performed, nevertheless, the assumption is made that the heart-block was the result of a toxic action on the vagus, for the author cannot conceive of any anatomical lesion of the conducting system causing such a fugitive train of symptoms as was present in this case.

The second case reported by von Podmaniczky presents a number of points of special interest, particularly when contrasted with the first case. The patient was a soldier twenty-nine years old, whose cardiac symptoms were first manifested ten years previously after a severe attack of tonsillitis. These symptoms were dyspnea on exertion, palpitation, and sensitiveness to cold. A valvular lesion was recognized at that time. One year before he came under the author's observation there was a marked increase in the intensity of the patient's symptoms, to which were added a sense of constriction and attacks of pain in the precordial region. The patient was then told that he had bradycardia. His condition continued without any apparent change until the time of the present study. The most significant physical sign was a radial pulse of 40 associated with a jugular pulse of 70 to 80. *X*-ray examination confirmed the diagnosis of heart-block whose rheumatic origin was strongly suggested by the history, the presence of a diastolic murmur at the apex, and a negative Wassermann reaction. Polygraphic studies showed a dissociation between auricles and ventricles. The atropine test was negative on repeated trials. There was no question that this was a case of persistent and complete heart-block. There was presumptive evidence that this was of rheumatic origin, and that it developed gradually. The Adams-Stokes syndrome was, however, at no time present. The author conceives of the pathological picture as of one comprising the presence of Aschoff's nodules localized to the region of the bundle of His, or of cicatricial changes in the same

region. The latter would be indicated by the long duration of the condition.

The author believes that the latter case is the first recorded instance of total persistent heart-block of rheumatic etiology. Its chief interest is apparent when it is compared with the first case. There is a striking parallelism between the two clinical pictures as regards the rheumatic origin, the organ affected, and the functional disturbances of the latter. The differences between the two pictures are also equally pronounced. Of prime importance to the patient, however, is the prognostic outlook, which in the one case is relatively good and in the other is extremely bad.

INSANITY AND THE WAR.

THE horrors of war from every conceivable standpoint have been vividly pictured during the past year. From the aspect of public health it was pointed out that in war it is not the survival of the fittest but the survival of the most unfit. It is the flower of the race that is stamped out or deprived of, the faculty ever to bloom again. It is the weeds, at any rate physicially, that are left. A nation which loses its best in war necessarily deteriorates, for those who are left are deficient in vitality and are unable to reproduce a sturdy stock.

In the *Lancet*, Sept. 4, 1915, the question is treated editorially from another and more optimistic point of view. It is generally held that the experiences of war as now waged, the strain exerted on the nervous system of continual shell concussions while one is cooped up in a trench, must have the effect of bringing about grave psychological disturbances not infrequently terminating in insanity and neuroses. But the question may be asked, is such really the case? And does war leave behind it enormous wreckage in the guise of nervous and mental sufferers, more or less permanently incapacitated and uninfluenced by treatment?

The writer in the *Lancet* states that facts do not support this point of view and bases his contention upon the recently published Eighty-fifth Annual Report of the Belfast District Lunatic Asylum in which the superintendent, Dr. Graham, refers to the remarkable decrease in the number of admissions for the year as compared with the twelve months preceding. He declares that in such a time of upheaval as the present it is natural to suppose that mental suffering ending in brain collapse should be the order of the day, whereas the figures do not bear out the suggestion. He further holds that "it is not the great tragedies of life that sap the forces of the brain and wreck the psychic organism. On the contrary, it is the small worries, the deadly monotony of a narrow and circumscribed existence, the dull drab of a life without joy and barren of achievement, the self-centered anemic consciousness; it is these experiences that weaken and diminish personality and so leave it a prey to inherited predispositions, or to the slings and arrows of outrageous fortune."

EFFECT OF PITUITARY EXTRACT UPON THE SALIVARY SECRETION.

ALTHOUGH the influence of an extract of the posterior lobe of the hypophysis upon the circulatory system has been fairly well established, the effect of this extract upon the process of secretion is still a matter of dispute. Some observers note that the secretory changes are to be accounted for by the accompanying vascular effects, while others maintain that there is a direct action upon the secreting cells. The problem is one of profound interest in pharmacology as well as in physiology. An important step toward its solution is provided by the results of an investigation conducted by G. O. Solem and P. H. Lommen (*American Journal of Physiology*, September 1, 1915), who studied the effects of the extract of the posterior lobe of the hypophysis upon the secretion of saliva.

The above investigators find that pituitary extract causes a diminution in the flow of blood and saliva from the submaxillary gland. The decrease in the flow of saliva is greater than the accompanying decrease in the blood flow. The slowing of blood is less marked if the injection is made during faradization of the chorda tympani than during pilocarpine stimulation, while the slowing of saliva is the same. Pilocarpine is relatively ineffective even when injected seven or eight minutes after pituitary extract. While suprarenal extract normally causes a vasodilatation in the gland (contrary to its action on the vascular system in general) and an increase in salivary secretion, the substance, during the action of pituitary extract, has the normal effect on the blood flow, but causes a diminution in salivary flow, probably owing to the greater quantity of pituitary extract coming in contact with the gland. When pituitary extract is injected during the action of chrysotoxin the decrease in the flow of saliva sets in before the vasoconstriction in the gland occurs. In five out of seven cases the flow of saliva slowed while there was active dilatation of the gland.

From the above results the general conclusion is drawn that the decrease in flow of saliva following the injection of pituitary extract is due to an inhibition of the action of the secretory nerves of the submaxillary gland, but also in part to the accompanying vasoconstriction caused by direct action on the muscle of the arterioles, on the vasomotor nerve endings, or on both. The decrease in output of blood from the gland may also be due to the decreased activity of the gland.

INTRAVENOUS INJECTION OF DIPHTHERIA ANTITOXIN.

IDEAL for the treatment of diphtheria, according to Seidel, is the following combination: earliest possible injection of antitoxin, large dose, and intravenous route—not alone but in association with the usual intramuscular injections. If treatment is instituted within the first three days the prognosis is good, varying with the duration; but after the third day all is reversed and any selection due to the treatment is abolished. At a recent meeting of the Medical Section of the Scientifico-Medical So-

ciety of Jena (*Munchener medizinische Wochenschift*, June 29) Seidel saw in a given material 100 per cent. recoveries in cases injected before the third day and 100 per cent. mortality in all injected after this period. In one case he saw complete defervescence follow at once upon an intravenous injection of serum. In the discussion of his paper Reichmann stated that with the use of the intravenous route he had not lost a case of diphtheria in nine months. The relative merits of high and deep tracheotomy were discussed, but intubation was not even mentioned. It will some day be rediscovered in Germany and will then become the accepted method of treatment of laryngeal stenosis in that country.

Icterus and Picric Acid Poisoning.

THE frequent therapeutic use of picric acid chiefly as an external application has given rise to an occasional instance of poisoning by means of this drug when taken internally by accident or with suicidal intent. The toxic dose for a human being is four to five grams; the lethal dose is not known. The symptoms caused by the absorption of picric acid are a yellowish coloration of the skin and mucosæ, gastrointestinal irritation, prostration, and a change in the color of the urine which resembles that seen in catarrhal jaundice. Owing to the close similarity between the objective evidences of picric acid poisoning and those of the various types of jaundice, the differential diagnosis between the two is a subject of no little practical importance. This furnished the theme for an experimental investigation by Marcelle Wahl (*Presse Médicale*, August 5, 1915). He found that there is no means of making an absolutely positive differential diagnosis between the two conditions. The absence of biliary pigments in the urine would be strong presumptive evidence in favor of an apparent icterus being caused by the absorption of picric acid. Chemical analysis of the urine fails to be of any service in the above differentiation, owing to the fact that almost all of the picric acid absorbed is eliminated in the urine in the form of derivation products.

Total Color Blindness.

ACCORDING to the very plausible view of Kriess a subject with total color blindness is a "rod seer"; that is, he has failed to develop the retinal cones which alone make possible color vision, and his visual perceptions are due solely to the retinal rods. Instead of color he perceives only tones. To bear out this theory histological studies are necessary, and it is seldom indeed that the eye of a totally color-blind subject can be obtained either at autopsy or as a result of enucleation. At a meeting last May of the Naturwissenschaft-medizinische Gesellschaft of Jena (*Münchener medizinische Wochenschrift*, June 1) Hegner reported two cases of total color blindness in one family, the other children of which had normal vision. As is common in such cases the eyes were otherwise defective. After astigmatism had been duly corrected by glasses vision was only five thirty-fifths. There was lively nystagmus as well as photophobia. The fundus was normal and there was no central scotoma. The typical displacement of the distribution of lightness from yellow to green could be demonstrated, as could also the notable shortening of the spectrum at the long wave end.

News of the Week.

New York City Death Rate.—During the week ended October 9 there were 1,250 deaths in this city, giving a rate of 11.32 per thousand, as compared with a rate of 11.53 for the corresponding week of last year. The rate for the first 41 weeks of 1915 was 13.31, as compared with 13.75 for the corresponding period of 1914.

Chicago Death Rate.—During the week ended October 9 there were 606 deaths in Chicago, giving a rate of 12.9 per thousand, as compared with 574 deaths and a rate of 12.5 for the corresponding week of 1914.

Cholera is reported to have been discovered among the German sailors in Kiel, the disease having been brought to that place by the Russian prisoners.

Typhus Fever is said to be epidemic in Victoria, Australia, 447 cases and 134 deaths having occurred up to October 9, according to a dispatch from Melbourne.

American Red Cross in Germany.—The members of the American Red Cross working in Germany and Austria were relieved from duty on October 1, their hospitals being closed. Most of them, however, both surgeons and nurses, have volunteered to look after the German prisoners in Russia, there being a scarcity of German army surgeons there. The Russians complain that the Teutons do not send their own surgeons to care for the wounded prisoners which the Russians have taken. Upon the completion of the American Red Cross work in Germany and Austria the members received decorations from the respective governments.

The American Red Cross at Belgrade.—Three times has the American Red Cross unit sent to Serbia a year ago been under fire at Belgrade, and, according to a cablegram transmitted from Vienna to the Red Cross headquarters in Washington, it is still there. Dr. Edmund W. Ryan of Scranton, Pa., chief of the unit, cabled: "We are still in Belgrade, working. Everybody well. Notify families of personnel." It was intended that they should leave on October 1, but the new invasion of Serbia made more work for them, so they have remained.

The Scarcity of Drugs in this country is becoming very serious, and if prices continue to soar the therapeutic nihilists will perforce have it all their own way; there will indeed be few drugs to give the sick unless we resort to the native specifics of the Eclectics or the high potencies of the Homeopaths. The German synthetics are about used up and no more are to be had at any price, but many other drugs are also unobtainable. A number of these are made from plants grown chiefly in Europe or Asia, and in the case of others the demand for them by the belligerent nations is so great as to make their cost here almost prohibitive. Speculation is said also to have had an influence in raising prices. Crude codliver oil has doubled in price, glycerin has nearly trebled in value, the cost of quinine is about six times what it was a few months ago, and the price of senna and many other crude drugs has risen in proportion.

Medical College Consolidation.—It is authoritatively reported that negotiations are in progress for the consolidation of the Medico-Chirurgical College of Philadelphia with the University of Pennsylvania, the purpose being to make the former the graduate department of the latter.

American Medical Editors' Association.—The 46th annual meeting of this Association was held at the Hotel McAlpin, New York, on Monday and Tuesday of this week under the presidency of Dr. H. Edwin Lewis of *American Medicine*. There was a large attendance and many papers were read and discussed. On Tuesday the annual banquet took place, the president being toastmaster. The election of officers resulted in the choice of the following: *President*, Dr. E. C. Register of the *Charlotte Medical Journal; First Vice-President*, Dr. W. A. Jones of the *Journal-Lancet*, Minneapolis; *Second Vice-President*, Dr. G. Morris Piersol of the *American Journal of the Medical Sciences*, Philadelphia; *Secretary and Treasurer*, Dr. Joseph MacDonald, Jr., of the *American Journal of Surgery*, New York; *Executive Committee*, Drs. C. F. Taylor of Philadelphia, John C. MacEvitt of Brooklyn, and A. S. Burdick of Chicago; *Publication Committee*, Drs. H. Edwin Lewis of New York, C. E. de M. Sajous of Philadelphia, Charles Wood Fassett of St. Joseph, Mo., and Robert M. Green of Boston.

"The Journal of Laboratory and Clinical Medicine."—We have received the first number of this journal, published in St. Louis, under Dr. Victor C. Vaughan, as editor-in-chief. The purpose is stated to be "to bring discovery and its application closer together, to supply the research man with a strictly scientific organ through which he can report the result of his labors, and to suggest to the practitioner how he may use the latest discoveries." It is an attractive publication, with an able editorial staff, and the character of its contents gives promise of permanence as well as high quality in the future.

Dr. Carl Anton Ewald, editor of the *Berliner klinische Wochenschrift*, died on September 20 at the age of 70 years. He was widely known as an authority on diseases of the digestive organs. He was also for a quarter of a century librarian of the Berlin Medical Society.

Dr. Harold Kneist Faber, formerly of the Rockefeller Institute, New York, has been appointed assistant professor of pediatrics at the Stanford University Medical School, San Francisco.

Dr. Howard Hepburn, formerly medical superintendent of the Montreal General Hospital, now serving in one of the British field hospitals in France, has been promoted to the rank of captain in the medical corps.

Dr. J. H. Frazer has been made dean of the School of Medicine of the University of Alabama at Mobile, succeeding Dr. Eugene D. Bondurant, who has resigned on account of ill health. Dr. Frazer was for many years treasurer and secretary of the school and also professor of obstetrics. The fifty-seventh session of this school began on September 30.

Dr. John C. Feltz, assistant to the medical director of the State Hospital for the Insane at Schenectady, N. Y., has resigned and will make his home at Gettysburg, Pa.

Dr. Frank A. Hartman, formerly of the Harvard Medical School, has been appointed lecturer on physiology at the University of Toronto.

Dr. William Hanna Thomson of this city has removed to 71 Central Park West.

Dr. John N. West has been elected president of the Ohio Society of Philadelphia.

Dr. E. B. Funkhouser has been appointed assistant to the medical director of the State Hospital for the Insane at Schenectady, N. Y., to succeed Dr. Feltz, resigned.

Medical Society Elections.—The Medical Society of the State of Pennsylvania, at its recent meeting in Philadelphia, elected the following officers: *President*, John B. McAlister, Harrisburg; *President-Elect*, Charles A. E. Codman, Philadelphia; *First Vice-President*, J. Torrance Rugh, Philadelphia; *Second Vice-President*, Edgar M. Green, Easton; *Third Vice-President*, W. Albert Nason, Roaring Spring; *Fourth Vice-President*, Meyers W. Horner, Mt. Pleasant; *Secretary*, C. L. Stevens, Athens; *Assistant Secretary*, C. P. Franklin, Philadelphia; *Treasurer*, George W. Wagoner, Johnstown. The next annual meeting will be held in Scranton.

The Association of Military Surgeons of the United States, at its meeting in Washington in September elected the following officers: *President*, Surgeon General Rupert Blue, U. S. Public Health Service; *Secretary*, Lt.-Col. Edmund L. Munson, Medical Corps U. S. Army. The next meeting will be held in Chicago.

The Utah State Medical Association, at its meeting in Salt Lake City the last week in September, elected the following officers: *President*, E. W. Whitney, Salt Lake; *First Vice-President*, L. B. Baker, Eureka; *Second Vice-President*, C. F. Osgood, Ogden; *Third Vice-President*, Fred Dunn, Springville; *Secretary*, W. Brown Ewing, Salt Lake; *Treasurer*, H. P. Kirtley, Salt Lake. The next meeting will be in Salt Lake City in October, 1916.

The Talladega County (Ala.) Medical Society, at its quarterly meeting at Chocco Springs, October 5, elected the following officers: *President*, Dr. F. H. Craddock; *Vice-President*, Dr. S. W. Welch; *Censor*, Dr. C. L. Salter; *City Physicians:* Talladega, Dr. S. W. Welch; Sylacauga, Dr. French Craddock; Ironaton, Dr. Fennell; Munford, Dr. Harris; Talladega Springs, Dr. Moore; Gantt's Quarry, Dr. Batson; Lincoln, Dr. McLaurin.

The Brookline (Mass.) Medical Club, at its meeting on October 4, elected officers as follows: *President*, Dr. C. R. C. Borden; *Vice-President*, Dr. Harold Walker; *Secretary and Treasurer*, Dr. Harold Bowditch.

The Wisconsin State Women's Medical Society, at its annual meeting in Milwaukee on October 5, elected the following officers: *President*, Dr. Mary Piper Houck, La Crosse; *Vice-President*, Dr. Minnie Hopkins, Oconto; *Secretary*, Dr. Ada Chandler, Pardeeville; *Treasurer*, Dr. Chaffee Fay, Whitewater; *Members of the Board of Censors*, Drs. Belle Nair, Oshkosh, and Mary Fitzpatrick, Milwaukee.

The Norfolk County (Va.) Medical Society, at its annual meeting on October 4, elected the following officers: *President*, Dr. J. J. Miller; *Vice-President*, Dr. R. S. Kight; *Secretary-Treasurer*, Dr. W. P. McDowell.

National Committee for the Prevention of Blindness.—The first annual meeting of the National Committee for the Prevention of Blindness will be held in the assembly room of the Russell Sage Foundation building, corner of East Twenty-second Street and Lexington Avenue, New York, at 4.30 P.M., Nov. 4. Ex-President William H. Taft will be present and will speak, and Dr. G. E. de Schweinitz of Philadelphia will make an address.

Obituary Notes.—Dr. James W. Mitchell of Atlanta, Ga., a graduate of the Southern Medical College, Atlanta, in 1880, died at his home on October 1.

Dr. John Tyndall Gibbons of Brooklyn, N. Y., a graduate of the College of Physicians and Sur-

geons, New York, in 1889, consulting physician to the Home for the Blind, and a member of the Association of Military Surgeons of the United States and the Brooklyn Medical Society, died at his home from heart disease, on October 2, aged 50 years.

Dr. JOHN H. ASHCRAFT died at Mullica Hill, N. J., on September 26 at the age of 82 years. He was graduated from Jefferson Medical College in the class of 1855.

Dr. G. T. PRINCE of Chattanooga, Tenn., a graduate of the University of Tennessee, Medical Department, Nashville, in 1887, died at his home in St. Elmo, Chattanooga, after a brief illness, from acute indigestion, on September 16, aged 50 years.

Dr. JOSEPH HORMISDAS BOUCHER of Woonsocket, R. I., a graduate of Laval University, Medical Department, Quebec, in 1884, formerly a member of the State General Assembly, and prominent in the Democratic party of Rhode Island, died at his home on Sept. 25, aged 57 years.

Dr. LUTHER HERN KELLER of Hagerstown, Md., a graduate of the College of Physicians and Surgeons, Baltimore, in 1875, and a member of the American Medical Association, the Medical and Chirurgical Faculty of Maryland, the Washington County Medical Society, of which he was a former president, and the Cumberland Valley Medical Association, died suddenly from heart disease while seated in a chair on the porch of the Washington County Hospital, Hagerstown, on Sept. 30, aged 63 years.

Dr. HARRY OLIVER LIGHTNER died at Maryville, Pa., on Oct. 5 at the age of 43 years. He was graduated from Baltimore Medical College in the class of 1896.

Dr. JOHN GAUNT BROOKS of Paducah, Ky., a graduate of the Jefferson Medical College, Philadelphia, in 1868, formerly city physician of Paducah and member of the City and County Health Boards and the Board of Education, a charter member and one-time president of the Kentucky State Medical Association, and a member of the American Medical Association and the McCracken County Medical Society, died in a sanatorium at Louisville, after a short illness, on Sept. 25, aged 75 years.

Dr. R. P. SORRELLS of Danielsville, Ga., a graduate of the University of Georgia, College of Medicine, Augusta, in 1875, died at his home suddenly, on Sept. 25, aged 60 years.

Dr. FLOYD M. YOUNG of Atlanta, Ga., a graduate of the Georgia College of Eclectic Medical and Surgery, Atlanta, in 1887, died at his home from acute indigestion, after a brief illness, on October 6, aged 50 years.

Dr. ROBERT B. BARRON of Gray, Ga., formerly of Macon, a graduate of the Bellevue Hospital Medical College, New York, in 1883, and a member of the Medical Association of Georgia and the Jones County Medical Society, died suddenly at his home on October 2, aged 56 years.

Dr. GEORGE HAMILTON WILSON of Albion, Me., a graduate of the Medical School of Maine, Portland, in 1856, and a former member of the State Legislature, died at the home of his daughter in Waterville, Me., after a long illness, on October 5, aged 86 years.

Dr. SAMUEL K. SPALDING of Omaha, Neb., a graduate of the College of Physicians and Surgeons, Keokuk, Ia., in 1874, and the Bellevue Hospital Medical College, New York, in 1882, a director of the Omaha Theological Seminary, and a trustee of the University of Omaha, died in Washington, D. C., where he had gone to attend the national encampment of the Grand Army of the Republic, on September 29, aged 68 years.

Dr. CHARLES WALLACE STILES of Somerville, Mass., a graduate of the Boston University School of Medicine in 1878, and a member of the Boston Homeopathic Medical Society and the American Institute of Homeopathy, died at his home on October 7, aged 65 years.

Dr. JOSEPH ETIENNE GENDRON of Worcester, Mass., a graduate of the Dartmouth Medical School, Hanover, N. H., in 1871, died in St. Vincent's Hospital, Worcester, on October 5, aged 72 years.

Dr. HOMER G. NEWTON of Sherburne, N. Y., a graduate of the New York University Medical College, New York, in 1863, formerly a practitioner in Brooklyn, and one of the founders of the Brooklyn Eye and Ear Hospital, a surgeon in the United States Army during the Civil War, died at his home on October 11, aged 79 years.

Dr. WILLIAM MERRILL MCCOY of Wenatchee, Wash., a graduate of the University of Illinois College of Medicine, Chicago, in 1901, and a member of the American Medical Association, the Washington State Medical Association, and the Chelan County Medical Society, died in the Deaconess Hospital recently, following an operation for appendicitis, aged 39 years.

Dr. WARREN DAVID KLEPPINGER died at Allentown, Pa., on October 9 at the age of 26 years. He was graduated from the Medico-Chirurgical College of Philadelphia in the class of 1913. He was pathologist to the Allentown Hospital.

Dr. HENRY WASHINGTON RIHL died at Philadelphia on October 10 at the age of 92 years. He was graduated from Jefferson Medical College in the class of 1849.

Dr. J. GRIER MARPLE, formerly of Harrisburg, Pa., died at Philadelphia on October 10 as a result of nephritis.

Dr. ALBERT S. ERNEY died at Philadelphia on October 12 at the age of 60 years. He was graduated from Jefferson Medical College in the class of 1877.

Dr. JOHN C. PRICE, Chief Medical Inspector of the Division of Hygiene and Engineering of the Pennsylvania State Department of Labor and Industry, died at Camp Hill, Harrisburg, on October 13 at the age of 44 years. He was graduated from the Medical Department of the University of Pennsylvania in the class of 1893.

Dr. WILLIAM J. MCNAUL died at Philadelphia on October 14 at the age of 43 years. He was graduated from Jefferson Medical College in the class of 1894. He was a member of the Philadelphia County Medical Society and of the Medical Society of the State of Pennsylvania and a Fellow of the American Medical Association.

Dr. EDWARD OSBAND SUTTON of Tacoma, Wash., a graduate of the University of Michigan, Department of Medicine and Surgery, Ann Arbor, in 1903, and a member of the American Medical Association, the Washington State Medical Association, and the Pierce County Medical Society, and for seven years secretary of the last, died in a hospital in Seattle, Wash., on October 1, following an operation, aged 40 years.

Dr. MATTHEW BONNER FLINN, formerly of Worcester, Mass., a graduate of the New York Homeopathic Medical College and Hospital, New York, in 1865, died at the home of his daughter in Oakland, Cal., on October 5, aged 72 years.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent)

MEDICAL DEFENSE—GONE TO THE FRONT—DRUG TARIFF—OBITUARY.

LONDON, October 1, 1915.

THE annual meeting of the Medical Defense Union was held on September 16. This year the assembly was at Bedford, and although it is spoken of as well attended by some, I can hardly think it satisfactory except by reflecting that medical practitioners are at this time rather fully occupied on account of the war and not a few are absent on military duty. I will not tell you the exact number counted, but merely add that the town and county might, if at all in earnest, have doubled it. The statutory resolutions were passed and the retiring members of council, being willing to continue in office were re-elected and thanked for their past services. The year has been an arduous one, as in addition to the usual work the war has given rise to numerous questions. Several arbitrations have been conducted and the decisions arrived at have been acquiesced in by the disputants who, so far as I hear, have been satisfied. This kind of work bulks largely in the proceedings, but the Union does not engage in law-suits between practitioners. The defence it undertakes is rather to protect medical men from encroachments by the public or individuals under circumstances in which their rights are seriously threatened.

The cases referred to the Union last year numbered 110, of which 36 were in defence of the honor or reputation of members concerned in suits for libel or slander, 22 related to charges of malpractice, 5 to prosecutions for unqualified practice and 47 to personal or miscellaneous matters, such as insurance, partnerships, inquests, terms of appointments and so on. The report of the solicitor shows further that the legal costs for the last fifteen years have amounted to nearly £16,000. The cost per case averaged £174. These few items will suffice to show you that the Union is an important protection for the general practitioner. Nor is it only a defence against actual assaults. Its mere existence is a warning that unjust attacks upon him are not devoid of danger to the assailant.

Many medical men have left their practices and gone to the front. Not a few have arranged with neighboring practitioners to take charge of their patients during temporary absence, on the understanding that they shall not be asked to continue to do so after the return of their usual attendants from the war. The public, to a considerable extent, seem inclined to support this honorable arrangement.

Sir James Barr has been urging that the medical care of the civil population must be held far behind that of our fighting men for whom there still remains a deficiency. He says all home work can be carried on by men over military age, and it is for young men to face the fatigues of a campaign. There must be medical officers for the troops going abroad. He holds it the duty of public bodies not to employ medical men of military age, and he would discharge any they may be employing who are fit for military service.

The drug tariff under the National Insurance Acts gives rise to much discussion which does not appear to promote agreement. A committee was appointed to consider the margin of profit yielded by the present tariff, whether any revision is required, and if so what, whether much change in the list of priced drugs and mixtures is desirable and how far it is practicable to place the tariff on a commercial basis.

The report of this committee, which appears to have devoted much attention to the questions involved, is received with varying degrees of approval or disapproval, but you will hardly care for more than a brief abstract of its conclusions. It declares that revision is required and should provide for payment of (a) the cost of drugs supplied, (b) a flat rate per prescription for establishment and expenses, (c) a fee per prescription for any professional services, graded by the nature of the prescription. Further, it advises a general revision to be undertaken annually and so arranged that the prices of certain drugs can be varied during the year in exceptional cases; that during the war the present plan be continued as it meets the war fluctuations by temporary alterations; that revisions should be undertaken by the central bodies which represent the interests involved, and that all revisions should, as far as possible, be made uniformly applicable to the whole United Kingdom.

As to contracts with chemists it is recommended that they should include an obligation to supply a quality such as would cost about the same as allowed for in the tariff. Also that the pricing of prescriptions should be fixed by insurance committees.

Surgeon F. J. Humphrys, M.D., B.N., died on September 5 of wounds inflicted in the war, at the age of 27. He served in the Dardanelles in the summer and afterwards on the armored car "Squadron."

Dr. Tacey of Bradford, an authority on Woolsorters' disease and able microscopist, has died at 82.

Surgeon-Major R. E. Volunteers G. Robinson, Hon. Surg. Teachers' Orphanage, has died at Bascombe, to which he retired about six years ago.

Surgeon-General Sir Lionel D. Spencer, honorary surgeon to the King, has died at the age of 73. He entered the Indian medical service in 1865 and passed through the several grades, becoming P. M. O. in the Wazeristan Force, 1894-95, being mentioned in despatches and awarded the C. B. He had been P. M. O. in Calcutta and officiated as director-general I. M. S., 1901, and subsequently honorary surgeon to King Edward, 1905, and King George, 1910. From 1881 to 1892 he was superintendent-general of dispensaries and vaccination and civil and administrative medical officer, Rajpatana and the Punjab.

At Trinity College, Dublin, the vice-chancellor took the occasion of conferring degrees to tell of the splendid work of the alumni for both past and present. He said 650 members of the school are serving in the army medical corps, the Indian medical service, or in the Red Cross hospitals; 24 of them have been killed, 26 wounded, 10 are prisoners and 3 missing. They have been mentioned in dispatches 28 times. Five have military crosses, 3 the D. S. O., 2 the order of St. Michael and St. George, 3 the Bath. The Trinity College students with the colors number 1,500, of whom 707 have been awarded commissions. The total who have joined since the war broke out was 970. Of these 74 have been killed and 67 wounded. Military crosses have been conferred on 4.

Progress of Medical Science.

Boston Medical and Surgical Journal.

October 7, 1915.

1. Our Criminal Problem from the Standpoint of Classification and Segregation. E. R. Spaulding.
2. Blood Pressure Determinations, Urinary Findings and Differential Blood Counts in a Group of 662 Young Male Adults. R. I. Lee.
3. Notes on Gastric and Duodenal Ulcers. C. Graham.
4. The Use of Calcium in the Treatment of Epilepsy. J. Bryant.
5. Synchronous Inspiration and Systole in a Patient Exhibiting Equal Respiratory and Pulse Rates. G. D. White.

1. Problem of Classification and Segregation of Criminals.—E. R. Spaulding, the resident physician of the Reformatory for Women at Framingham, Massachusetts, believes that the problem of prison reform is one that the medical profession should help solve. She makes four general divisions of the offences for which 500 women have been arrested: 1. Alcoholism alone (21 per cent.). 2. Offences against chastity, with or without alcoholism; this includes all offences which have a probable sex basis, such as stubborn child, vagrancy, common nightwalker, keeping disorderly house, lewdness, fornication, adultery, etc. (58 per cent.). 3. Offences against property, such as larceny, breaking and entering, forgery, etc.; many of these cases also have offences belonging to the first two classes (15 per cent.). 4. All remaining cases, including offences against the person, such as abandoning children, assault, manslaughter, etc. These comprise but 6 per cent. The author then points out that if the criminal problem is one of treatment of the individual for his deficiencies rather than of punishment for the crime committed, the following fundamental provisions for the administration of such treatment are necessary: Adequate provision by the State for the permanent custodial care of all committable cases of mental defect whether or not they have a court record. The establishment of laboratories in our courts and correctional institutions for the study and diagnosis of all offenders. The equipment of all our institutions with facilities for classification and treatment of the various types which will remain even after the removal of the most defective. Such a classification will necessitate separate buildings, at least one of which should be equipped for hydrotherapy. The adoption of an indeterminate sentence, which shall enable us to treat patients until they are able to return with safety to the community. The physician has it in his power to do much toward educating the public to the need of fundamental measures of reform and toward counteracting the tendency toward superficiality of some enthusiastic believers in universal reform. His knowledge of mental and physical defect enables him to see more than the cross-section of the subject, which is represented by the population at present confined in our penal institutions, and to appreciate the social and economic waste, which is the result of our past neglect of generations of inefficients in the community.

2. Blood Pressure, Urinary Findings, and Differential Blood Counts in 662 Young Men.—R. I. Lee points out that there are few absolute standards for the normal in clinical medicine, and that physcians are better acquainted with disease and its variations than with health and its variations. The author then reports on the physical examination of the entire freshman class in Harvard University. Six hundred and sixty-two freshmen with the average age of 18 years, average height of 5 feet, 8 inches, and average weight without clothes, of 143 pounds, were each carefully examined once. He concludes that among young male adults in the usual condition of health a single determination of the systolic blood pressure frequently gives readings that are regarded as abnormal according to the usual standards. This deviation from the usual standard may be considerable and may be present on several occasions. In the absence of other abnormal findings moderate increase of systolic blood pressure seems to be of no significance. The diastolic blood pressure is much less subject to variation and is of considerable value in offering a control on an abnormal systolic pressure. Albuminuria was present in 5 per cent. of this group, and in only one case was there additional evidence of a true nephritis. Albuminuria in young male adults may be permanent, orthostatic or transitory, and is apparently of no serious significance. Glycosuria is unusual and in one case particularly, and apparently in another, was more than transitory and seemed associated with disturbed metabolism. The differential counts of the leucocytes of the blood in this group confirm our accepted standard for the normal.

3. Notes on Gastric and Duodenal Ulcers.—C. Graham states that, after reviewing his case histories from 1906 to 1915, he cannot find any pathognomonic symptoms or group of symptoms whereby he may reasonably locate peptic ulcer. It is not difficult to diagnose the presence of a peptic lesion, but it is quite difficult to determine whether the lesion is gastric or duodenal. Nevertheless there are some points that aid in their differentiation. In the whole picture, the coming and going of symptoms are not so distinctly seen in gastric ulcer. The pain in the gastric form often comes earlier after food (within 1 to 2 hours, in one-half the number), and frequently ceases in a short time, or before the next meal. It may return after a brief intermission, to be eased by the next meal, or the distress is such that food is refused lest pain be increased. This is more often the case in gastric than in duodenal ulcer, unless complications are present. When adhesions and perforations are present in any ulcerative lesion, and more so in those well above the pylorus, pain may begin sooner after food intake. This early pain is due apparently to peristaltic movements, tugging at the sensitive adhesions, quite as much or more so than to any acid fluid acting upon the chronic ulcer or open wound. Pain that comes immediately or soon after food intake seems to point to cardiac, fundic or other extensive ulcerations, perforations, adhesions, or obstructions. Coarse and large amounts of food may increase pain in any ulcer, but more constantly in gastric rather high in position, and high ulcers often seem to have periods of shorter duration (1 to 5 days) and shorter intermissions, or remissions which show a lighter grade of symptoms and tend to constant complaint. Duodenal or pyloric ulcers more often run an exact course day by day for days or weeks with decided food ease.

4. The Use of Calcium in Epilepsy.—J. Bryant states that in addition to faulty heredity, malnutrition seems with considerable frequency to precede the onset of epilepsy. Many poverty rations, such as white bread and potatoes, are very deficient in calcium. The author tried the effect of calcium in the treatment of epilepsy with gratifying results. He does not present calcium as a panacea. It may not cure any case, but it at least can be said that when added to existing only partly successful treatment by bromides, it has in some cases produced results sufficiently encouraging to make it seem desirable to mention its employment and possible value. The author desires to focus attention upon a broader question related to calcium metabolism. It has been held that such manifestations, as for instance chorea, migraine, tic, tetany, and epilepsy, are absolutely unrelated disease entities. Proof is lacking. It

is, on the other hand, not impossible that proof may be forthcoming to show that these diseases are, at least in some cases, merely different expressions of an underlying abnormality common to all. Three facts suggest that a lack of calcium may be such a common underlying factor in more than one of these conditions: many diets are deficient in calcium, calcium is deficient in the brain tissue of those afflicted with certain explosive manifestations, and some of these diseases have been markedly relieved by the adminstration of calcium.

New York Medical Journal.

October 9, 1915.

1. The Gonorrhea Complement Fixation Test. A. A. Uhle and W. H. Mackinney.
2. The Autolysin Treatment for Cancer. C. Pope.
3. Inoperable Cancer Treated with Autolysin. E. H. Williams.
4. Inoperable Cancer Treated with Autolysin. H. G. Nicholson.
5. The Autolysin Treatment of Inoperable Malignant Neoplasm. A. Wilson.
6. Treatment of Fractures of the Upper End of the Humerus. R. E. Davison.
7. A Broader View of Mental Deficiency in Aliens. H. A. Knox.
8. Weight Reduction. R. H. Rose.
9. Abuse of Insanity Plea as a Defense for Crime. M. A. Hays.
10. Backache. S. Epstein.

2. Autolysin Treatment for Cancer.—C. Pope used autolysin in thirteen cases, during five or six weeks, and summarizes the results as follows: The injection, usually into the subcutaneous cellular tissue of the arm, is extremely painful for a period ranging from two to five minutes, and is followed by a dead, dull aching pain for approximately ten minutes. Reaction usually takes place within six hours and varies from malaise, depression, and chilly feelings to an actual chill, followed by a rise in temperature in no sense proportional to the chill. The first change usually noted by the author has been in the discharge. The first few injections may increase the quantity, but usually after the fourth or fifth injection there is a marked diminution and frequently a cessation. He observed that where he had to deal with an irritating mucopurulent, purulent, or sanguinopurulent discharge, this soon changed to semiclear or clear, thin, watery discharge, distinctly nonirritating in character and of small amount. Of all the changes that take place under autolysin, the cessation of the odor is the most remarkable. Pain is relieved and the appetite increased.

8. Weight Reduction.—R. H. Rose points out that for the intelligent supervision of weight reduction in cases of obesity, familiarity with the maintenance diet is a necessity. A maintenance diet is one sufficient to maintain the person's normal weight and strength. The author remarks that there is only one scientific method of procedure, and that is to prescribe the diet in detail as to amounts of each article, times of eating, etc. Exercise is an especially valuable adjunct to dietetic measures, and the more, the better. It increases the strength and the feeling of well being during the period in which the weight is being lost. Hard outdoor exercise, and very hard room exercises are of value. When the diet is low enough to cause weight reduction, the loss of weight will be over the most used muscles, and exercises can easily be devised to remove the weight where most desired. The author's purpose is to discuss the dietetic factors in weight reduction. His method in weight reduction is as follows: He asks the patient to tell him what he eats, not neglecting the very important inquiry as to amounts of oil, sugar, butter, bread, and dessert. It is important to elicit the amount of cream and butter used in the cooking—also amounts eaten between meals. Ice cream, it must be remembered, is quite nutritious. These facts are written in the history of the case, and he estimates at once the caloric value of the food the patient is accustomed to eat. He then revises his diet to make it equal two-thirds a maintenance diet for that individual when undergoing slight activity. A person weighing 150 pounds will lose one-quarter to one-half pound daily on two-thirds of a maintenance diet.

10. Backache.—S. Epstein considers some of the backaches of serious import caused by bone and joint lesions. The author points out that patients are not often examined with their underclothes removed, and their gait, posture, and spinal movements tested, that the tests for spasm of the psoas muscle and for the spasm of the posterior spinal muscle, which are just as important as abdominal rigidity in acute abdominal disease, are not fully appreciated by the general practioner, and that the general surgeon has removed appendices and ovaries and done laparotomies where the patient might have been much better served by a spinal support or plaster jacket.

Journal of the American Medical Association.

October 11, 1915.

1. Gastric Cancer as a Sequel to Gastric Ulcer. W. F. Cheney.
2. Birdshot Removed from the Vitreous Through the Pupil. K. Pischel.
3. Stone in the Kidney and Ureter. H. Cabot.
4. Stones in the Ureter. W. F. Braasch and A. B. Moore.
5. Plastic Surgery of the Kidney Pelvis and the Ureters. H. K. Loux.
6. Uretero-Enteric Anastomosis. W. H. Barber.
7. Fractures. New Ideas and New Instruments. H. R. Allen.
8. New Method of Passing the Wax Tip. B. R. Kirkendall.
9. Leucemia—An Infection? With Report of Cases. R. L. Wilbur.
10. Abortion. Its Causes and Treatment. E. E. Montgomery.
11. Placental Bacteriemia. J. M. Slemons.
12. A Modification of the Abderhalden Test. J. Bronfenbrenner, M. J. Schlesinger and W. T. Mitchell.
13. Pancreatic Ferment Determination in Pulmonary Tuberculosis. E. A. Gray and O. Pickmann.
14. The Use of a Loan Collection and Photomicrographs in the Teaching of Pathology. E. Scott and J. Forman.
15. Orbitopalpebral Emphysema Caused by Perforation of a Dental Canal. A. Bray.
16. An Unusual Type of Gross Cardiac Arrhythmia. P. D. White.
17. Trichinosis Simulating Frontal Sinusitis. E. L. Pratt.
18. Chloroform in the Treatment of Insolation. G. C. Hanson.

1. Gastric Cancer as a Sequel to Gastric Ulcer.—W. F. Cheney states that there is almost unanimous agreement that gastric cancer does originate as an ultimate sequel to chronic gastric ulcer. As regards the frequency with which this happens, however, there has always been disagreement among observers. One set of observers base their opinion on microscopic evidence of resected tissues; the other on clinical histories, course and outcome. The author is of the opinion that gastric cancer originates from gastric ulcer much more frequently than was formerly believed. Not every ulcer becomes cancer, but every ulcer is potentially cancer. It is impossible in early stages to distinguish those ulcers still benign from those becoming malignant. The author therefore concludes that surgery should be advised more frequently and more promptly than heretofore.

3. Stone in the Kidney and Ureter.—H. Cabot made a careful study of 157 cases at the Massachusetts General Hospital and comes to the conclusion that stone in the kidney too large to pass occurs most commonly between the ages of 10 and 40, and, with him, has come to operation most commonly between the ages of 20 and 50, which shows that the diagnosis of stone in the ureter is not made with great promptness. Renal colic is absent in a considerable proportion of the cases, and the pain caused by renal calculus may closely simulate that caused by various other abdominal lesions and is frequently mistaken for such lesions. The urine is persistently normal in a proportion of cases sufficiently large to make it an uncertain guide. The Roentgen ray is persistently negative in enough cases to make it dangerous to depend wholly on this evidence, but the com-

bination of unusual pain symptoms, a negative Roentgen ray and a persistently normal urine is fortunately rare.

9. Leucemia.—R. L. Wilbur states that the evidence thus far available points strongly to infection as the cause of the leucemias. It is probable that organisms usually of low virulence but of various kinds, perhaps working on a soil prepared by previous infections, can, when they secure a foothold in the bone marrow, spleen, or lymphatic glands, bring about the leucemic reaction alone or combined with disturbance of the red blood cell forming mechanism. Streptococci have been more frequently reported than other organisms in the blood and tissues of leucemic patients. The attempt to classify rigidly the leucemias and pseudoleucemias on purely morphological grounds is futile. A long series of bacteriological studies, including blood cultures and bone-marrow inoculations from living patients, will be required to settle the relationship of infection to the leucemias as well as the anemias. Foci of infection should be sought, and treatment directed against them. Only with the establishment of the cause can we hope for a sound therapeusis of this condition.

10. Abortion.—E. E. Montgomery writes that abortion may be the result of overexertion, infection or injury, but most frequently in first pregnancies through efforts to secure evacuation of the uterine contents by the administration of drugs or by mechanical measures. When the uterus is the seat of disease from previous infection or interruption of pregnancy, the pathogenic changes render the organ incapable of nourishing the incumbent until full term, and the contents are evacuated. When pregnancy recurs abortion becomes a habit. Frequently this is attributed to syphilis, which may be the cause, but it occurs more frequently independent of it.

12. Modification of the Abderhalden Test.—J. Bronfenbrenner, M. J. Schlesinger and W. T. Mitchell are inclined to think that the technic of the Abderhalden test is not very difficult. The difficulty in obtaining more constant results lies in the fact that the relations of the ingredients to each other are not properly understood. The authors come to the conclusion that the Abderhalden tests depend on the presence in the serum of specific substances which are not of a fermentive nature, that the substratum is not digested during the test, that dialyzable split products originate from the serum as a result of its autodigestion, and not from the substratum.

13. Pancreatic Ferment in Pulmonary Tuberculosis.—E. A. Gray and O. Pickman state that pancreatic secretions are seriously diminished by toxins of tuberculosis, in any stage. Rest, by reducing the production of toxins, aids in the return to a normal of these pancreatic secretions. Persistently low trypsin readings are prognostically bad. Low amylopsin values are of lesser prognostic importance. All interpretations must be made with due consideration for anorexia, overeating and diarrhea.

14. Loan Collection and Photomicrographs in the Teaching of Pathology.—E. Scott and J. Forman write that the use of the loan collection and photomicrographs in the teaching of pathological histology possesses the following advantages: It compels the student to write concise and accurate descriptions of the specific cellular elements and of the lesions which they build up. It allows the discussion or quiz to be followed in detail with much greater ease. It gives time for the introduction of more experimental demonstrations. It permits of closer correlation between the gross and the histological pathology. It enhances the value of the notebook. Most important of all, it opens a greater opportunity for the student of medicine to do some thinking for himself.

16. Unusual Type of Cardiac Arrhythmia.—P. D. White records an instance of gross cardiac arrhythmia due not to auricular fibrillation or sinus arrhythmia, but to ectopic ventricular contractions.

17. Trichinosis Simulating Frontal Sinusitis.—E. L. Pratt reports three cases of trichinosis simulating frontal sinusitis and states that the diagnosis in all three cases rested on edema of the lids with absence of edema elsewhere; negative nasal findings referable to the accessory sinuses; the history and the eosinophilia. In all three cases pain in the region of the eye and frontal sinus was noted.

18. Chloroform in Insolation.—G. C. Hanson administered chloroform cautiously by inhalation in three cases of unconsciousness from insolation and in all three cases rapid improvement occurred.

British Medical Journal.

September 25, 1915.

1. Surgery on the Gallipoli Peninsula. J. Morley.
2. Three Cases of Gunshot Wounds of Large Arteries, with Traumatic Aneurysm. J. A. C. Macewen.
3. The Treatment of Wounds in War. E. G. Kennedy.
4. On the Recrudescence of Local Sepsis in Completely Healed Wounds as the Result of Some Surgical Interference or Passive Movement. C. J. Bond.
5. Trench Nephritis: A Record of Five Cases. N. Raw.
6. Artificial Pneumothorax: Manometric Aberrations. F. C. Coley.
7. A Case of Rotary Nystagmus with Recovery Under Optical Treatment. T. S. Barrie.

4. Recrudescence of Sepsis in Healed Wounds.—R. J. Bond calls attention to a renewed septic process in completely healed wounds—no mere slight reaction, or swelling or effusion, which subsides with rest and time, but a violent reaction on the part of the tissues against a renewed virulent infection that ends in local suppuration, and that in some cases is sufficiently serious to threaten the limb or even the life of the patient. He points out the necessity of knowing more about the life-histories of pathogenic organisms in their relation to the body tissues, which are now obscure. For instance, we should know more about the conditions under which pyogenic organisms can dig themselves into the tissues and remain quiescent in sheltered situations without causing any local or general symptoms and without losing their virulence, just as the malaria organism is supposed to bury itself in the bone marrow or the tubercle bacillus to become encapsulated in a lymph gland. To what extent is the capacity of such organisms to remain alive and virulent the result of the formation of the barrier of fibrous or granulation tissue which surrounds them, or is it aided by the concomitant presence of a foreign body or some devitalized piece of tissue—for example, a fragment of bone—within the uneven surfaces of which the cocci can more readily defend themselves against phagocytic action? Is the time interval of essential importance, and, if so, how long after the complete healing of a wound under ordinary conditions may we suppose that the cocci or bacteria which caused the original sepsis can retain their virulence and their capacity for renewed activity? These are some of the questions that came to the author in his experience with cases of the reappearance of sepsis in completely healed wounds.

5. Trench Nephritis.—N. Raw gives a record of five cases and concludes: 1. There seems to be some association between life and conditions in the trenches and the disease. 2. None of these patients had any previous kidney trouble, and they all made a good recovery from what seemed to be a serious lesion of the kidney structure. 3. Bacteriological examinations were negative, and one is inclined to think that some infective process—giving rise to a toxin with a selective action on the renal epithelium—is the cause of this unusual symptom complex.

7. Rotatory Nystagmus Overcome by Optical Treatment.—T. S. Barrie reports a case of concomitant rotary nystagmus in a girl seven years old, alleged to have existed since birth, which disappeared after wearing glasses that corrected the errors of refraction. The author states that the interest of this case is the disappearance of the nystagmus under optical treatment, for according to May and Worth, "infantile cases (of nystagmus) are not amenable to treatment, though the condition sometimes becomes less marked with advancing years; the correction of high errors of refraction seldom improves vision."

The Lancet.

September 25, 1915.

1. Experiences in the Treatment of Typhoid Fever by Stock Typhoid Vaccine. H. W. Wiltshire and A. R. N. MacGillycuddy.
2. On Nervous Furring of the Tongue and Disturbed Taste. J. Goodhart.
3. The Pleomorphism of the Meningococcus. A. Lundie, D. J. Thomas and S. Fleming.
4. Neurasthenia Gastrica. J. G. McClure.
5. Notes on a Case of Multiple Exostoses with Hereditary History. R. Cox.
6. The Transmission of Malaria in Northern France. J. H. Dible.
7. A Case of Syphilitic Nephritis Treated by Salvarsan. N. Macdonald. With Remarks by S. Phillips.
8. A Note on the Testing of Disinfectants. S. Rideal and J. T. A. Walker.

1. Experiences in the Treatment of Typhoid Fever by Stock Typhoid Vaccine. — H. W. Wiltshire and A. R. N. MacGillycuddy report their experience in the treatment of fifty cases of typhoid fever by means of the stock therapeutic typhoid vaccine supplied from the Royal Army Medical College. Very few of their patients were admitted to hospital in the early stages of the disease. The general result of treating these fifty cases has been to convince the authors of the value of vaccine treatment to such an extent that they should now regard the withholding of vaccine from a suitable case in the early stages as an unjustifiable experiment. They have had no experience of living vaccines, and practically none with autogenous vaccine. The results obtained, and the power and limitations of vaccine which they have found in clinical work, are only such as theoretical considerations should lead them to expect. In the earlier stages its use as a direct antagonistic to the pure typhoid infection is obvious. At the same time it may be regarded as a powerful prophylactic agent against secondary infections. The latter find their opportunity in the lowered resistance of the body caused by the typhoid toxemia. The vaccine, by diminishing or completely ending this toxemia, may prevent the opportunity for the occurrence of secondary infection altogether. Once secondary infection has taken place, a dual toxemia has to be fought, and it is not to be expected that a vaccine specific for one organism can neutralize both. It can still help by tending to neutralize its own antagonist —the primary infection—but in this there is a risk, as they found in some cases, that the reactionary period may be favorable for an extension of the secondary infection. Hence in these cases a marked reaction must be avoided by care in dosage, and, when possible, a specific antagonistic must be provided to fight the secondary infection. This view is strongly supported by the good results obtained in some recent cases by the use of typhoid vaccine and pneumococcus vaccine combined. Their conclusions are as follows: 1. Stock typhoid vaccine is a valuable therapeutic agent for the treatment of typhoid fever. 2. The treatment should be started as early as possible with an initial dose of 250,000,000. 3. A reasonable suspicion that a patient is suffering from typhoid fever is sufficient indication for commencing vaccine treatment. 4. The treatment is quite harmless to patients who may subsequently be proved not to be suffering from typhoid fever. 5. An interval of three days should be given between doses. Shorter intervals are not well tolerated. When a longer interval is given, if four days the dose should not be increased, if over four days the dose should be reduced. 6. Great care must be used in dosage if secondary infections of the lung are present. If possible, the typhoid vaccine should be combined with a vaccine suitable for the secondary infection. 7. Doses should be continued for ten days after the temperature is normal as a preventive against relapse. 8. Preventive inoculation exerts slight, if any, influence on subsequent vaccine treatment.

4. Neurasthenia Gastrica.—J. C. McClure was encouraged to revive an old title by the fact that he has encountered in considerable number a type of neurasthenia associated very definitely with gastric and intestinal symptoms. His paper is based on the continuous observation of 100 cases during the past four years. He examined the gastric contents in 20 of these cases, all of whom suffered from pain and discomfort in the epigastrium, beginning two or three hours after food and relieved by eating. In 16 out of the 20 the total acidity was increased; in 2 the total acidity and hydrochloric acid content were normal, while in the 2 remaining cases the total acidity was less than normal and hydrochloric acid practically absent. In the 16 cases in which the total acidity was increased the proportion of hydrochloric acid varied enormously. In 3 cases there was definite hyperchlorhydria, but in the remaining 13 cases the hydrochloric acid was either normal or definitely diminished. In all those cases where the total acidity was high without hyperchlorhydria, the high acidity was due to the presence of organic acids—namely, butyric acid and acetic acid; in no case was lactic acid present. Large quantities of mucus were usually present in the stomach washings, and sarcinæ were found in three cases. The train of symptoms associated with neurasthenia gastrica is curiously constant. Patients complain of being easily tired, both physically and mentally. Inability to concentrate attention on work which was at one time easy for them is a frequent trouble. Memory tends to become capricious. Headaches, either of a dull, heavy kind with a frontal distribution and worse in the morning, or sudden bouts of migraine-like disturbance, are very common. A certain uneasiness in the left hypochondriac region, occurring at varying times after food and in the evening, either with or without a feeling of distension in the left hypochondrium and epigastrium, is a very usual experience. At times the gastric symptoms are obtrusive, so that a patient may complain of frequent attacks of nausea and almost constant burning in the region of the stomach, especially one to three hours after food, while flatulence may become so great as to be a social nuisance. It is not uncommon for the patient to suffer from a sensation of obstruction on an attempt to swallow food, especially at the beginning of a meal, and this sensation of obstruction is often associated with a feeling of constriction in the chest and a dragging sensation in the neck. Sometimes it is also accompanied by profuse salivation. Constipation is the rule, but is not invariable. Cardiac symptoms are very common. Attacks of palpitation often occur, produced sometimes by exercise, especially immediately after food, but more often coming on without any apparent cause, while the patient may be resting quietly. Insomnia of a peculiar character is common. In those who go to bed early, sleep comes quickly but about 2 o'clock in the morning they become wakeful. Those who go to bed late cannot get to sleep

until about six o'clock in the morning. Dilatation of the stomach, signs of intestinal stasis, and exaggerated tendon reflexes are commonly found. The author points out that an essential part of the treatment is the removal of any source of irritation or toxemia apart from the stomach itself. The teeth, gums, appendix, and colon should be kept in mind in this connection. Rest and diet are not successful unless they please the patient. The author advises against "overfeeding" and insists that the stomach should be permitted to empty itself before taking another meal. Having removed all other sources of toxemia and irritation, the treatment of the gastric condition by the method described by Dr. Percy Mitchell should be instituted. Without going into unnecessary details it may be well to give a short description of the manipulation necessary for this form of treatment. The patient lies on his back in bed or on a couch; the physician sits on his right side facing the head and places the phonendoscope over the pyloric region of the stomach. He then with the fingers of his right hand strokes the skin very lightly just inside the cartilages from the tenth to the seventh ribs on the left side of the patient. The stroking should be intermittent and a slight vibratory character given to the movement. The skin is stimulated in this way until a contraction of the stomach is educed, this contraction being expressed by a succession of explosive or gurgling sounds audible through the phonendoscope, due, presumably, to the passage of gas or fluid through the pylorus. The moment that a contraction of the stomach takes place stimulation of the skin should be intermitted until the gurgling and explosive sounds have entirely ceased. The process is then repeated until another contraction takes place, when another pause is made until all sounds cease. Treatment in this way is carried on for some 20 to 30 minutes at a time, at the end of which it is usually found that the size of the stomach is considerably reduced. It is not possible in most cases to empty the stomach completely at the first sitting, nor is it particularly desirable to do so. It is only after treatment has been carried on regularly on successive days for upward of a week that frequent and powerful contractions are educed and the size of the stomach brought to limits approaching the normal. In many cases a contraction is not educed very easily by stimulating the skin in the area already described, and it is necessary to stroke the skin overlying the lower costal cartilages from below upward with a sweeping and slightly interrupted movement, from about the tenth costal cartilage almost to the left edge of the sternum, following more or less the line of the normal upper border of the stomach as ascertained by auscultatory percussion. By stimulating the two areas alternately a contraction may often be educed where stimulation in only one area has failed.

7. Case of Syphilitic Nephritis Treated by Salvarsan.—N. MacDonald reports a case which is very typical of early syphilitic nephritis in its clinical course. It is no longer open to question that syphilis in its early as well as in its later stages may give rise to nephritis, and, indeed, the dependence of one upon the other is probably more common than is generally appreciated. The nephritis in this case manifested itself about the fifth month after infection, which appears to be about the usual period, though it may be later or may be much earlier. In one reported case it occurred before the secondary roseola. The onset was insidious and without marked symptoms or derangement of health. The percentage of albumin in the urine tended to be very high, and the albumin came down on warming the urine long before the boiling point was reached, forming a voluminous and peculiarly white deposit even when the urine was high-colored. There was a great tendency to rapid and extensive dropsical effusion which cleared up with unusual rapidity. In this case, as in others reported, there was also pleural effusion. Throughout the case the patient's feeling of good health was quite out of proportion to the gravity of his symptoms. Even with extensive dropsy and great albuminuria he always averred he felt quite well, and he had none of the symptoms usually met with in nephritis from other causes. The blood pressure was not much raised except on one occasion, and though there is not sufficient evidence of the effects of blood pressure in syphilitic nephritis, in this case, as in others the tension was not much raised. In late syphilitic nephritis the blood pressure may be very high with extensive arterial degeneration. The treatment by salvarsan was adopted after due consideration, notwithstanding that albuminuria is said to increase the dangers of its administration, as mercurial and iodide treatment had failed. In several cases treated, salvarsan has not produced untoward effects when albumin was present. It was given with great care in small doses and so far has resulted in the disappearance of the Wassermann reaction.

Berliner klinische Wochenschrift.

August 30, 1915.

Clinical and Therapeutic Experience with Tetanus.—Pribram's serial article on this subject is summed up by its author in part as follows: Extreme variation in type makes all generalization difficult, so that means should be found to individualize cases. Those with trismus, episthotonus and convulsions of peripheral muscles have a relatively fair prognosis *per se*, but pulmonary and cardiac complications may cause death. Cases with spasms of the diaphragm and glottis have an unfavorable prognosis, because these manifestations cannot be reached by treatment; epigastric pain points to forthcoming spasms of the diaphragm. In very rare cases tetany has been confounded with true tetanus. Next to death from spasm of the glottis, confluent lobular pneumonia is the chief cause of mortality in tetanus. This affection may be shown in time to be an integral part of the disease. Spasm of the diaphragm, by compressing the large veins, causes hemorrhages and stasis in the viscera. The victim of tetanus—both as a disease and as a cause of death—usually presents the status thymico lymphaticus, which must serve as a predisposition. Prophylactic injections against shell wounds alone are good as far as they go but tetanus may develop from very slight injuries, mere chaps. Ether anesthesia should never be used in tetanus lest it provoke spasm of the glottis. The problem of treatment for future consideration is how to combat the tonic spasms of the diaphragm and glottis, for magnesia and chloral fail here completely. In theory the course is plain: Tracheotomy and bilateral phrenicotomy should be performed and morphine given in massive doses to restore normal breathing. This can do no harm if artificial respiration and oxygen are immediately available to offset overaction. Magnesium may be given by the intradural route as a sedative to contraction of the voluntary muscles.

Dysentery Bacilli of the Toxin-Poor Type.—Arnheim says of these organisms that they demand better cultural conditions, for only in a certain per cent. are cultures positive. The diagnostic possibilities of the dysentery-Widal reaction are to be regarded as slight. The carrier problem, as it relates to this organism, is not a serious one in comparison with the exciters of other infectious diseases. The Y type so-called of dysentery bacillus is identical with *B. flexneri*. In individual cases dysentery bacilli appear in the urine,

although they are never found in the blood. Attempts to locate dysentery bacilli in the ordinary articles of diet were fruitless. The author's experience with dysentery during the present war has been almost wholly with cases caused by the so-called toxin-poor bacillus (Y bacillus, *B. flexneri*). In but two cases did he find the virulent, Shiga-Kruse organism.

Gunshot Wounds of the Lung and Tuberculosis.—In the course of an article by Korach on the diagnosis and treatment of gunshot wounds of the lung, the author states that the relationship between these injuries and tuberculosis is problematical. Many young recruits in the haste of mobilization doubtless pass the examiners with slight foci of tubercle in the lungs. Hence whenever a case of pulmonary wound is received in a hospital the sputum should at once be examined, and the apices carefully examined. In this way antecedent lesions may be excluded; so that when tuberculosis develops some time after the traumatism it may be regarded as traumatic phthisis.

Münchener medizinische Wochenschrift.

August 24, 1915.

Circulatory Disturbances Due to Shock Toxins.—Mautner and Pick have studied the phenomenon of lowered blood pressure with which shock is ushered in On the supposition that a toxic principle is responsible they have injected certain substances into the circulation with and without previous sensitization. Among these are pepton and β-imidoazolethylamin, albumoses, bacterial vaccines. The original teaching has been that shock poisons are vasodilators which lower the blood-pressure of the abdominal vessels. The authors' researches have led them to the opposite conclusion that the toxic substances are powerful vasoconstrictors; *i.e.* they produce intense contractions in certain areas which result in anemia. Three vascular capillary areas are attacked in this manner; viz.: the intestines, liver and lungs. Histamin, pepton and the anaphylaxis toxin bring the intestinal vessels to contraction, with resulting increase of blood pressure in the greater circulation. But when the capillaries of the liver and pulmonary circulation contract, the left heart and general circulation tend to become empty and there sets in a sudden fall of blood pressure. These pure conditions, affecting separately the two circulations, give extreme pictures; but between the two we may see every gradation, in which one or the other system predominates, or resets unevenly. That the blood pressure is lowered in shock appears to be due to the greater sensitiveness of the pulmonary circulation to shock toxins.

Acute Yellow Atrophy of the Liver in Syphilis.—Bendig reports a case of this incidence in a woman in the ninth month of gestation. As she had also received injections of salvarsan, no less than three separate causal factors were to be considered—syphilis, pregnancy, toxemia and salvarsan, since each of these has alone been accused of causing the lesion. The author is perhaps unaware of the belief of many pathologists that pregnancy is the essential and not incidental cause of an acute hepatitis followed by yellow atrophy. The syphilis toxin is by common consent regarded as a not infrequent cause of this lesion. Salvarsan, if able to produce the latter would in all likelihood act as an arsenical compound. In the hepatic atrophy which follows poisoning by phosphorus or arsenic, the organ is usually actually larger than normal from fatty infiltration. The case ended fatally. The woman was young and strong and as she was near term when infected she received an intensive Hg-salvarsan cure. In six weeks from admission date she began to complain of epigastric distress and dyspnea and showed great restlessness. The liver then appeared to be enlarged. Next day jaundice appeared and death occurred suddenly. Autopsy revealed extensive internal hemorrhages and universal jaundice. The disease had practically been manifest but forty-eight hours, and the terminal symptoms were those of acute cholemia (great unrest, mental confusion, convulsions with hypostatic pneumonia). At autopsy the liver was found to be smaller than normal with all evidences of acute yellow atrophy. The author had seen a case very similar to the preceding but the young woman, a recent syphilitic, was not pregnant nor had she been treated with salvarsan. It is by no means unlikely that the cases on record as acute yellow atrophy following salvarsan injections, were due purely to syphilis. The first patient having also been treated intensively with mercurial inunctions, the author, believing acute yellow atrophy to be due to toxins, is inclined to think that the combination of syphilis, pregnancy, salvarsan, and mercury could have determined a condition which might not have developed had either one been absent.

Muenchener medizinische Wochenschrift.

August 31, 1915.

Serotherapy of Scarlet Fever.—Reiss and Hertz report results at the Frankfurt Medical Clinic with several sera in the treatment of scarlet fever. These measures no longer come under the head of experiment, because they have now been fully incorporated in practice. While convalescent serum represents the ideal, this is not always forthcoming and must then be replaced by normal serum. Specific sera are sometimes exhibited. The number of patients who have been treated with convalescent serum is 27, naturally of severe type. All but 3 recovered. Characteristic was the complete transportation of symptoms upon infusion of serum. Patients out of their heads, delirious, would be found 12 hours later reading books. The three patients who succumbed did excellently under the serum, but one died of bronchopneumonia and in a second case the cause of death preexisted before the disease developed. The third case was a fulminant one and death could not be stayed. The doses of serum were large (50 to 100 c.c.) and given repeatedly. But 4 patients received normal serum, which has a similar action, but not as marked. Only 2 patients received an antiserum and with good results. Normal horse serum exerts no action whatever on the course of scarlet fever. The serum treatment of the latter is indicated only in severest cases as identified by small, irregular pulse, cyanosis, and bad mental state; it is contraindicated whenever the severity of the disease is due to complications, over which it can have no direct control. It can render signal service only in the first 4 or 5 days of the disease. The technique is very elaborate, and the treatment could hardly be carried out in the absence of special facilities.

Origin of the Hard, Traumatic Edema of the Back of the Hand.—Stromeyer refers to the original recognition of this condition about 1901. Since that period some twenty papers have been devoted to it. The author reports a personal case as follows: Patient was a strong country woman of 30. While cleaning a needle she had pricked the back of her hand. When seen a few days later the wound was barely visible in the second interosseous space of the left hand, ½ cm. from the knuckle. An *x*-ray picture showed a piece of sewing needle in the hand, 2 cm. long, containing the eye. The object was readily removed and the wound healed

kindly. Some pain persisted on motion, and the dorsum soon began to swell. This progressed in all directions but spared the ball of the thumb. The swelling also stopped short at the wrist and fingers and the color surface remained unaffected. The operation scar was extremely sensitive. The *x*-ray find was negative. The hand was first kept at rest for a number of days, at the end of which massage and hot air treatment was begun. Slight improvement after massage was quickly followed by return of former hardness. At last after 3 months of non-improvement the author excised the scar, which had become a source of torment to the patient. The result was surprising as in a few days the hand edema began to disappear, the fingers became movable, and within 6 weeks after excision the hand became quite normal.

Deutsche medizinische Wochenschrift.

August 26, 1915.

Deposits of Coal Dust in the Intestine. — Lubarsch states that a deposit of coal dust is often found in Peyer's patches at the lowest segment of the small intestine. Of 81 subjects 11 were children between the ages of 2½ and 16. The dust is swallowed, after having been inspired and is then taken up by the intestinal villi. This ingestion anthracosis has no necessary connection with anthracosis of the lungs and intrathoracic lymph nodes and is probably not affiliated with anthracosis of the retroperitoneal lymph nodes. There is quite a parallel, as regards separate involvement of digestive and respiratory, between anthracosis and tuberculosis.

Posttyphoid Paralysis.—Zadek states that peripheral palsies are not rare after typhoid. Actual neuritis is not so common. Most of these palsies are mixed—sensori-motor. Pure motor palsies sometimes occur, and bear a striking resemblance to post diphtheritic paralyses. There is no connection between any of these nervous phenomena and myodegeneration. The prognosis is good and varies inversely in this respect with the severity. Peroneal paralysis is common in all palsies of toxi-infectious origin. Either the whole or part of the nerve distribution may be involved. True central paralyses are far more infrequent than peripheral forms. Taking no account of cases due to meningitis, the usual form is hemplegia, the causes being cerebral apoplexy or thrombosis. The nature of this phenomenon is obscure, especially when it occurs during convalescence. The author relates a personal case of cerebral apoplexy which occurred in a child during convalscence from typhoid. Recovery took place so that the mechanism can only be surmised. Conditions which obtain in apoplexy of advanced years do not of course apply in this case. Here hemplegia set in rapidly, no contractures developed, there was a positive Babinski and no involvement of cranial nerves. Such a case comes under so-called functional apoplexies of which uremic hemplegia is a variety.

Ovariotomy in Pregnancy.—Unterberger, Jr., reports 8 cases of this intervention, in one of which the operation was bilateral, while another was a parovarial cyst in which the adnexa were left behind. In the two last named cases abortion followed the operation, gestation being but slightly advanced (one and two periods missed). Many cases are on record in which double ovariotomy in very early pregnancy did not interrupt the latter, but in the majority abortion has been the rule. It is not apparent why extirpation of a parovarian cyst could cause abortion. The author in these aborting cases is inclined to accuse the internal secretions, but does not venture an explanation of the modus operandi.

Treatment of Abdominal Injuries in the Field.—Von Brunn differentiates entirely in this matter between active and stationary warfare. With troops in motion he never interferes save when the bowels protrude. Not only do these cases do fairly well when let alone but all the surgeons' time must be devoted to the men on the firing line. With troops who fight while stationary, he does not operate on any kind of wounds in the upper abdomen, but any other portion of the belly he attacks at once whenever he can strike a balance after deliberation as to what should be done. The decision must be made without too much delay, and the abdominal cavity must always be thoroughly irrigated with saline infusion.

Deutsche medizinische Wochenschrift.

September 2, 1915.

On the Conjectural Exciting Cause of Typhus.—Arnheim ignores entirely the discoveries of Plotz and Proescher, so that his paper may have been written before the latter were published. He deals chiefly with the finds of von Prowazek, Rabinowitch and Petruschky, and the results of his personal labors. He has isolated and cultivated a bacillus which closely resembled Petruschky's, but presents certain differences. As a matter of fact the author's finds were by no means uniform, and it was impossible to state whether the different strains produced by culture were really identical. Bacilli were cultivated from the blood, sputum and urine of many typhus cases. Protozoa may straightway be excluded as causes. The finds of the author will doubtless soon be contrasted with those of Plotz and Proescher; until this shall have been done the elaborate work of Arnheim can count for little, for both of the others have reached a more advanced stage of investigation, while Proescher's discovery is a diplococcus.

An Attempt at a Specific Treatment of Trachoma.—Loewenstein and Herrman report that the former has been at work on this subject for ten years. Only the crude disease product could be used for the production of antigens. Cases were selected which presented trachoma granules. These were then expressed, the instrument cleansed and the granules rubbed up in a mortar with saline infusion and then injected without further elaboration beneath the skin. No reaction of any sort followed, including allergy. Some 8 or 10 days after injection the disease began to improve and in three weeks more the lesions had cicatrized. In certain cases trachomatous pannus when present disappeared and the cornea cleared up. The return of vision was remarkable.

External Treatment of Chronic Rheumatic Affections.—Schattauer mentions first the old empirical and household remedies used externally in chronic rheumatism. These all belong under rubefacients, among them being opodeldoc and oil of mustard. The physician added to these cantharides and iodine. The ethereal oils were also much used for this purpose and oils of juniper and turpentine, camphor, and menthol. Next came a period in which salicylic acid and its derivatives under various forms were applied locally. With protracted employment, however, the members of this group proved to be local irritants. A new synthetic has recently been devised with the aim of doing away with this irritation. The molecule contains salicylic acid and trichlorobutyric alcohol, to the latter of which it owes analgesic properties. This substance (marketed of course under a proprietary name) has been used extensively among the troops during the present war.

Insurance Medicine.

Policyholders as a Medium for Increasing Longevity.—Dr. W. P. Blackford, medical director Commonwealth Life Insurance Company, Louisville, Ky., read a paper with this title before the fifth mid-year meeting of the Medical Section of the American Life Convention. He said that the movement of life extension had only recently taken a definite form, but for years it had had the support of the medical profession as a whole and much good had been accomplished by its untiring efforts and it was deserving of much credit for arousing the interest of laymen and business organizations to the consideration it was to-day receiving.

By the very nature of their work, and the mutual dependence of the different companies and their various policyholders, life insurance companies in connection with their agency forces and more especially their corps of medical examiners, were in a better position than any other organization for increasing longevity through the medium of their policyholders. It was a long step in this direction when, in 1909, forty-three of the large insurance companies in this country and in Canada, with a volume of statistics in no other manner available, opened their books of experience for the benefit of mankind. Never in our history has preventive medicine received such a support, and when we consider how large a percentage of our untimely mortalities is due to preventable diseases, which are costing our nation untold misery, affecting not only the present but future generations, and costing our insurance companies millions of dollars, filling our penal and charitable institutions, we are surprised that the movement did not have an earlier origin. The millions of dollars that were spent annually for charitable purposes proved that the hearts of our people were touched by the condition of our fellowman, and yet the millions spent were only palliative, allaying only the pain and suffering of the individual and did not protect those that might become infected through contact or the innocent offspring who might inherit some hereditary taint or predisposition. If millions were so generously given for palliation what should be given and what might we expect, if our lay people only realized the difference in value of relieving a condition in an individual and the prevention of a multitude of the same condition.

He believed the day was dawning when our people would demand the truth and every disease would be controlled in a businesslike manner. There was certainly no business or scientific reason why syphilis, a disease which had claimed thousands of years of mankind by early mortality and one which was absolutely preventable, should not be eradicated. He was aware of the unsatisfactory results of the various methods that had been tried, such as inspection, segregation, etc., but he believed the added information of the past few years regarding this disease placed it in a different light from that in which it had been formerly regarded.

To a certain extent, those who appreciated this condition and its significance took sufficient precaution against infecting others, but those who were less careful should be punished. With a registration board, State or national, could be filed the records as to date of infection, length of treatment, etc., and those individuals should not be granted a marriage license who had not had a two years' treatment from the initial infection. Some plan with such an object in view should have the support of every reputable physician and intelligent citizen, and he saw no reason why the policyholders and people at large, who had reached the age of maturity, should not be enlightened for self-protection and as an assistance to the State along this line.

The crusade against tuberculosis and most of the infectious diseases that had been waged for the past several years was being felt, and but for this, apparently, our mortality rate for the past ten years would have shown an appreciable increase. Some talks were given which showed that the spreading of childhood diseases was being prevented by the regulations of municipal and State authorities. The older citizens ignored municipal regulations, consumed too much alcohol, meats, and other nitrogenous foods, and did many things that tended to impair the circulatory and other systems of the body; hence, the consideration of the advisability of periodical medical examinations of the policyholders with the view of detecting the degenerative diseases in their incipiency and through counsel assist them to longer life. The Company co-operated in over 140 cities by the distribution of literature and by urging policyholders to enter into clean-up campaigns.

He did not wish to be understood as recommending that insurance companies enter into the movement purely from a commercial standpoint, expecting money spent to be promptly replaced by the saving in mortality, yet we might reasonably hope for results in that direction if the movement became sufficiently universal.

In the consideration of conservation of the nation's available resources the most important was to be found in the life and good health of the individual members; and the loss of human energy through mortality by preventable diseases constituted the greatest waste of our resources to-day. It was also true that this waste of human energy was the result of ignorance or neglect of prophylactic or curative measures well known to science.

With the health of the nation as its greatest asset our insurance companies had an interest in the good health and favorable mortality of the people, and might we not hope to see a cooperative movement of these organizations that would be for the betterment of our nation?

Warranty Against Disease—Effect of Examination by Company's Medical Examiner.—An insurance policy contained the warranty that, "This policy is void if the insured * * * has had before its date any pulmonary disease." In an action on the policy the evidence showed that the insurance company had a medical examination made of the applicant before the policy was issued, and the applicant's family physician testified that the applicant had pulmonary disease prior to the date of the examination. It was held that the express provision of the policy was binding and would be enforced, although the company's medical examiner failed to discover the presence of the disease.—Hanmore v. Metropolitan Life Insurance, La. Supreme Court, 68 So., 385.

What Constitutes Loss of the Hand.—A policy providing compensation for accidental loss of a hand by removal at or above the wrist is held in the Oregon case of Moore v. Ætna L. Ins. Co. L.R.A.1915D, 264, to cover an accident requiring the removal of all the bones of the fingers, leaving only flesh enough to protect the bones remaining and the thumb in a stiffened and useless condition.

Book Reviews.

MICROBES AND MEN; A SURGEON'S PHILOSOPHY; DOCTORS VERSUS FOLKS. TO-MORROW'S TOPICS SERIES. By ROBERT T. MORRIS, M.D. Illustrated. Three volumes; $2.00 each. New York: Doubleday, Page & Co., 1915.

WHEN an author says in the preface that in reading his book "one may open the pages at almost any point and find something to which he will object" the effect is at least to rouse the reader's interest. And when a little farther on the eye lights on the phrase, "When men smile and agree, progress weeps," he proceeds with the perusal in pleasant anticipation of intellectual conflict. In fact, most readers *will* be likely to disagree with much that is to be found in these three delightful volumes, but they will also be charmed and even fascinated. The books form a triology of universal scope, a true *Weltanschauung*, for there is little in the heavens, the earth, or the waters under the earth that is not discussed at ample length.

The first volume of the series "Microbes and Men" gives the keynote to the others, for the microbe, omnipresent and omnipotent, is the mighty protagonist of the whole world drama as it reveals itself to the author's scrutiny. All of life and all of man's activities—literature, science, philosophy and art, the feminist movement, the wars of nations, the problems of education and of science, social questions and the declining birth rate—all are phenomena dependent in the last analysis on the microbe and the reactions produced by it in more highly developed forms of life. The optimism of Stevenson is fostered by the toxin of Koch's bacillus, and the gloom of Nietzsche by the depressant action of the colon group, while Shelley's alternations of ecstasy and *Weltschmerz* depend on a fluctuating mixture of these two antagonistic influences. The state of the large intestine is of profound importance in regulating its owner's mental and physical activities, and toxemia originating there may have the most far-reaching and unsuspected consequences not only to the individual but to the cosmos. In short "A man is what his bacteria make of him," and no doubt the author would say that Pope should have written, "The proper study of mankind is Bacteriology," instead of the familiar phrase.

The second volume deals with matters of equal import—religious belief, the soul, work and play, conjugal infelicity, and the relation of the sexes (including a discussion of the double standard from the physiological standpoint), insanity, sleep and the beliefs of the Freudians, etc. Wholesome advice is offered to young men suffering from the "love psychosis," as for example, that an *x*-ray picture of his intended's enteron would be of much more use to a lover in estimating the chances of future compatibility than a photograph of her face. The author's views of life and its problems, while based on the knowledge of the scientist and medical man, are always kindly, cheerful, and wholesome, constructive and not destructive, and form a philosophy which is replete with the joy of work and of play, and full of interest in the big and little things of daily life. Most readers will probably wish, however, that he had expressed a little more clearly his conception of "Nature," a mysterious *deus ex machina* to which he constantly refers without precise elucidation, but which he appears to regard as the prime mover of all things, as for example, when he says "Nature placed the idea of a personal God in the mind of man as a working library of herself in a compact edition."

In the third member of the series, "Doctors versus Folks," Dr. Morris addresses himself especially to his younger colleagues. There is much of autobiography in the volume, and many diverting anecdotes of experiences, pleasing or the reverse. He also discusses some of his own original work in medicine and surgery, and in various of his hobbies, especially in horticulture. The books bear evidence of an astonishing versatility in intellectual pursuits and attainments, and of a mind of extraordinary originality and freshness of outlook. There is something here for every reader and every mood, from grave to gay, and the volumes once begun can be laid down only with reluctance.

MOTHERCRAFT. By SARAH COMSTOCK. Illustrated. Price, $1.00 net. New York: Hearst's International Library Co., 1915.

THIS book comprises a series of articles that first appeared in *Good Housekeeping Magazine* and that present in simple language the elements of the care of pregnant woman, and of the care of the infant and growing child. The chapter headings are as follows: Motherhood To-morrow; The Days Before the Stork; Hygiene in the Baby's Wardrobe; Feathering the Nursery Nest; Feeding the New Baby; The Growing Body of Your Child; A Footing for Life, and The Growing Mind of Your Growing Child.

WHAT EVERY MOTHER SHOULD KNOW ABOUT HER INFANTS AND YOUNG CHILDREN. By CHARLES GILMORE KERLEY, M.D., Professor of Diseases of Children, N. Y. Polyclinic Medical School and Hospital. Price 35 cents net. New York: Paul B. Hoeber, 1915.

THIS is a flexibly bound pamphlet of 54 pages of text with a similar number of blank pages for notes. It provides easily understood and practical instructions regarding the care of infants and young children for the mother of moderate means.

X-RAYS, HOW TO PRODUCE AND INTERPRET THEM. By HAROLD MOWAT, M.D. Edin., Temporary Lieutenant, R.A.M.C.; at present Officer to X-Ray Department Meerut Indian General Hospital; Radiographer to Metropolitan Hospital and Royal Chest Hospital. Price, $3.00. London: Henry Frowde, Oxford University Press; Hodder & Stoughton; New York: Oxford University Press, 1915.

THIS book presents an account of the *x*-rays for the benefit of those who have little or no knowledge of the subject. Part I deals with the production of the *x*-rays and comprises chapters on the *x*-ray tube; sources of supply, etc.; accessories; localization of foreign bodies; and technique of examination and development. Part II includes chapters on the thorax, the digestive tract, the urinary system, bones and joints (injuries), and bones and joints (diseases). There are 106 excellent illustrations, including drawings of apparatus and reproductions of *x*-ray photographs. The latter represent all the important clinical conditions in which the *x*-rays are of diagnostic value. The therapeutic applications of this agent are not considered in this volume. The author has acquitted his task admirably, in writing a succinct and clear account of the *x*-rays. The Oxford University Press has in this instance maintained its high standard of workmanship. The volume is printed in large type on heavy paper and is well bound.

LOSS OF HAIR. Baldness, Falling Hair, Prematurely Gray Hair, and Seborrhea Successfully Treated by the new Quartz Light Rays. Authorized Translation from the German of Dr. FRANZ NAGELSCHMIDT by RICHARD W. MULLER, M.D. Price, $1.50. New York: William R. Jenkins Company, 1915.

THIS book sets forth the results obtained in the treatment of 200 cases of alopecia areota, alopecia, seborrhoica, and premature and senile alopecia by means of the modified Heraeus-Quartz lamp, whose efficacy depends upon the ultraviolet rays. The case histories are all briefly recorded, following which there is a description of the apparatus used and of the technique of its application.

DIET AND DISEASE IN INFANCY. By HECTOR CHARLES CAMERON, M.D., F.R.C.P.; Assistant Physician in charge of the Department for Diseases of Children, Guy's Hospital. With four colored plates and thirteen text figures. Philadelphia: P. Blakiston's Son & Co., 1915.

THIS is an eminently succinct and practical exposition of the subject of infant feeding. The author follows Finkelstein's method in classifying the common nutritional disorders of infants; indeed one may characterize his book as an excellent English version of the modern German theories of pathological nutrition in infancy. Simplicity is the keynote in the various methods of feeding advised for healthy and sick infants. One cannot but admire the absence of arbitrary rules and the recognition of the fact that the correct feeding of any infant must be established by experiment. In using the term "albumen-milk" as the English equivalent for eiweissmilch the author commits a common error of nomenclature. This preparation is more correctly named protein, or casein-milk. This error is one of minor importance, however, and in no sense mars the value of this book. The four plates illustrating four different types of infant's stools are unique in their graphic portrayal of a subject that is inadequately described in words.

Simplified Infant Feeding. With Seventy-Five Illustrative Cases. By Roger A. Dennett, B.S., M.D., Adjunct Professor of Diseases of Children, New York Post-Graduate Medical School; Attending Physician of the Children's Department New York Post-Graduate Hospital; Assistant Attending Physician at the Willard Parker Hospital and the Red Cross Hospital, New York. With 14 Illustrations. Price, $3.00. Philadelphia and London: J. B. Lippincott Company, 1915.

There are several unique features about this book. As its title indicates, it attempts to simplify infant feeding: instead of the complicated formulae of milk, cream, and water, it recommends the use of mixtures of milk and water with the addition of cane sugar. The seventy-five illustrative cases which bring the subject before the reader in a concrete form deal with different types of difficult feeding and their management. In discussing the various phases of nutritional disturbance in infancy the author follows closely the modern German classification. An excellent and complete synopsis of the entire text is given at the beginning of the volume. The author notes that when boiled milk is used in infant feeding curds are less apt to appear in the stools. He details five different methods of treating diarrhea. Special chapters are devoted to the subjects of constipation, vomiting, loss of appetite, combined breast and bottle feeding, etc. This book has many merits, but there is room for improvement, particularly in its literary style. As examples of careless English the following two paragraphs from the preface may be cited: "There has been so much written upon the theory of infant feeding that the general practitioner is lost in its mazes, since the theories are constantly changing and eminent pediatricians differ so widely in their ideas upon the subject." "That is the reason that 'theory' has been left out of this book as much as it has been possible to do so, using facts and rules when they can be made to apply." The word "proteid" is used generally throughout the book, although the correct term "protein" is also used in some places. The literary shortcomings are, however, of minor importance in comparison with its many admirable features. The typography, illustrations, and binding are particularly good.

Occupational Affections of the Skin. A Brief Account of the Trade Processes and Agents Which Give Rise to Them. By R. Prosser White, M.D., Ed., M.R.C.S., Lond.; Life Vice-President, Senior Physician, and Dermatologist, Royal Albert Edward Infirmary, Wigan; Vice-President, Assoc. Certif. Fact. Surgeons; Life Fellow, Lond. Dermat. Society; Member Manch. Med. and Dermat. Society; Hon. Life Member, St. John's Ambulance Assoc.; P.M.C. and Senior Surgeon, Church Lads' Brigade. Price, $2.00 net. New York: Paul B. Hoeber, 1915.

A definite gap in the literature of medicine is filled by this volume, which consists of a compilation of practically all that is known about the occupational diseases of the skin—a subject to which considerable attention has been paid within recent years. Chapter I is headed "A Circumspection" and deals with such topics as nomenclature, statistics, protective resources of the skin, diagnostic and stigmata, clinical varieties, etc. Chapters II, III and IV discuss various trades, chemicals and processes. Chapter V deals with petroleum and tar distillation, and Chapter VI, with aniline. Dermatitis venenata comprises the subject matter of Chapter VII, while the concluding chapter of the book deals with zoetic dermopathy. The book is printed on excellent paper in clear type, the various processes and agents being given in heavy-face type. There are a number of excellent illustrations. The index is particularly full, a fact which renders this book valuable for quick reference.

Handbuch der speziellen Chirurgie des Ohres und der oberen Luftwege. Herausgegeben von Dr. L. Katz, Spezialarzt für Ohren-, Nasen-, und Halskrankheiten in Ludwigshafen a. Rh.; Dr. H. Preysing, Prof. der Ohren, Nasen, Kehlkopf,Heilkunde, Ord. Mitglied der Akad. für prakt. Medizin zu Cöln a Rh.; und Dr. F. Blumenfeld, Spezialarzt für Nasen-, Hals-, und Lungenkrankheiten in Wiesbaden. II Band, Lieferung 3. Price, 7 marks. Würzburg: Curt Kabitzsch, 1914.

The Intrapharyngeal Surgery of the Nasopharynx is the opening article of the present number and is from the pen of P. H. Gerber. It comprises a section of 36 pages and is accompanied by four handsome colored plates, in addition to the other numerous illustrations. E. Kronenberg contributes the next article of 80 pages on the Surgery of the Mouth. Seven superb colored plates accompany this article. They illustrate chiefly different types of new growths of the lips and tongue. The Diseases of the Base of the Tongue is the title of an article also contributed by Kronenberg. Suspension Laryngoscopy is described in a fully illustrated article by Hölscher. This number of the "Handbuch" maintains in every respect the high scientific and artistic standard set by those that have already been published. The statement is made on the cover that the remaining numbers of the second volume "will appear after the end of the war," and it is to be hoped that they will appear very soon.

What the Mother of a Deaf Child Ought to Know. By John Dutton Wright, Founder and Principal of the Wright Oral School for the Deaf, New York City; Collaborator of the "Laryngoscope" and the "Volta Review"; Director of the American Association to Promote the Teaching of Speech to the Deaf; Author of "Eucational Needs of the Deaf," for the Guidance of Physicians. Price, 75 cents. New York: Frederick A. Stokes Company, 1915.

The keynote of this little book is struck when the author states in the preface that "even though the child be totally deaf from birth, he can nevertheless be taught to speak and understand when others speak to him. He can be given the same education that he would be capable of mastering if he could hear." In a series of twenty-seven short and succinct chapters the mother is given instruction as to her duties toward her deaf child, particularly during the years preceding the school age. She is told how to test the child's sound faculties and how to determine the degree of learning that may be present. The child may be made to understand and may be taught to speak many words and sentences by watching the facial expression and lips of the mother. The child's mental faculties may be developed with the aid of the Montessori method. He should be taught to play games and use toys that exercise the lungs. The creative imagination may be developed with the aid of modeling wax and building blocks. The mother is instructed how to develop any residual hearing that the child may possess. His power of lip reading should be trained. The formation of character and the cultivation of the social instinct must not be overlooked. The following subjects are also discussed. The preservation of speech when deafness results from accident or illness after infancy; teaching lip reading; school age; organized efforts by parents to obtain better educational conditions; the personal cooperation of the parent in the teaching of deaf children; day schools; the deaf child at five years of age; schools for the hearing and private governesses; importance of the beginning; avoid the young and inexperienced teacher; on entering school, with instructions for the guidance of the mother during the child's first year at school, by Eleanor B. Worcester; during the school period; during vacation; and some "nots." The book is an inspiring exposition of a subject that has hitherto been sadly neglected.

A Manual of Personal Hygiene. Proper Living upon a Physiologic Basis. By American Authors. Edited by Walter L. Pyle, A.M., M.D.; Member of the American Ophthalmological Society; Fellow of the American Academy of Medicine; Fellow of the College of Physicians of Philadelphia; Assistant Surgeon to the Wills Eye Hospital, Philadelphia, etc. Sixth Edition, Revised and Enlarged. Price $1.50 net. Philadelphia and London: W. B. Saunders Company, 1915.

Among the special articles in this manual of hygiene for the general reader, which add considerably to its authoritative value, are the following: Hygiene of the Digestive Apparatus, by Chas. G. Stockton; Hygiene of the Skin and its Appendages, by George Howard Fox; Hygiene of the Vocal and Respiratory Apparatus, by E. Fletcher Ingals; Hygiene of the Ear, by B. Alex. Randall; Hygiene of the Eye, by Walter L. Pyle; Hygiene of the Brain and Nervous System, by J. W. Courtney; Physical Exercise, by G. N. Stewart; the Body Posture, by J. E. Goldthwait; Domestic Hygiene, by D. H. Bergey; and Food Adulteration and Deterioration, by Harvey W. Wiley. There are also a chapter on the Hygiene of Infancy and an Appendix containing information on baths, massage, accidents and emergencies, etc. The book is a practical exposition of the subject of personal hygiene in accordance with the latest teachings.

Society Reports.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

Sixty-fifth Annual Meeting held at Philadelphia, September 20-25, 1915.

THE PRESIDENT, DR. EDWARD B. HECKEL OF PITTSBURGH, IN THE CHAIR.

THE meeting was opened with prayer by the Rev. Marcus A. Brownson, D.D. The Hon. Rudolph Blankenburg, Mayor of Philadelphia, welcomed the Society on behalf of the city; and Dr. E. E. Montgomery, President of the Philadelphia County Medical Society, on behalf of the local profession.

Civic Responsibility of the Physician and the Medical Society.—Dr. JOHN B. MCALISTER of Harrisburg, in this, the President's Address, mentioned as vital problems for thought on the part of the State Society: The standardization of the profession throughout the country, and hoped that he might see the day when a licensed doctor in Oklahoma would be a licensed doctor in Pennsylvania. He believed that the attitude of the profession should be modified toward new schools of practice; all that was good in the various methods of relief was to be desired; ignorance and fraud only should be opposed. He believed that the legislative committee of the Society needed the wisest judgment and conscientious co-operation of the profession, and that the establishment of a Board of Regents similar to that of New York would set standards, protect the public against fraud and incompetency, remove from the profession the reproach of bigotry and selfishness, and prevent the multiplicity of examining boards. In the field of preventive medicine he felt there was great need of a National Health Department in the Federal Government. Half a million deaths in America annually from preventable disease emphasized this need. He regarded the newspaper as more powerful than all the guns of all the armies in the world and believed, did they unite, they could end the war in Europe. He felt that the press and the doctor should join forces for the education of the public in health, hygiene, and preventive medicine and for influence with legislatures. The value of organization and co-operation was emphasized.

Report of the Sub-Committee on Cancer.—Dr. JONATHAN M. WAINWRIGHT of Scranton stated his belief that the Pennsylvania State Medical Society was the first organization making a systematic attack upon the problem of cancer. The first effort had been to induce every medical college professor interested in a subject approaching cancer to impress upon his students the fundamental principles of the cancer campaign and the hope was expressed that examining boards might be induced to insist upon a proper knowledge of the disease. Effort had been made to have every nurse training school in the State have their nurses instructed in the subject. Perhaps the most efficient plan by which the Society had worked had been through the county societies. In June thirty-eight counties had held meetings devoted to the consideration of cancer, and sixty-five journals in their July issue had joined in a cancer campaign.

The Evil Effects of Delayed Operation in Malignancy.—Dr. CHRISTIAN B. LONGENECKER of Philadelphia believed that in the entire field of medicine nothing was of so great importance as early diagnosis in malignancy and in this connection the responsibility of the family physician was very great since he was the first consultant. He emphasized the necessity of physicians becoming more conversant with the early signs of cancer. He referred to cases in which the patient had been advised to "wait and see if the lump might not disappear," or "until the character of the lump could be determined." While hope lay in early diagnosis and early treatment it might be with propriety questioned whether this treatment should always be surgical. There were other agencies claiming attention and promising much, but time was required to demonstrate their value. Slides were shown of operations unsatisfactory in result although the patients had passed through competent hands.

Dr. JOHN G. CLARK of Philadelphia believed that as pioneers in the dissemination of knowledge concerning cancer the Sub-Committee of the State Society had laid an enduring foundation by first attempting to put the medical profession in the right position regarding the question. Two serious errors were delay on the part of the patient to seek advice and negligence of the physician to observe the most patent symptoms.

Pennsylvania's Relation to Industrial Safety and Health.—JOHN PRICE JACKSON, Commissioner of Labor and Industry of Pennsylvania, of Harrisburg, read this paper by invitation. He said that the Industrial Board had prepared a set of standards beginning with the problem of safety, and that it had covered a large proportion of the industrial activities of the State. It was the intention later to formulate rules relating to industrial health and sanitation. The duty of the division of hygiene and engineering was that of preparing for the industrial board information of value in reducing accidents, improving health conditions and increasing the welfare of the workers. The matter of injury to children between the ages of 14 and 16 unfitted for their work, the study of poisonous industries, the preparation of first aid kits, investigation of the effect of tobacco fumes on tobacco workers were some of the questions included in the work of the Division. The Accident Corporation System, another line of endeavor in the work of the industrial board has for its primary object the giving of prompt adequate aid to the injured for maintenance of himself and dependents.

Diagnosis of Tubal Pregnancy.—Dr. ALFRED HEINEBERG of Philadelphia considered the diagnosis of tubal pregnancy before interruption in the course of the pregnancy occurred and after its course had been disturbed in one of several ways, with a brief review of changes taking place in the pelvic structures and embryo before such disturbance and cause of failure in diagnosis in this stage. He classified cases in which interruption in pregnancy has occurred into "tragic" and "non-tragic," and mentioned pathological changes during and after interruption in each type. Symptomatology and diagnostic signs were enumerated with a consideration of the differential diagnosis from ordinary abortion, twisted pedicle of an ovarian cyst, pyosalpinx, appendicitis and other conditions causing peritonitis.

Dr. WILLIAM R. NICHOLSON of Philadelphia cited a case occurring at the Methodist Hospital approaching the "tragic" type mentioned by Dr. Heineberg. A large amount of blood had been found in the peritoneal cavity but he had been unable to find rupture or enlargement of either tube until after their delivery, when a small perforation was discovered close to the cornu. The frequency of confusion between extrauterine pregnancy and abortion he felt should be emphasized. Slight uterine hemorrhage he considered of great importance.

Dr. JOHN A. MCGLINN of Philadelphia, in reviewing the histories of eighty cases of this kind upon which he had operated had found none presenting symptoms sufficiently different from those of normal pregnancies to cause the patient to consult her physician. He believed that few cases would be diagnosed before rupture because patients would not present themselves for study until after rupture had occurred. He believed the number of cases diagnosed by the general practitioner was in direct relationship to the publicity given the subject. While he agreed practically with Dr. Heineberg regarding diagnosis at the termination of pregnancy he believed the most important aid in diagnosis was a painstaking history. Differing somewhat from Dr. Heineberg he did not believe the amount of shock to be dependent upon the size of hemorrhage; he had seen profound shock following rupture with but little blood in the peritoneal cavity, and cases with the pelvic and abdominal cavities full of blood with practically no shock.

Dr. HUGGINS of Pittsburgh in a series of more than 100 cases had diagnosed ectopic pregnancy and operated before rupture in 22 instances. He believed that if the general practitioner in seeing a patient with the history of pain in the pelvis and a missed menstrual period would think of ectopic pregnancy he would diagnose such a case in the majority of instances. He believed that ectopic pregnancy should be diagnosed in more than 85 per cent. of cases.

Scopolamine-Morphine Anesthetics in Obstetrics.—Dr. JAMES R. FREELAND of Pittsburgh classed as largely "advertising matter" the literature appearing in association with this subject in the last fifteen months. A statistical review was given of cases regarding the effect of scopolamine in relieving pain; its effect upon uterine contractions and the duration of labor; the effect upon the child and its temporary and permanent effect upon the mother. He believed the proper field

for scopolamine was that of a useful sedative in selected cases. Complete amnesia should not be regarded as the main object of its use. The physician should reserve the right to give "twilight sleep" just as the surgeon chooses the anesthetic without reference to the wishes of the patient.

Dr. Barton Cooke Hirst of Philadelphia had found the disadvantages of the method to be prolongation of labor, tendency to atony of the uterus with hemorrhage, and an increased proportion of apneic babies that could not be revived. If one followed the latest method of giving minimum doses of the two drugs, the disadvantages disappeared, hut the relief afforded was scarcely noticeable. He had, however, found the method of advantage in primiparæ of a neurotic type in whom a long painful labor was probable, and in such cases used it rather for its psychological effect than for the relief of pain. He thought it unfair to criticize negatively any method without offering some alternative. He referred to his experimental use of canabis indica for the relief of the pains of childbirth without disadvantage to mother or child.

Dr. Daniel Longaker of Philadelphia believed that every woman should be transferred to the specially appointed hospital for her confinement regardless of the method by which delivered. He believed that Dr. Freeland would eventually admit that the full benefit of scopolamine is obtained only with complete amnesia. He agreed that the apnea was due to the morphia and said that in certain cases neither of the drugs should be used.

Dr. D. M. Barr of Philadelphia referred to his employment of an anesthetic in labor consisting of one part chloroform, two parts alcohol, and three parts ether, and showed an inhaler made for him by the elder Colby forty years ago. With a means so efficient as the method had been in his hands he questioned the necessity of resort to the "Dämmerschlaf." He called attention to the publication of his paper "A Plea for Anesthesia in Labor" in the *Medical and Surgical Reporter* of 1880.

Dr. Freeland, in closing, regretted his inability to join the enthusiasts for the use of scopolamine anesthesia. His first objection was to the name "twilight sleep," by which it was usually known, regarding this as a trade name, and as such, without place in the practice of medicine. The factor of suggestion also he considered harmful to the patient's mental balance and believed that a certain proportion of patients would later come into the hands of the neurologist.

Pulmonary Tuberculosis and Pregnancy.—Dr. C. C. Norris of Philadelphia considering the frequency of pregnancy in the tuberculous said it was an undetermined point whether or not the normal, pregnant woman was more susceptible to infection by the tubercle bacilli than her non-pregnant sister. That pregnancy exerted an unfavorable influence upon the course of tuberculosis he said was generally admitted, but no hard and fast rule could be laid down. He believed it correct to advise the tuberculous woman against marriage, but here too, a hard and fast rule was too sweeping. Certainly, however, marriage should be advised against in the presence of an active lesion, no matter how limited. Regarding the treatment of pregnancy in the tuberculous the author believed that the attitude toward any given case should depend upon the individual conditions. There must be the consideration of the advancement of pregnancy, the character of the pulmonary lesion, social status and intelligence of the patient, her ability to undergo hygienic and dietary treatment and whether she already has children. Indications for the induction of abortion in the tuberculous prior to the fifth month, choice of operation, treatment of pregnancy advanced beyond the fifth month and during the puerperium were also considered.

Dr. R. H. M. Landis of Philadelphia remarked that among tuberculous women a very considerable number gave the first noticeable manifestation of the disease during the course of pregnancy. He doubted, however, if any of these cases were instances of primary infection at this period, but believed rather than they were cases of quiescent tuberculosis in which the added stress of pregnancy had lighted up the process. He had known, however, of instances in which women after six or seven years of sterility had become pregnant after recovery from an attack of incipient tuberculosis and without recurrence of the disease. This he attributed to the improved health. He was opposed to legislation advised by eugenists against the marriage of all tuberculous persons and questioned whether it could be enforced. He agreed with Dr. Norris' views concerning treatment, but disagreed with him in the use of ether as an anesthetic believing it to have a bad effect upon tuberculous lesions in the lungs.

Dr. Alexander Armstrong of White Haven said it was his custom to advise against the tuberculous woman bearing children until she had had at least five years of health. This opinion applied also to the question of marriage. He knew of no case of relapse as a result of pregnancy in a patient who had remained well for five years after the initial attack.

Dr. John A. Lichty of Pittsburgh referred to a very practical side of the question arising when, in spite of advice against pregnancy, the woman five or six months after confinement was found to be in a dangerous condition with marked evidence of infection. The impaired health was too apt to be attributed to the effect of nursing the baby. In this connection he felt the burden lay upon the internist to take serious consideration of the patient.

Dr. Elmer H. Funk of Philadelphia referred to a series of 100 cases of tuberculous women studied at the Jefferson Hospital in 43 of whom the definite lesions dated from the beginning of pregnancy and during the puerperium. Termination of the pregnancy in the early months gave better results than in instances in which they had been inclined to allow the pregnancy to proceed. In the latter stages the tuberculous lesion had rapidly increased.

Hospital and Home Isolation.—Dr. Dennett L. Richardson of Providence, R. I., read this paper by invitation. While the exact cause of many infectious diseases was unknown considerable definite knowledge concerning the escape of virus from the body had been gained through laboratory investigation and epidemiological experience. An enumeration of diseases was given with the method of escape of the infecting material. Upon the subject of extra-corporal longevity of viruses there was much difference of opinion; in media such as water and milk they might survive and even multiply. Available data practically ruled out atmospheric contagion. The underlying principles of control of infectious diseases by home isolation should be the same as in the hospital. Simple methods of protection of other members of the family should be utilized in place of elaborate hospital equipment. The human being himself was said to be the chief distributor of the disease. Three sources of disease in the community were persons recognizedly sick with infectious disease; missed cases; and the carriers. He believed it erroneous to suppose that a room occupied by a patient with an infectious disease was permeated by the virus. That fumigation was unnecessary had been shown by Dr. Chapin at Providence and by the recent experiments in New York City. In Providence terminal disinfection after diphtheria was abandoned in 1905, except in a few instances.

Quarantine of the Home as Practised by the Department of Health in Pennsylvania.—Dr. Samuel G. Dixon of Harrisburg enumerated the reasons for the various types of quarantine established, details of community quarantine and domiciliary quarantine, pointed out the differences between modified quarantine and absolute, conditions under which wage earners' permits may be granted with quarantine over the premises, etc., and the changes in quarantine under the new law.

An Unappreciated Form of Pneumothorax.—Dr. Charles Rae of York read this paper. By this "unappreciated form of pneumothorax" was meant that form which came on suddenly without obvious evidence of illness. The condition was considered to be due to rupture of air vesicles from a tearing of the pleura, probably always due to a previous pleurisy resulting in an adherence of the two surfaces. Frequency was rather greater than generally supposed, and the condition more familiar to radiologists than to other workers. The differential diagnosis would be of interest so far as extreme emphysema was concerned. General care would seem to be all the treatment required. There should be avoidance of any unnecessary muscular effort until absorption of the air and obliteration of the rent had taken place. While prognosis was excellent in the majority of cases some instances had been reported in which absorption of the air had not occurred for many years. Literature showed the occurrence of outspoken pulmonary tuberculosis in several cases of the condition.

Therapeutic Pneumothorax in Pulmonary Tuberculosis.—Dr. Alexander Armstrong of White Haven said

this method of treatment had been used at the White Haven Sanatorium for three years and the results in sixty cases were given. The procedure consisted of the introduction of gas, preferably nitrogen, into the pleural sac, compressing and eventually collapsing the affected lobe or lung. Strict asepsis was to be enjoined throughout the operation. The lung was usually kept under compression for six months although in some cases a longer time was essential. The rationale of the measure was to lessen expansion of the alveolar tissue and to encourage drainage of septic matter. Three indications for the treatment were: (1) Progressive softening in one or more lobes of one lung, the other lung being normal; (2) relief of hemorrhage; (3) pleurisy, either dry or with effusion. While a careful selection of cases was advisable it was not necessary to restrict the treatment to those in which the disease was unilateral.

Dr. CHARLES M. MONTGOMERY of Philadelphia believed that "unappreciated pneumothorax" described by Dr. Rae should have been more readily recognized by the profession than had been the case. He knew of no more encouraging paper in literature upon the subject than that of Dr. Armstrong's giving the excellent results. It was a matter of concern lest the impression might be conveyed that the operation was a simple one and its employment not limited to experts in the work.

Dr. ISADORE KAUFMAN of Philadelphia pointed out that Dr. Rae's case of pneumothorax had occurred in a tuberculous individual and stated his belief that a very large percentage of the cases developed in phthisical patients. His experience was limited to two cases and in both the condition disappeared in a few weeks. All of Dr. Armstrong's conclusions regarding therapeutic pneumothorax agreed with his own.

Dr. D. M. BARR of Philadelphia discussed the value of hot air in medicine administered by inhalation and exhibited an inexpensive instrument which he had devised by which air could be heated to 400° F. Cases were cited in which diseases of the chest had been corrected by the inhalations.

Medical Education in China.—Dr. JAMES B. NEAL of Tsinan, China, presented (by invitation) this paper in which he brought greeting to the Medical Society of the State of Pennsylvania from the China Medical Missionary Association the membership of which was made up of four or five hundred doctors in China, principally American and British. The development of medical education in China had been left almost entirely to medical missionaries. In addition to the work already done by the Medical Missionary Association it is planned to have at least one thoroughly equipped medical school in China in which the teaching shall be done in Chinese. Dr. Neal pointed out that there was in China an immense field for not only medical work, but for the training of Christian doctors. Under the Rockefeller Foundation there would be a great demand for Christian medical men to help in the training of a medical profession for China.

Cholesteatoma of the Spinal Cord.—Drs. WILLIAM EGBERT and SAMUEL D. INGHAM of Philadelphia reported this case. The patient was a young woman taken from school when 15 years of age because of increasing languor and anemia. She was first seen on December 28, 1914. There were progressive loss of flesh, intermittent insomnia, motor and sensory disturbance of the left leg, later of the right, variable in character, obstinate constipation, marked cystitis, and a mixed spastic and steppage gait. At operation on March 31, 1914, by Dr. W. Wayne Babcock a tumor 5½ inches long was removed which microscopic examination showed to be a cholesteatoma. The patient has gained 25 lbs. in weight. There was still moderate foot drop in the left leg with a little anesthesia and loss of muscle sense, but there was considerable gain in power with increased size of the left leg and gait was almost normal.

Comparative Therapeutic Effect of Mercury and Salvarsan in Experimental Trypanosomiasis.—Drs. JAY F. SCHAMBERG, JOHN A. KOLMER, and G. W. RAIZISS of Philadelphia contributed this paper, which described studies of the toxicity of the soluble and insoluble mercurial compounds, of distribution of mercury in the animal body, and the resultant pathological changes. The effect on trypanosome infections of various mercurial salts was given with studies of the toxicity of salvarsan and an investigation of its trypanicidal influence. The chemistry of salvarsan was considered, with an interpretation of the above findings and their application to the treatment of syphilis.

Factors Influencing the Present Mortality in Peritonitis.—Dr. DAMON B. PFEIFFER of Philadelphia stated that there was a marked reduction in the mortality in peritonitis during the past few years due to recognition of the principle of early operation and to evolution of improved operative methods. The present medical treatment founded upon incorrect reasoning and older teaching was responsible for a large part of the present mortality. It was urged that practitioners adopt methods which surgeons have found to be most efficacious in the general treatment of peritonitis. The author discussed the simplicity and rationale of these methods.

The Value of the Psychopathic Hospital.—Dr. D. J. MCCARTY of Philadelphia referred to the need of a better equipment for the care, study, and the prevention of mental disease. He would divide the psychopathic hospital into: (1) The clearing house type for the reception and distribution of mental cases; (2) the psychopathic, the primary function of which was for the investigation of mental cases; (3) the psychopathic hospital for the cure of border-line cases. There should be facilities in every general hospital for the care of temporary cases of mental disease. He would favor also a preventorium type of institution for the reception of all types of disease needing rest, fresh air, physical training, occupation, open to border-line cases and the functional types of nervous cases, latent tuberculosis, functional and early organic heart, liver, kidney diseases, etc. All such institutions should have departments for partial and full pay in addition to provision for the State charges.

Dr. JAMES HENDRIE LLOYD of Philadelphia said that the term "psychopathic hospital" had come to be a favorite one at the present time and much used by persons of an optimistic turn of mind. It was meant to note progress, and was used to signify an institution which was different and theoretically better than the thing meant by the old-fashioned term, "insane asylum." In so far as the term meant progress it was commendable. Progress did not, however, depend upon mere words. A psychopathic hospital was after all nothing but a hospital for the study and treatment of the insane; one should not be deceived by a name; the treatment of the insane should be practically the same in all hospitals. He believed that a large municipal hospital offered the equipment and facilities desirable for mental cases.

Dr. GEORGE E. PRICE of Philadelphia did not agree entirely with Dr. Lloyd that the psychopathic hospital should be entirely under the care of the municipality. The great difficulty in the present situation was that people of moderate means have no hospital to which they could go but the municipal hospital at Blockley. He believed that every large general hospital, particularly those connected with the teaching institutions should make provision for the mentally sick, just as they would for the man with an acute pneumonia or nephritis. The case could be received and studied and then provision should be made for them to meet the indications.

Dr. ALFRED GORDON of Philadelphia made a plea for the many persons seeking medical advice who were not insane in the true sense of the word and yet not normal mentally; such persons were seen who, though free from delusions and capable of reasoning, were in a state of mental disquietude and caused anxiety to their friends. For these he felt there should be a place between the general hospital and the hospital for the truly insane. There should be considered also the social nature of the question, for in spite of the teaching that insanity is a disease a stigma attaches to the placing of a patient in an asylum for the insane.

The Treatment of Exophthalmic Goiter by Means of the Röntgen Rays.—Drs. GEORGE E. PFAHLER and J. D. ZULICK of Philadelphia believed that the trial of treatment for one series with an interval of waiting of one month was justifiable in all cases, for if operation were decided upon nothing was lost, and many operations might be avoided. Treatment should be directed toward both the thyroid and the thymus glands. An increase in weight and a decrease in pulse were the first signs of improvement and were practically always found. Treatment should not be prolonged over too great a period or hypothyroidism might be produced. The goiter and the exophthalmus were the last to show improvement and in many cases showed no change.

Dr. ARDREY W. DOWNS of Philadelphia, in experimental work by the administration of thyroid gland to rabbits until hyperthyroidism appeared had been able to produce hypertrophy of the thymus gland in seven out of nine cases. While the number was too small to

have definite value, taken in connection with similar reports he inclined to the belief of an intimate relationship between the thyroid and thymus glands. He questioned whether it might not be possible that a persistent thymus gland, stirred to activity by over excitement, anemia, etc., was the real cause of exophthalmic goiter. The necessity for accurate dosage of the Röntgen rays was emphasized.

(To be continued.)

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

Twenty-eighth Annual Meeting, Held at Pittsburgh, September 14, 15, and 16, 1915.

THE PRESIDENT, DR. CHARLES L. BONIFIELD OF CINCINNATI, IN THE CHAIR.

(Concluded from page 677.)

The Use of Luteum Extract in the Treatment of Menstrual Disorders.—Dr. ADAM P. LEIGHTON, JR., of Portland, Me., after reporting several cases of menstrual disorders, said that from his little experience, he was certain that there were cases of dysmenorrhea in which the main causal factor was deficient action of the natural *corpus luteum*. He was not carried away with the idea that the therapy of *corpus luteum* was a cure-all in any sense of the word. On the other hand, the cases which might be traced to ovarian deficiency were probably in the distinct minority. One must not allow himself to be so impressed with the etiological value of some one factor in the cause of disease, that he forgot or became indifferent to others of equal importance. Surgery was necessarily indicated in those cases where they found pelvic pathological conditions or anatomical abnormalities present, which they were wont to consider as probably causes of this disorder. There were some serious drawbacks to the use of *corpus luteum*. It generally had to be used routinely or continuously to obtain and maintain results. Its cost injured its more general application. Its action was not immediate, it was cumulative, and for that reason patients and they themselves too often discarded its use after a short trial, if it had been unproductive of good results. As regards its dosage, he found that from fifteen to thirty grains a day, seldom more, were sufficient in any case. Its prolonged administration had not brought about any untoward symptoms, that he had been able to detect, with the possible exception of slight gastric disturbance in one or two instances. The subject of organotherapy, in its present experimental state, was rather involved and indefinite, and while it was sometimes difficult to recognize and identify cases which would be benefited by *corpus luteum*, yet when there was a possibility of ovarian deficiency being an etiological factor in any gynecological disorder, they owed it to the patient to make use of this remedial agency, for its value was well determined.

The Present Status of Twilight Sleep in Obstetrics, Based upon a Collective Study of over 2,000 Cases.—Dr. A. J. RONGY of New York City, after referring to 2,000 cases which he had collected from the literature, said that, judging from his personal experience extending over a period of fifteen months and covering a series of over 350 cases, he felt that the value of the treatment and its acceptance as a recognized therapeutic measure would depend upon our interpretation of the physiological processes which were produced by these drugs. If we accepted the theory that the semi-consciousness induced, prevented the actual experience of pain, although apparently present in all its clinical phases, then labor must be considered painless, and therefore to refuse to adopt it would be a failure on our part to carry out the trust reposed within us. On the other hand, if the mental state induced did not actually prevent the sensations of pain and the patient was actually suffering, even though it be modified, then the value of this method would devolve upon the degree of pain, diminution of analgesia, and not upon the lack of recollection of pain or amnesia. He found it difficult to reconcile the fact that a patient, displaying all clinical evidences of pain, such as crying and groaning, as was observed in these patients, did not actually experience it. However, he was fully convinced that pain in a goodly proportion of cases was influenced to a degree that would warrant its adoption in selected cases, more particularly in the primiparæ of the highly emotional type and in multiparæ in whom we anticipated long and tedious labors.

Dr. JOHN NORVAL BELL of Detroit, Mich., reported an unusual case of myofibroma complicating pregnancy in a woman, 31 years of age, who had been married four years.

Chorioepithelioma.—Dr. BEN R. MCCLELLAN of Xenia O., stated that chorioepithelioma was more common than generally recognized. He emphasized the importance of a case history and the laboartory findings. Anemia might be a possible factor in the etiology as well as a result of this disease. He reported a case of a typical chorioepithelioma in which he resorted to curettage, with an apparent recovery of the patient.

Dr. ORANGE G. PFAFF of Indianapolis reported a case of fibroid tumor which completely obstructed the uterine canal; dead fetus long retained without infection.

The Teaching of Obstetrics.—Dr. CHARLES EDWARD ZIEGLER of Pittsburgh said he would not overemphasize the importance of didactic teaching in obstetrics. It was basic and indispensable to the teaching of obstetrics as a science. It must in part precede and in part accompany clinical teaching, but could never take its place as had too long been attempted. In times past, obstetrics was taught very largely didactically and in certain quarters this was still the case. Even at the present time in all but a few medical schools in this country, the clinical teaching and practical experience given undergraduate students in obstetrics were woefully deficient. Both the teaching and practice of obstetrics were generally regarded as the poorest of all the clinical branches of medicine. There must be a reason for this. Any scheme for improvement in obstetric teaching and practice which did not contemplate the ultimate elimination of the midwife would not succeed. He said this not alone because midwives could never be taught to practice obstetrics successfully, but most especially because of the moral effect upon obstetric standards. The lay public would continue to regard with indifference all pleas for the improvement in the teaching of the practice of obstetrics so long as more than 50 per cent. of confinements were in the hands of ignorant, non-medical individuals, who as a class were regarded as capable of doing the work satisfactorily even by physicians, among whom were certain well known professors of obstetrics. The teaching of the clinical or practical side of obstetrics could be accomplished satisfactorily only through the medium of suitably equipped and properly conducted hospitals and dispensaries. Such hospitals and dispensaries should be teaching and research institutions in the fullest and broadest sense of the terms, with a large amount of obstetric material freely and constantly available for the purpose. The teaching staff, and there should be no other, should consist of full time workers only, who should be paid salaries sufficiently large to make them independent of all other work. To become a thoroughly trained obstetrician, the graduate student must spend a number of years as assistant and teacher in maternity hospital and dispensary services of the type described. The major part of undergraduate instruction should be given by graduate students for this very purpose. The teaching helped them immeasurably. It gave them assurance, made them alert, taught them the invaluable art of expression, and developed clean-cut ideals and thorough-going accurate procedure. Laboratory studies and research should constitute an indispensable part of all graduate study in obstetrics, not alone for the knowledge which the student acquired and what he added to the knowledge of the subject, but most especially because of the habit of investigation acquired thereby, which would make him fruitful in research later and prevent him the more certainly from degenerating into a mere money maker.

The Combined Operation for the Interruption of Pregnancy and Sterilization.—Dr. PALMER FINDLEY of Omaha after reporting four cases, drew the following conclusions: (1) The combination of abdominal hysterectomy and resection of the Fallopian tubes was the procedure of choice in all cases not previously infected. (2) The removal of the ovum through an abdominal incision should be reserved for those cases in which permanent sterilization was desired. (3) No other method was so free from the dangers of sepsis, retained secundines, perforation of the uterus and excessive loss of blood. (4) In point of safety, expediency, and efficiency, the procedure would appeal to all abdominal surgeons.

Surgical Operations during the Pregnant State.—Dr. FRANCIS REDER of St. Louis stated that his conclusions gleaned from the studies of a limited experience with surgical lesions complicating or coexisting with pregnancy could be expressed briefly, as follows: A woman expecting to become pregnant should be thoroughly examined for any physical defect that might be found. Such a defect should be corrected, if possible, before pregnancy took place. No operation that could be deferred should be performed upon a pregnant woman. Any operation that would contribute to the safety of a pregnant woman should be performed without hesitancy.

The Value of Pituitary Extract in Obstetrics and Gynecology.—Dr. SAMUEL W. BANDLER of New York City spoke of the value of pituitary extract in labor. He referred to its importance as a diagnostic test to distinguish between false and true labor pains. It was a great help in cesarean section. In gynecology it served a good purpose in certain menorrhagias and metrorrhagias. It was of aid in postoperative atony of the intestine and bladder, etc.

Menstrual Statistics Based on a Study of 4,500 Menstrual Histories.—Dr. K. I. SANES of Pittsburgh stated that 75 per cent. of women menstruated regularly and 25 per cent. irregularly. The most common regular type met with was that of twenty-eight days, which constituted 72 per cent. of this type. The thirty-day type followed next in frequency with only 3.8 per cent., and the twenty-one day type with 3.3 per cent. etc. In some of the thirty-one days' type the menstrual flow appeared monthly on the same date independent of the number of days in the month. The most common irregular types were three to four weeks, then four to five weeks, two to three weeks, five to six weeks, etc. The most common ages of onset in order of their frequency were 15, 12, 16. The age of onset did not show any relation to regularity or irregularity of menstruation. The earliest age of onset in our series was 9 years and the latest 24 years. The most common duration of menstrual flow was three days, then four to five days, three to four days, five days, seven days, and four days. The irregular type of menstruation showed a larger percentage of long durations and smaller percentage of shorter durations, than the regular type. The quantity of flow in 45 per cent. of women was normal, in 17 per cent. scant, and in 37 per cent. profuse. Irregular patients showed a higher percentage of profuse flow than the regular ones. Hyperthyroidism cases showed a very high percentage of profuse menstrual flow (65 per cent.). Clots were very frequently found in menstrual flow and they did not find them to be influenced by menstrual irregularity. Forty-seven and four-tenths per cent. of women suffered from dysmenorrhea (if the term dysmenorrhea was to convey the idea of discomfort). In retrodisplacements the percentage was found to be 50.4 per cent. In 50 per cent. of the dysmenorrhea cases the symptoms appeared during the flow, in 29 per cent. before, in 17 per cent. before and after, and in the rest after the flow or during and after. Most frequently the dysmenorrhea appeared the day before the flow, then the first day of the flow, then two days during, two days before, one day before and two days during, then three days before, and seven days before. Improvement in menstruation was frequently noticed with advance of menstrual life, after marriage and after childbirths, menstrual periods becoming more regular and the dysmenorrhea improving or disappearing entirely. The most common ages of menopause in order of their frequency were given as 50, 46, 48, 47, 51, 49, 44, 45, 52. The length of menstrual life was most commonly given as 37 years, then 35, and 33. Sixty-eight per cent. reported a menstrual life of 30 years or more. The very early and very late ages of puberty showed a rather early menopause.

Anesthesia in Gynecological Operations.—Dr. R. R. HUGGINS of Pittsburgh, said all methods should be used with discrimination and judgment and when this was done by those who had the knowledge to select the cases the mortality and morbidity of anesthesia would be materially lessened. There could be no doubt that gaseous drugs should be administered in exact amounts and this could be accomplished only by a physical measuring instrument which indicated accuracy, not only to the anesthetist but to the operator as well, the percentage of drug which was being inhaled. When this method was established, the safety and efficiency of surgical narcosis was increased and the shock and postoperative discomforts were reduced to a minimum. Occasionally he found the narcosis anesthesia of value and he practically always preceded his local and spinal anesthesia with injections of hyoscine and morphine which allayed the patient's nervousness and removed any objection to consciousness during operation. It was not at all unusual to have the patient sleep throughout the operation, if not disturbed. This preliminary dammerschlaf was particularly valuable in operations under local or spinal anesthesia in highly nervous or insane patients. The value of nitrous oxide supplemented by local anesthesia had been demonstrated by Crile. There was no doubt that shock was reduced to a minimum. The value of Crile's theory so far as it went, led to the consideration of the advisability of blocking the nerves either by injecting the solution into the nerves where they escaped from the spinal canal or in selected cases the use of spinal or lumbar anesthesia. It seemed reasonable that if the technique that partly blocked the nerves was valuable, one that went to the fountain head completely blocking the entire nerve supply must be more so. A careful study of the literature led to the conclusion that it had passed through a very stormy period. Extreme enthusiasm which led to unfortunate results had given way to a sane appreciation of its value when used with caution and full knowledge of its contraindications. After an experience with spinal anesthesia covering a period of two years the writer was convinced that it was of great value and that it would eventually find a high place among the methods of anesthesia, particularly for surgical procedures in the lower abdomen and pelvic cavity. The time was not here, however, when it could be used indiscriminately and by those who were not familiar with the contraindications. It was highly important to know when not to use it. A keen appreciation of its dangers and the unfortunate sequelae which had thus far caused considerable prejudice against the method would enable us to avoid its use in certain instances where they were liable to occur. Its wonderful possibilities would then overshadow the disadvantages, and when trouble was encountered the operator would be able to charge it to his own shortcomings and not to the method.

Colloidal Therapy in Sepsis.—Dr. G. VAN AMBER BROWN of Detroit, said the laboratories in France had prepared through electrical current a colloidal silver called electrargol. This preparation had another excellent property besides being a colloid. It was heterogeneous, including two essential parts—a liquid medium and solid particles. These solid particles were seen only by ultramicroscope on a dark ground. A multitude of particles moved in the solution, each of which had an electrical charge. Every ion had its own antiseptic power. What did we expect from an ideal general antiseptic? First, a real and complete catabolic action of bacteria. Second a protecting influence on the body by stimulation of leucocytes to phagocytosis. From this viewpoint the colloidal silver was ideal. He obtained virulent streptococci from a manufacturing firm and made cultures in ascitic bouillon, putting only five drops of the silver colloid into a tube of ascitic fluid. No growth was obtained. He sprayed it onto a growth of bacteria on ascites agar plates. He transplanted the islands which came in contact with it and those which did not, and obtained growths in the culture tubes from those that did not come in contact with the spray but no growth from the others. Electrargol had in the last few years been much used in different septic conditions, not however, so far as he knew, in the bacteriemias. Here the results were very satisfactory. In his paper he cited four cases in detail in which he obtained very gratifying results. If the demand of an ideal treatment to conquer septic disease was one having a catabolic action on the invading organism, and a stimulating action on the body's defensive matter, then from this point of view the colloidal argentum was the ideal, since its germicidal action was shown both *in vitro* and *in vivo*, and the simulation of the leucocytes was also shown, a potent factor in the defense.

Syphilis Among Negroes and Whites.—Boas finds that 5 to 6 per cent. of the negro patients in hospitals are diagnosed as syphilitic, and that 3 to 4 per cent. of the white patients in these same hospitals are diagnosed as syphilitic. From 19 to 27 per cent. of skin diseases among negroes are due to syphilis; among whites from 9 to 12 per cent. Among insane negroes syphilis is apparently three times as frequent as among insane whites.—*Social Hygiene.*

State Medical Licensing Boards.

Massachusetts State Board of Registration in Medicine.

September, 1914.

ANATOMY AND HISTOLOGY.

1. What anatomic structures are involved in the problem of fallen arches?
2. Describe the semicircular canals.
3. Give an outline of the regional anatomy of the neck.
4. Give a description of heart muscle.
5. Describe the hip joint.
6. What bones are involved in so-called Colles' fracture?
7. Describe the pancreas.
8. Give the distribution and arrangement of the blood-vessels of the kidney.
9. Describe the patella, giving its relations and attachments.
10. What are sesamoid bones and where found?

PHYSIOLOGY AND HYGIENE

1. What is the function and appearance of lymph?
2. What dietary conditions influence favorably or unfavorably the development of the teeth?
3. Describe and give the functions of the cellular elements of the blood, excepting the red blood-cells.
4. How and why do changes of temperature influence the functions of the kidneys?
5. What insects are dangerous to health? How should they be dealt with?
6. What changes result in muscle tissue following a diminished blood-supply?
7. What happens if the thyroid gland is removed?
8. What part of the brain is affected when a patient has aphasia?
9. How is acidity of the stomach maintained?
10. Describe the method of counting blood-cells.

PATHOLOGY AND BACTERIOLOGY.

1. Explain the phenomena of active and passive hyperemia.
2. A patient has an acute septicemia. What changes would be found in parenchymatous organs?
3. A patient dies of pyemia. Describe the kidney in such a case.
4. A person dies of abscess of the liver. Explain what may have caused this condition.
5. What would cause thrombosis of the mesenteric vessels?
6. Give the pathology of the different common forms of cystitis.
7. Give the pathology of elephantiasis.
8. Describe the blood in a case of myelogenous leucemia.
9. Give the pathology of malaria.
10. Describe the hookworm.

ANSWERS.

ANATOMY AND HISTOLOGY.

1. In *fallen* arches, the following structures are involved: The longitudinal and transverse arches are both flattened. The muscles and ligaments of the sole of the foot are stretched; this includes the calcaneo-cuboid and the inferior calcaneo-scaphoid ligaments, the tendons of the tibialis anticus and posticus, and the flexor longus digitorum and flexor hallucis (and other short) muscles. The astragalus drops, the astragalo-scaphoid joint projects, the sole of the foot is everted, and the tendons of the peronei muscles are rigid.

2. The *semicircular canals* are three arched osseous canals, situated in the internal ear, placed above and behind the vestibule, opening into that chamber by five rounded apertures, two adjacent canals having a common opening. Each canal forms about two-thirds of a circle, and presents at one end a dilated part, the ampulla. Two of the canals are vertical, and the third is horizontal. The superior canal is vertical, and forms a projection on the upper border of the petrous part of the temporal bone. The inner extremity joins the opening of the posterior canal. The posterior canal is vertical, its upper end being joined to the lower opening of the superior canal. The horizontal or external canal is the smallest of the three, and lies horizontally just above the level of the fenestra ovalis.—(*Aids to Anatomy.*)

3. "The *region of the neck* is limited below and in front by the upper margin of the sternum, and by the clavicle on each side, while, behind, there is no sharp line of demarcation between it and the back. Above it is bounded by the lower margin of the mandible, by lines drawn from the angle of the jaw on each side to the root of the mastoid process, and by the superior curved lines of the occipital bone. The neck region is divided into well-defined anterior and posterior areas by the two sternomastoid muscles. These muscles lie close together at their origin below, but diverge widely when traced up toward their insertion into the mastoid processes and into the superior curved lines of the occipital bone. Below, the clavicular and sternal heads of the muscle are distinct from one another, and are separated by a small depression which extends upward for an inch or more above the clavicle. Higher up, however, they completely fuse into a single belly, the anterior fibers of which are derived from the sternal head, and the posterior of which principally represent the clavicular head. The anterior area of the neck lies in front of these muscles, and is triangular in shape, with the apex below at the suprasternal notch, and the base above extending from one mastoid process to the other. The posterior region behind these two muscles is also triangular in shape, with a blunted apex above at the occipital bone, and with its base below where the neck and back become continuous with one another."—(*Moorhead's Surface Anatomy.*)

4. "The muscular substance of the heart is composed of transversely striated muscular fibers, which differ from those of voluntary muscle in the following particulars, viz.: their striations are less distinct; they have no sarcolemma; they branch and unite by their branches and also at the side with neighboring fibers, and their nuclei lie in the substance and often near the center of the fibers. Moreover, the fibers are composed of a series of short cylindrical cells joined together end to end, each corresponding to one of the nuclei. The lines of junction of these cells may sometimes be seen in longitudinal sections stained with hematoxylin; but they come much more distinctly into view in sections of the fresh tissue stained with nitrate of silver. They appear to be bridged across by fine fibrils."—Schäfer's *Histology.*)

5. The *hip-joint* is an enarthrodial joint, formed by the head of the femur and the acetabulum. The articular surfaces are covered with cartilage. Near the center of the head of the femur is attached the ligamentum teres. The *ligaments* are: (1) The capsular, which embraces the margin of the acetabulum above, and the neck of the femur below. (2) The ileofemoral or Y ligament, which passes obliquely across the front of the joint, and is attached above to the anterior inferior spine of the ileum, and below to the anterior intertrochanteric line. (3) The ligamentum teres. (4) The cotyloid ligament, which deepens the acetabulum, and bridges over the cotyloid notch, being there called (5) the transverse ligament. The joint has a very extensive synovial membrane. It is capable of the following movements: Flexion, extension, abduction, adduction, circumduction, and rotation.

6. Colles' fracture is a fracture of the lower end of the radius.

7. *Pancreas: Length*, 6 to 8 inches. Consists of a body enlarged to the right at its head, with which the body is connected by a narrow part or neck, and narrowed to the left where it ends as the tail.

Position.—Placed in the epigastic and both hypochondriac regions, directed transversely across posterior wall of abdomen.

Relations of the body:—

In front. Stomach and small omentum.

Behind. Aorta, crura of diaphragm, splenic vein, left kidney, left suprarenal body, and left renal vessels.

Upper border. From right to left; cœliac axis, splenic artery.

Lower surface. From right to left; superior mesenteric vessels, inferior mesenteric vein, transverse colon.

Left end or tail. Touches lower part of anterior surface of spleen.

Right end or head. Embraced by three parts of duodenum, from which it is partly separated, behind by bile-duct, and in front by pancreatico-duodenal arteries. Is covered in front by the lesser sac of peritoneum.

Behind it lies on the first and second lumbar ver-

tebræ, from which it is separated by the crura of the diaphragm, inferior vena cava, superior mesenteric vessels, and portal vein. The superior mesenteric vessels overlap the left end of the head, lying in a groove on this surface.

Duct (canal of Wirsung): extends transversely from left to right, opens into second part of the duodenum in common with the ductus communis choledochus.

Arteries: pancreatic of splenic, superior pancreaticoduodenal of hepatic, and inferior pancreatico-duodenal of superior mesenteric.

Veins: open into splenic and superior mesenteric.

Nerves: from the solar plexus.—(*Aids to Anatomy.*)

8. *Blood vessels of kidney.* "The renal artery enters the kidney at the hilus, and divides into branches that pass toward the cortex, then turn over and form incomplete arches in the region between cortex and medulla. From these arches vessels pass to the surface which are called the interlobular arteries; they give off vessels at right angles, which are the afferent vessels of the glomeruli; a glomerulus is made up of capillaries. From each a smaller vessel (the efferent vessel of the glomerulus) passes out, and like a portal vessel on a small scale, breaks up once more into capillaries which ramify between the convoluted tubules. These unite to form veins (interlobular veins) which accompany the interlobular arteries; they pass to venous arches, parallel to, but more complete than, the corresponding arterial arches; they ultimately unite to form the renal vein that leaves the hilus. These veins receive also others which have a stellate arrangement near the capsule (venæ stellulæ). The medulla is supplied by pencils of fine straight arterioles which arise from the arterial arches. They are called arteriæ rectæ. The efferent vessels of the glomeruli nearest the medulla may also break up into similar vessels which are called false arteriæ rectæ. The veins (venæ rectæ) take a similar course and empty themselves into the venous arches. In the boundary zone groups of vasa recta alternate with groups of tubules, and give it a striated appearance."—(Halliburton's *Physiology.*)

9. The *patella* is a flat, triangular bone situated in front of the knee-joint; it is said to be a sesamoid bone developed in the tendon of the quadriceps extensor. Its anterior surface is convex and shows perforations for nutrient vessels; it is separated from the skin by a bursa. Its posterior surface is smooth and oval-shaped, and has two facets separated by a vertical ridge; these facets articulate with the two condyles of the femur. The superior border gives attachment to the rectus and crureus: the lateral borders give attachment to the vastus externus and vastus internus. The apex gives attachment to the ligamentum patellæ. The anterior surface is covered by the tendon of the quadriceps extensor, which is continuous below with the ligamentum patellæ.

10. Sesamoid bones are cartilaginous in early life, but later become osseous. They are developed in the tendons of muscles at points where these latter are exposed to pressure upon the parts over which they glide. Their function is to increase the leverage of the muscles. The largest sesamoid bone in the body is the patella; others are found in or near the joints of the thumb and great toe, in the tendons of the biceps cubiti, peroneus longus, tibialis anticus, and posticus, gastrocnemius, and gluteus maximus.

PHYSIOLOGY AND HYGIENE.

1. LYMPH. *Origin:* There are two theories as to the formation of lymph: (1) That it is formed from the blood plasma by the processes of filtration, diffusion, and osmosis. (2) That in addition to these, the endothelial cells of the capillaries exercise some influence. *Description:* Lymph is a colorless, albuminous fluid, alkaline in reaction, with specific gravity of about 1015, containing lymph corpuscles, and coagulating when drawn from its vessels. *Composition:* Proteins (serum albumin, fibrinogen), sugar, sodium chloride and carbonate, water, urea, fat. *Function:* To provide cells and tissues with materials necessary for their growth, repair, and functional activities; and to receive and carry away their waste products.

2. "The tooth papillæ are all preformed at the time of birth. They remain latent and develop regularly into the different teeth. A serious illness of a child just before their eruption may affect their healthy growth by interfering with proper nutrition, and imperfect and pitted teeth result, which often accounts for an early decay."—(Hill's *Histology.*)

3. The white blood cells are spheroidal masses, varying in size, having no cell wall, and containing one or more nuclei; there are about 7,000 to 10,000 of them in each cubic millimeter of blood. They differ much in appearance, and are divided into (1) small mononuclear leucocytes, or lymphocytes, (2) large mononuclear, (3) transitional, (4) polynuclear, or polymorphonuclear, or neutrophile, and (5) eosinophile. They are all more or less granular, particularly the last two varieties named. They are probably formed in the spleen, lymphatic glands, and lymphoid tissues. Their fate is uncertain; it has been asserted that they are converted into red blood cells; they play a part in the formation of fibrin ferment; they are sometimes converted into pus cells. Their functions are (1) to serve as a protection to the body from the incursions of pathogenic microorganisms; (2) they take some part in the process of the coagulation of the blood; (3) they aid in the absorption of fats and peptones from the intestine, and (4) they help to maintain the proper proteid content of the blood plasma.

There are also *platelets*, which are very small, colorless, irregular shaped bodies; they are about one-fourth the diameter of a red corpuscle. Their function is not determined; it is possible that they take some part in the coagulation of the blood. In number they vary from about 200,000 to more than 500,000 in each cubic millimeter of blood.

4. Cold weather causes a constriction of the cutaneous arterioles, and this leads to a dilatation of the arterioles of the splanchnic area (which includes the vessels of the kidney). This causes a rise in the capillary pressure of the glomeruli of the kidneys, and the result is an increase in the output of urine.

5. *Insects dangerous to health:* Ants, bedbugs, fleas, flies, mosquitos, sand-flies, tsetse-flies, midges. *To abolish mosquitos*, get rid of all stagnant water, use mosquito netting; *sand-flies* can be exterminated by the use of formalin spray, good floors and walls to houses, removal of all old woodwork, and frequent painting and varnishing of fixtures; *flies* are dealt with by screening, fly papers, disinfectants, and absolute removal of waste material and manure; *bedbugs* require fumigation with formaldehyde or sulphur, absolute cleanliness, pyrethrum powder, and washing floor and wooden bedsteads with emulsion of kerosene oil; for *fleas*, absolute cleanliness.

6. Diminution of the blood supply to muscle results in diminution of muscular activity.

7. "In man, before the consequences of thyroidectomy were known, the whole gland was not infrequently excised for goiter. If the parathyroids happened also to be completely involved in the operation, death quickly followed. But where only the thyroid itself, or the thyroid *plus* the small internal pair of parathyroids, was extirpated, the condition called cachexia strumipriva was observed to supervene. The symptoms resemble those of the disease known as myxedema, in which the characteristic anatomical change is an increase of the connective tissue in and under the true skin. Newly formed connective tissue always contains an excess of mucoids, and for this reason in the early stages of myxedema there is somewhat more than the usual amount of these substances in the subcutaneous tissue. The skin is dry, and the hair falls off. The features are swollen and heavy, the movements clumsy and trembling. As the disease progresses the mental powers deteriorate, too; the patient becomes stupid and slow, and perhaps, at last, imbecile."—(Stewart's *Physiology.*)

8. *Aphasia* is a morbid condition consequent on a cortical or subcortical lesion, whereby speech, writing, or reading may become impaired, either from an inability to coordinate the necessary movements involved in speech or from a defective interpretation of sounds or visual impressions. . . . Speech involves a healthy continuity between the chief motor center in the left inferior frontal lobe and the visual and acoustic centers on the one hand and between the chief motor center and the muscles employed in speech or reading aloud on the other. The centers assigned to speech and writing are motor and sensory, distributed thus: (1) a motor (*glosso-kinesthetic*) speech center, in the third left frontal (Broca's convolution); (2) a motor (*cheiro-kinesthetic*) center for writing, in the posterior part of the second left frontal convolution; (3) sensory centers; (a) *auditory word center*, in the posterior part of the first temporal convolution; (b) the *visual word center*, in the angular gyrus. The motor centers connect with each other and the sensory

centers by commissural fibers. The similar but subordinate centers in the right hemisphere have a limited capacity for taking over the functions of the left centers when these are destroyed.—(Wheeler and Jack's *Handbook of Medicine.*)

9. The acidity of the stomach is maintained by the formation of hydrochloric acid. This may be the result of the action of disodic phosphate on calcium chloride:

$2Na_2HPO_4 + 3CaCl_2 = Ca_3(PO_4)_2 + 4NaCl + 2HCl.$

Or, it may be due to the action of carbonic acid on disodic phosphate, thus:

(*a*) $Na_2HPO_4 + H_2CO_3 = NaH_2PO_4 + NaHCO_3$

(*b*) $NaH_2PO_4 + NaCl = Na_2HPO_4 + HCl.$

10. "The blood cell count is readily done with the Thoma-Zeiss hemocytometer which consists of two graduated capillary pipettes, *i.e.* the erythrocytometer and the leucocytometer for counting red and white cells, respectively. The blood is drawn by suction or capillary attraction from the drop obtained by puncture until it reaches the point marked 1, then rapidly wiped dry and the diluent quickly drawn in until it fills the bulb and reaches the mark 101. While drawing in the diluent the pipette is revolved between the finger and the thumb to set in motion the mixing bead contained in the bulb, and when filled again thoroughly shaken and revolved for half a minute. This mixing should be repeated each time before expelling a drop for examination. One has then a mixture, each drop of which presents a blood dilution of 1:100. Many prefer a 1:200 dilution readily obtained by using the mark 0.5 as the upper limit for the indrawn blood. The blood rises quickly if the pipette is perfectly clean and may exceed the proper level if not watched or checked by withdrawing the point and quickly wiping it. If the higher dilution is used any excess is readily blown out or better drawn down by touching the tip with filter paper or blotter. The next step consists in expelling the diluent occupying the capillary portion of the tube, after which a small drop of the mixture in the bulb is placed upon the central disc, the cover glass is placed in position and the cells given time to settle.

The drop should just or very nearly fill the central plateau without running over into the moat around it when the cover glass is applied, else the process must be repeated after thoroughly cleaning and drying the cover glass and counting surface. At the point of contact between the cover glass and the underlying plate concentric color rings should appear indicating perfect contact. Their absence vitiates the count and indicates dust or moisture which must be removed and the process repeated. The specimen being placed under the microscope carrying a Leitz No. 6 objective and a No. 4 ocular, or their approximate equivalents, should show an even distribution of cells throughout both the ruled and unruled fields. Up to this point a certain amount of blood diluted 100 times has been placed upon a field so ruled that each of its squares represents an area of 1/20 x 1 20 mm. *i.e.* each side of the square represents 1 20 mm. A third dimension has been added by the cover glass brought into contact with the blood, but lying 1/10 of a mm. above the level of the depressed central disc which carries the squares upon its surface. One has now to count the number of cells lying within a definite number of the small squares and for the sake of accuracy it is best to include the whole 400, though for ordinary work a less number may be taken if the blood seems to be perfectly distributed. One should pursue a systematic course, crossing from left to right and back from right to left and so on, counting not only the cells that lie within each square, but those that touch its upper and left-hand sides. Having counted the cells, say in 100 squares, one multiples by 4,000 if the original dilution was 1:000, and by 8,000 if it were 1:200, the result representing the number of cells in 1 cm. of the blood under examination. The blood counter must in every case be cleaned immediately after using, (first) with water, (second) alcohol, (third) with ether, and the glass bulb should be absolutely free and movable after the process is completed. If to be again used at once, air should be blown through the tube by means of a hard bulb and rubber tube, not the mouth. The counting chamber should be cleaned with cold water only and should not be exposed to direct sunlight for fear of softening the cement.

The Leucocyte Count.—"For this the large calibered pipette is used with a diluent consisting of an aqueous solution of glacial acetic acid (0.5 per cent.), which leaves visible only the white cells. The most accurate counts are made by using 0.5 rather than 1 as the basis of the dilution, and even this requires a good sized drop. Furthermore, the pipette must be kept nearly horizontal at the time and after the diluent is added, else it will run out of the tube. The diluent is then added to the point 11 and the count can be made with the erythrocyte counting chamber or better with Zappert's chamber in which the central square (one millimeter) is surrounded by 8 unruled squares of the same size. The total obtained by counting the leucocytes in the nine squares is multiplied by 200 and divided by nine, assuming a dilution of 1:200 as above described.

"If the ordinary counting chamber is used, the process is greatly facilitated by inserting an eyepiece diaphragm into the tube of the ocular, which will cut off exactly 100 of the small squares. These may be bought or can be made by the physician from metal or cardboard. The leucocytes in 400 small squares of the erythrocyte chamber may then be rapidly counted and as many additional outside diaphragm fields as are necessary to correct work. Accurate white blood counts require patience and the counting of a large number of fields for a slight error has a disastrous effect. Usually two drops of the 1 10 or four drops of the 1 20 dilution will enable one to count 140-150 cells."—(Greene's *Medical Diagnosis.*)

PATHOLOGY AND BACTERIOLOGY.

1. "*Active hyperemia* may be due either to paresis of the vasoconstrictor nerves or to stimulation of the vasodilators, both of which events cause relaxation of the muscular tissue of the arteries, or to direct weakening or paralysis of the muscular coat of the arteries, as by heat or by trauma. A collateral hyperemia occurs when the blood supply to some other part is diminished. Thus if an artery be blocked, the area supplied by it will be anemic, and around this a zone of hyperemia will for a time be present.

"*Passive hyperemia* or engorgement arises from interference with the venous outflow from a part. This may be due to various factors. The venous circulation is mainly carried on by the contraction of the muscles and by the aspiration toward the thorax which occurs during inspiration. If these forces fail, the blood stagnates in the veins and especially collects in the most dependent parts. The term 'hypostasis' is sometimes erroneously applied to this condition, but should be reserved to indicate the post-mortem gravitation of the blood.

"The causes of general passive hyperemia are enfeebled heart's action and uncompensated valvular disease, of local passive hyperemia, the interposition of an abnormal resistance in the course of the veins; the latter may be caused by external compression, by tumors, by occlusion of the lumen, by growths, thrombosis, contraction of scar tissue, etc., by increased pressure in the abdomen by the pregnant uterus, tumors, and the like.

"If there be free anastomosis in the region supplied by the occluded vein, the hyperemia subsides as soon as the collateral circulation becomes established, but if this does not occur the engorgement will persist, as is the case when such veins as the splenic, the renal, the portal, and the sinuses of the dura mater are occluded."—(Hewlett's *Pathology.*)

2. The lungs are congested and edematous; the kidneys, liver, and spleen are enlarged, congested, soft and pulpy; and cloudy swelling will be found in the secreting glands.

3. The kidneys contain emboli in which may be found bacteria; infarction is present and is observed as a wedge-shaped hemorrhagic area at each point of infection; abscesses are also present.

4. "*Abscess of the liver* is always the consequence of microorganismal infection: the microorganisms are various, and they reach the liver by one of several pathways. The common causative microorganisms are the ordinary staphylococci and streptococci, Ameba coli, Bacillus coli communis, Bacillus pyogenes fœtidus, Bacillus typhosus, Bacillus dysenteriæ, Bacillus pyocyaneus, Diplococcus pneumoniæ, Proteus vulgaris, Actinomyces bovis, etc. The infecting agent or agents may reach the liver directly, as in case of traumatism, or by extension of disease of adjacent organs; or the infection may be carried from afar by the blood stream, that is, by the portal vein, by the hepatic artery, by the hepatic veins, by the biliary ducts, or by the lymphatics."—(Kelly's *Practice of Medicine.*)

5. *Thrombosis of the mesenteric vessels* may be caused by infections, ulcerations, embolism, cirrhosis of the liver, pylephlebitis; it is found most often in anemic and cachectic patients.

6. *Pathology of cystitis:* "The lesions may be catarrhal, suppurative, or ulcerative; unilateral or bilateral; and acute or chronic. In the catarrhal process there is swelling, edema, and congestion of the mucosa, with the excessive formation of mucus; in aggravated cases considerable mucopus or almost pure pus is formed, and there is more or less desquamation and superficial erosion of the epithelium and foci of hemorrhage; or more or less widespread and deep ulceration may occur. In the chronic cases there is, in addition, more or less thickening and pigmentation. Rarely fibrinous exudations or gangrene ensue. There is, as a rule, more or less decomposition of the urine with the precipitation of urates and phosphates. When the infection extends from the renal pelvis to the kidney substance (urogenous pyelonephritis) yellowish purulent streaks are found extending from the papillæ into the medulla and the cortex, and small miliary abscesses throughout the kidney, but most numerous in the cortex just beneath the surface and arranged often in groups. In the event of obstruction in the renal pelvis, the ureter, bladder, or urethra, with consequent increased intrapelvic (renal) pressure, the pelvis and calices become distended, the renal tissue more or less destroyed, and the kidney ultimately converted into an intercommunicating, many-chambered pus sac (pyonephrosis) lined by the remains of the pelvic mucosa; should this become very large, very little kidney tissue may be demonstrable (degeneration, atrophy, and replacement by connective tissue)."—(Kelly's *Practice of Medicine.*)

7. *Elephantiasis* is the hypertrophic condition of the skin and underlying tissue, having its origin in lymphatic obstruction and characterized by edema, enlargement, thickening of the skin, overgrowth of the papillæ, and pigmentation. The causal lymphatic obstruction may be due to tumors, cicatrices, erysipelas, and the *Filaria sanguinis hominis.* It is most common in the tropics and is most often observed in male adults. The structural changes incident to the disease are hypertrophy of the entire skin and subcutaneous tissue, edema of affected structures, and dilatation of the blood-vessels and lymphatics with inflammation of the latter. The disease usually affects the leg and foot but the genitalia may be attacked.—(Hughes' *Practice of Medicine.*)

8. In *myelogenous leukemia* the red blood cells are greatly diminished, the hemoglobin is also diminished, normoblasts and megaloblasts are present. The leucocytes are enormously increased in number, there may be 300,000 to the cubic millimeter instead of 10,000 or 12,000 as is normally the case; mast-cells are present, and myelocytes are found in large numbers. The proportion of polynuclears is not disturbed.

9. *Pathology of malaria:* "During the paroxysms, the principal changes are: (1) Enlargement of the spleen, sometimes very great. In recent cases the organ is soft; in older cases firm ('ague cake'); (2) Enlargement and congestion of the liver; (3) Congestion of the bone marrow, the brain and meninges, and the kidneys. In all these organs the vessels are full of plasmodia and of melanin. There is also present a yellow pigment, not confined to the vessels, which consists of altered hemoglobin. Marked diminution of the number of red cells, and pigmentation of the leucocytes, are conspicuous features. The lymphocytes are also relatively increased for some time after the paroxysm, but leucopenia, not leucocytosis, is a feature of malaria. In malarial cachexia the spleen is not necessarily pigmented. The enlargement is mainly due to thickening of the capsule and trabeculæ, and the organ is hard. The liver is frequently enlarged. Anemia is a conspicuous feature."—(Wheeler and Jack's *Practice of Medicine.*)

10. "*Necator americanus*, the New World hookworm, is a cylindrical worm, 5 to 11 mm. long, and is possessed of a dorsal and a ventral pair of lips at the mouth, a prominent dorsomedian buccal tooth, and four buccal lancets; in the male the dorsal ray of the bursa divides at the base and each branch possesses two tips; in the female the vulva is the anterior half of the body; the eggs are thin shelled, 64 to 72μ long, by 36 to 40μ broad; they are oval with somewhat bluntly rounded poles."—(Kelly's *Practice of Medicine.*)

(To be continued.)

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HABIT AND MALOCCLUSION.*

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My remarks will concern certain features of the theory of habit so far as related to special forms of muscular behavior. The precise name of the discussion is "Habit and Malocclusion." It is a great satisfaction to me to have a chance to talk to you. I talk four days a week to over five hundred students, male and female, and they have me so thoroughly in the habit of talking that it has become a pleasure! My scientific specialty being other than dentistry, it rightly may be assumed that my remarks will concern habits mostly, rather than malocclusion. However, unless there be a preclusion, near the conclusion of my talk there will be some little inclusion of occlusion.

Habituation is a well-nigh universal process in our experience. The over-eating habit, for example, just exemplified. Machines made of steel, of brass and of wood are said by some to acquire habits just as organisms do. Shoes, coats, neckscarfs, have habits. The rain running down a new mountain side soon acquires definite habits which we call brooks. You have all experienced, probably, habits in dental engines, not, however, worse or better than your own habits. Every machine, in short almost everything we are familiar with, has habits. Habit is surely a universal process in matter, in all material mechanisms, whether non-living or self-repairing, *i.e.* living. But observe that in organisms its basis is in the *matter*, not in the mind, so far as we can see. A "mental habit" at present means practically nothing. Compare, for example, if you wish to understand how habit in living "mechanism" is determined by the material aspect and not by the mental, the shadows on the moving-picture screen. It is impossible to think a series of successive mere shadows as having any habits; they are obviously put there by material mechanisms from outside themselves; it is as impossible to think of habit in such a series itself as it is to think of the events as the respective causes of each other. If we are to find anything, then, in the way of causation of habit in this pure series of events or processes, we have to turn back to the mechanism that continues it, namely, the film apparatus. It is more or less the same with mental process, viewed as phenomena. It is at present unbelievable that habit in an organism is a mental process. It is matter, protoplasm, that has habit. The mind doubtless exists in some mode separate from the body, but if so we know nothing of it as yet, and, therefore, habit (to conclude this matter) appears to me to be a matter of mechanism and not of the soul at all.

However that may be, a polemic question certainly, habit in our organisms and personalities is practically universal. The only exception of which I am aware is the lack of a habit not to form habits! It has been said that habit is "second nature," but William James, the great dead psychologist, suggests that habit is nature itself. In order to realize how universal the process is in organisms, it is necessary for a moment to point out the nature of the only sort of process that is *not* habitual, which is, namely, true or real voluntary movement. Suppose, for example, that your revered and philosophic grandmother, having much money to spend, had said that she would give you a thousand dollars if you, without training, would engrave *without any slip or mistake whatever* a complex, delicate, and artistic monogram on the rounded belly of a small cream jug. Those of you who have tried to do such a thing realize the difficulty of accomplishing it, the difficulty, clearly, being not one of doing it, in a sense, but one of *preventing* yourself from doing something you did not wish to do. In short, it is the *inhibitory* process, which is the really voluntary movement. I take it that this is the only occurrence in all the body's behavior that is not somewhat habitual, and that everything else you could possibly think of has some degree or other of habituation in it. It is in all cases relatively easy and in some extremely easy to do things "never done before" because they all have some degree of habituation, for this, in short, is the universal principle of neuro-musculo-glandular action. So you have in the organism all possible grades of habituation, from the strictly new voluntary movement to the action of the heart or the beating of any other of the rhythmic organs. But inhibition is theoretically the sole unhabituated, and represents the free will of the human as opposed to the vegetative.

Next we will take up briefly the biologic function of habit, and this, as you all know, is economy; first, of time, second, of energy, and third, economy of variation. Habit serves, at least in the way of economy, those three things: it saves time, saves unnecessary expenditure of energy, and makes everything more constant. Habits then are theoretically sure to be "bad" as well as "good," and some of them indeed are bad and surely some are good. Some suspect that bad habits are formed more easily than good habits, for fish, as well as souls, bite averagely well on the Sabbath day. The basis of the fact that it is easy to form habits, especially bad habits, in the long run is always *satisfaction* in some way or in some other. We always get

*Remarks made (for the most part) before the Eastern Association of the Graduates of the Angle School of Orthodontia at Hotel Puritan, Boston, 27 March, 1915.

satisfaction, of course, out of the repetition of an act which causes any degree of pleasure, but also out of pain, ideational satisfactions, or out of any other form of will-fulfillment whatever, we may get at times true satisfaction. You all know, for example, that when one has a sore tooth there is a kind of satisfaction to be obtained from pressing that tooth, making it hurt; if you have a hang-nail there is a certain sort of satisfaction in causing pain from it. Thus we cannot say that the formation of habit depends only on true pleasure, because there may be no pleasure concerned. The same applies to self-denial, and to other forms of satisfaction-getting, which appear to be so painful. Even the martyr being burned at the stake can be psychologically said to get some compensatory satisfaction out of what is usually considered an ualloyedly agonizing process.

Often the satisfaction concerned is subtle and hard to appreciate, and yet it is none the less effective. In other words, it may be purely physiological, kinesthetic, or tactile. A neuromuscular habit may be purely kinesthetic, or it may be a matter of satisfaction derived from the pure sensory experience of touching things, perhaps the result of an instinct of curiosity of an exploratory nature. The dynamic basis of the satisfaction, as of joy, is the kinesthesia of normal bodily activity becoming more and more inhibitory (human) as the child's personality unrolls. A child may do things which promptly lead to fixed habits with any one of these three physiological suggestions, so to say, behind the movements. Action itself is seen to be satisfaction in this way, and muscle-action, at first made by chance, so to say (really developmental practice), may become quickly and fixedly habitual by repetition long before any habit is realized.

It has been said that the bodily mechanical movements of respiration, the ordinary processes of inspiration, and to a less extent of expiration, give rise on the average to more satisfaction during a life time than any other thing—the kinesthetic experience of taking air into the lungs. I merely wish to suggest here, for future reference, that this universally known process of inspiration pneumatically considered is one especially of suction.

Cosmetic values, of course, are very greatly disturbed by some of the muscular habits that children get into. If we compare the women with the children who sit before us in the trolley cars, for example, in this respect, we can see the effects ahead as well as the causes behind. You can readily point out certain children who, when they become adults, will have badly deformed and perhaps unworthy faces simply because they have been allowed to form the habit of holding their mouths, and so on, in various postures which are going to become fixed. How many good men are needlessly scared away from matrimony by this contrast between the middle-aged women whom they sometimes see and these women's children! Physical education should care for these conditions. As I pointed out some years ago, in the child's early years it should be one function of the physical educator, in the playgrounds and in the schools, to tell children what some of them are doing in this particular respect, and to point out some of the deformities which they quite needlessly are bringing on themselves by a lack of appreciation of what is happening through, in turn, a lack of proper guidance. This certainly should be one of the recognized and practised functions of physical instructors on the playgrounds and generally in the schools. Physical education, I regret to say, is certainly not making many important applications in these broad outside ways.

Human personality has two phases: one is actuating, impulsive, "vegetative," and the other is inhibitory, restraining, or controlling, and comes from the cortex of the brain. Childhood inherently lacks this latter inhibitory phase of behavior, and its necessary development can occur only through the endless action of every possible group and combination of muscles, nerves, and glands. The nerve-centers have to be impressed year after year with what James called the motor ideas of every possible action that the organism can make. Biologically, then, childhood is inherently the time of impression of the nerve-centers (especially the cortex of the brain and spinal gray matter) with all possible movements. Childhood is the period, too, of growth and development by way of practice and habituation. By these and such means Nature incites evolution, especially by the dim satisfaction of new kinesthetic expressions.

This kinesthetic matter is, of course, by no means a new matter, but only in recent years has it been appreciated as the fundamental sense of the animal, especially of the human animal. Curiously enough, there is something about the sense of vision that entirely drowns out "the muscle-joint sense," but this is only a matter of consciousness, for the kinesthesia is there all the time and in absolute control of the muscles. We do not control the muscles by means of vision; our eyes only stop and start each gross movement about where it should be stopped or started, for it is the kinesthetic sense that has the effective control in all ways over the muscles. This sense is dim but it is continual, and when the eyes are closed so that we can get consciousness behind the subconscious, so to say, it can be developed almost to any extent. Helen Keller, for example, in her book, "The World I Live In," has a whole chapter devoted to telling how much benefit she gets out of the kinesthetic sense and her other remaining senses.

At this late day in the psychology of behavior, we do not need to spend much time in the discussion of kinesthesia. It is a sense often subconscious which originates in the joints, muscles, bones, tendons, and skin; all of these parts, at least, are continually sending strains or impulses into the cortex of the brain. Only so has the brain complete control of the organism, just as it would be impossible for the switchmen in the tower down at the South Station to guide the numerous trains out and in that station unless he knew continually where each train was, its speed, and so on. That corresponds to the kinesthetic impulses from all parts of the body, giving information as to the exact posture and location of the various limbs and the degree of contraction of all the body's muscles.

The kinesthetic sense, therefore, is there at the same time in complete control and under complete control, and the voluntary muscles are actuated consciously by the child because of the satisfaction it affords, if for no more explicit reason. Sometimes the need of relief from kinesthetic strain (allied to the "fidgets" coming from too much caffiein or nicotin) is the cause of apparently random and seemingly unnecessary muscular movements. On a Sunday afternoon when we have not

had our usual muscular activity we get "fidgety," *i. e.* the muscles get uneasy as the result of their demand for adequate activity, and this need shows itself sometimes as positive unpleasantness. Of course the child has this need even more distinct than has the adult, and it urges him on continually to instinctive movements of many kinds; yawning is a good illustration of a reflex endeavor to relieve this hyperkinesthetic strain.

Physiologically we may think of a motor habit (and probably all habits) as a set of kinesthetic impulses or strains, passing from the parts most concerned into the great cortex. When these strains have continued relatively long without much variation, in some way as yet wholly indefinable, they impress the central nervous system, probably the extremely sensitive and delicate neurones of the cortex in particular, and tend *pro tanta* to dominate behavior. It is worth noting (and, so far as I know, it has not been noted adequately heretofore) that it is not that the formation of a motor habit is a pleasant process or one that gives obvious distinct satisfaction, but, on the other hand, that opposition to the habit gives distinct unpleasantness, often of an acute kind. How extremely unpleasant, for example, it is not to frighten away a fly lit on the tip of one's nose. Here is inhibitory kinesthesia hard to ignore! It would be more accurately scientific to say that the formation gives pleasantness which is, however, largely or wholly subconscious, while opposition to the habitual kinesthetic set causes conscious unpleasantness. A theoretic pessimist might argue pessimism from this: The formation of habits gives us no pleasure, but to break them is pain. "Facile est descensus Averni, sed ——," etc. Many habits, of course, have extraneous pleasure connected with their formation, but intrinsically the process seems regularly to be a subconscious one. As I have elsewhere shown, the actuating phase of kinesthesia is subconscious. On the other hand, the inhibitory kinesthetic strains or impulses are conscious, and when violently opposed may be intensely unpleasant. When the case is one of breaking a habit the unpleasantness may be so great that in practice it dominates the behavior at the time, and oftentimes of course subconsciously, if not deliberately in consciousness, influences the mind of the individual strongly enough to become a permanent motive, preventing the breaking of the habit. Here, then, we see the pure science of the principle, which amounts to a rule of practice, for the overcoming of bad motor habits, especially in older children, to which we shall recur later on: *Do not attempt* to break a habit in a bold and direct way; always try to be rid of it by replacing it with another habit quite as persuasive physiologically and mentally, and not injurious. In this way the individual is given whatever of satisfaction or of pleasantness (not to say, sometimes, actual pleasure) accompanies the formation of a habit while, on the other hand, the inhibitory unpleasant kinesthesia is kept at a minimum, the contest being thus a purely neural and physiologic battle, little concerned with the conscious will of the individual, and thus economical.

So much for a few obvious points in the physiology and psychology underlying habit-formation and habit-breaking in general.

We are going to discuss, of course, only certain arbitrary types of habits. In practice, that is in reality, the "types" are indefiniably confused and usually far more complex than may be described here. The essence of human personality is its uniqueness, and the chief reason for our scientific interest in behavior lies in this continual uniqueness of the individual, a law unto himself and not to be discussed in detail under any circumstances.

I have tried to suggest that the reason for some habits is the kinesthetic satisfaction, continual, however slight, obtained from normal muscular actions. So far now as malocclusion is concerned, more or less arbitrarily we may consider four groups of kinesthetic habits especially, which lead to deformities of the mouth and of the dentition. In the first class we have the group which we may characterize as sucking and biting movements, which involve the sucking of the thumb and fingers, fist, either lip, the tongue, or the clothing. Some of the worst cases of paradontic deformity come from the rather common habit of biting the clothing; boys especially get in the habit when young of biting the clothes and tugging on them. Perhaps more practically important than this, because commoner, is the use of the so-called "pacifiers," which really should be called something else, even defacifiers. A second group of actions is the biting habits, biting either lip, the tongue, or hands. Biting is a well-defined instinctive movement in most young mammals. Third, a group which requires less effort than the other two, namely, mouth-breathing; one of the commonest, I take it, of the causes of malocclusion. It appears to be always forced by a respiratory obstruction, for no one, as far as I have observed, breathes through the mouth purely from physiologic choice. The passage of air through the nose is normally, at least, as easy as it is through the mouth, so that, as I have just said, no one with entirely unobstructed posterior nares breathes through the mouth. The fourth class of paradontic habits includes a very large number of arbitrary actions, including those of the busy hands in relation to the mouth, all sorts of tractions, distentions, etc., habits of many kinds that young children and sometimes older children get into, of handling their mouths in many various ways. I do not need to do more than cite the numerous other causes of malocclusion with which you are familiar, but there are at least thirty-five conditions which have been mentioned by witnesses as causes of this kind of deformity. Rickets is one, and osteomalacia, and tuberculosis, syphilis, scarlatina, measles; pathological injuries of various kinds coming from these organic disasters. Then there is the group of popular acquired diseases such as adenoids, enlarged tonsils, chronic rhinitis, and deviated septum. Then there is a class of congenital deformities: cleft palate, harelip, supernumerary teeth, infranumerary teeth, hypertrophied tongue (such as we see in cretinism), atrophied tongue, abnormal frenum, and other forms of maldevelopment. Early loss of the decidious teeth, early loss of the permanent teeth, and late development of the permanent teeth, complete what, I think, is a fairly complete list of paradontic occasions or causes to be found in the literature of malocclusion.

Of all these habitual occasions of malocclusion I have no doubt that sucking, the first one mentioned, is of most theoretical interest; first, because it is the most common, and second, because it is most widely involved with the depths of human nature. Sucking and biting, I do not need to

suggest, may be seen well in most all young brute animals and may be seen particularly well in pups, in many respects like children. The sexual relations of sucking have been much discussed of late. The great Freud has made some revolutionary and sensational suggestions in regard to it, and one in particular, that this is one of Nature's means of bridging the sexual instinct from one generation to the next; he holds the opinion that the sucking of anything affords sexual satisfaction, more or less. I think it is generally admitted now by most neurologists that Freud's opinions regarding sexual matters, of which this is an example, are in places exaggerated. To the maternal suckee, so to say, often there is some or even great satisfaction, but it is hard to see that there is much satisfaction to the sucker, unless the process produces something worth while, as, for example, milk or tobacco smoke! However, in what way the young infant can get into the habit of sucking the thumb, as very many infants do, except on the basis of kinesthetic satisfaction, I am unable to understand unless indeed it be true, as Freud claims, that there really is in it a dim, subconscious sexual satisfaction. But Freud has certainly exaggerated the universality of sexual effectiveness in childhood, whether this be true of sexuality in adult life or not. It certainly is not *necessary*, as we have seen, to bring in sexuality to account for the widespread satisfaction of sucking and biting. Of course a man sucking a cigar has nothing whatever suggesting sexual reference, and the erethistic young man, if anyone, would have it. In children who are sexually precocious (from a deficiency of product of the pineal gland or deficiency of the product of the pituitary body?) and in highly stimulated, unrested children, sucking expressions, it may be, are actually carried over from the mother's breast and nipple to their own potential sexual feelings, but not normally, to any effective degree, I am sure. The widespread muscular (kinesthetic) satisfaction of sucking seems adequate then to explain its great popularity at all ages, but this doubtless merges in the abnormally erethistic and sexually precocious into a true sexual satisfaction, especially, perhaps, in boys. Ellis and Moll explain these relations in an adequate degree.

A well-known New York writer on orthodontia (whose name has escaped me) has offered as an explanation of thumb-sucking that the movement of the tip of the tongue in the process stimulates the chorda-tympani nerve and thence, through the pneumogastric's cardiac branch, increases the heart's action, resulting in increased blood supply to the brain, thereby increasing the circulation of the blood to the brain and inducing a sensation of satisfaction to the child. He illustrates this by the experiment of drinking a glass of water: if the water be swallowed in one gulp it produces only a slight increase of the pulse, but if it is slowly sipped the pulse is greatly augmented. As a physiological problem this, like a million others yet unsolved, is interesting, very, but cerebral congestion does not seem regularly to enhance euphoria, and besides it is such a long way around. It is almost as far-fetched as are some of Dr. Kirk's explanations of caries.

Whatever may be the cause of this habit (and that is a matter of academic discussion of purely theoretic interest), sucking and biting, we may conclude, are almost an innate impulse in humans as in brutes and are continued from infancy on, and become continuous on the basis of kinesthetic satisfaction when no other satisfaction helps. This is, as near as I can make out, the philosophy of sucking. The precise mechanics of the malocclusional deformity itself I need not discuss, because you know and understand it better than I do.

But three basal principles need to be recalled for the understanding of the often shocking effects of sucking the objects we have mentioned above and others during the first eight years of life; mere mention and not elaboration of these conditions is necessary. The first principle to be kept in mind is the great plasticity of the jaws, especially in babies. This is something I do not need to suggest any further to experienced gentlemen of your profession; but, curiously enough, students do not understand it, but they think of bone as something inherently hard, and more or less unplastic and fixed; but, of course, quite the contrary is true. The bones are extremely plastic, colloidal in nature, and subject to almost any amount of deformity from long-continued impacts and strains. As an example to illustrate this, you sometimes may see a delicate green herb pushing its way through an asphalt pavement. The sprig may be so frail that it could be easily broken with the finger, but it may push its way through a concrete pavement if the light conditions are right, by its low but continuous pressure on what is really a fluid medium. So with the jaws.

The second principle is the vigor and power of the respiratory and inspiratory movements, even in babies. If you wish an example of this, note the enormous cries of some minute and very young infants. It seems sometimes as if the cry were inversely in proportion to the size of the baby, and we sometimes are tempted to ask where they can possibly keep all that sound. Of course lung power is one of the most conspicuous things in the infant, and it has to be exercised in all kinds of ways, and here much muscle is involved.

The third consideration necessary to account for deformity is that long periods of continual pressure are involved, and the frequent repetition of the acts, as in the case of the sucking process. "Pacifiers," bad as they are, are not so bad in some respects as certain other means used by some thoughtless or vicious nurses for the same purpose, but occasionally the results are certainly far more disastrous in infancy. Biting the tongue, either lip, or the hands are conditions in part like those of sucking, but in part also the deformity in this case comes from unilateral continual pressure of one kind or another. Mouth-breathing (due to nasal or pharyngeal obstruction and made worse by tonsilar hypertrophy) is now not so common as formerly, before it was customary to keep adenoids out of the pharynx.

A fourth and last principle underlying paradontia includes the fact of arbitrary postures of the mouth and of the hands (such as the common dragging on the lower jaw), which are innumerable and undescribed and do not need to be further discussed. These represent habits theoretically as "pure" as any we could find, because we know that there is always at least a dim satisfaction coming from such muscular actions. These habits often start by chance, but are continued by this complex and overmastering power of habituation, and soon become fixed just as firmly as the shape of an old deformed bone, or any other part of the organism as it grows and hardens.

Modern medicine is inherently and ever more *prophylactic;* it is the *duty* of the dentist, the nursery maid, the physical educator, and the parent to *prevent the formation* of malocclusional habits. To this end the surest road in the long run, it seems to me, is vigorous biological normality, busy normality, I have called it. Try to make the child normal by natural hygienic means, and keep him usefully busy with natural out-of-door muscular distractions, for this kind of fatigue leads to much sleep, sound and deep, that may be called out-of-door sleep, whether indoors or out. Anything which tends to nourish the nerve-centers will tend to lessen all those tendencies toward habitual exaggeration of any one movement or kind of movement. The old verse of our dear old grandmothers, "And Satan will find mischief still for idle hands to do," is as true of babies as of older folks, and as true of lips and tongues and diaphragms and pterygoids as it is of the hands.

Modern systems of elementary education, those, for example, of Seguin, Fröbel, Montessori, Witte, Sidis, Stoner, Berle, and others, plus adequate playground systems, are doing much and are going to do much more toward developing this *busy normality* in the child. I have great respect and hopefulness for the great new system of playground education, municipal playgrounds conducted by trained experts; there is no assignable limit for the good that playgrounds so conducted can do for children, especially in the cities. The system teaches them perhaps, for the first time, self-respect, shows them their capabilities that often would be developed in no other way. Above all, there is in the system no end of opportunity for instruction of the most advanced, most useful, and yet of the simplest kind. One of my pet hobbies is that many useful, and indeed vastly important things, which children are perfectly competent to receive greatly to their future benefit are kept away from them unjustly on the mistaken supposition that their minds are not far enough advanced to receive them. The young child of average intelligence, you may be certain, can be told many things of the most fundamental importance to their complex human lives, provided the teller knows how to do it. The impression on the subconscious mind made early in such a way may be effective throughout the life of the individual; the wisdom of life especially. What a shameful waste not to inform the child how to live, so that the crises of life, especially the emotional life, may be anticipated to some extent and sad experientia be not their only teacher!

Every intelligent child would be interested, for example, in the theory of habit; it is a matter of universal interest. If you explain to the child of average intelligence, even if he forgets in half an hour, the universality and the force of the principle of habituation, the subconscious impression made upon him will serve as a more or less unconscious rule of behavior whether he thinks of it consciously or not. This is one of the points I have in mind in speaking of the intelligent education of these patients. *Explaining* things to them—is the simple enough principle of modern psycho-therapeutics—full explanation and, to some extent, sanction of the habit. A child should not be punished or abused because he has a habit, but he must be led to *understand* the human nature of it and must be able to work out his own gradual cure. No other method is scientific, no easier way is sane or safe to the delicate personality of the young child, as we shall explain more fully shortly. For the general practitioner of the dental or other specialty of medicine, serving an office practice, this makes, in slang terms, a hard proposition. Such habits are more readily prevented than safely checked.

You cannot do much in practice unless it is in your own household, or unless you can deeply convince the parents of the essential importance of rightly controlling the habit, and obtain their full and active cooperation. In many cases at least, however, it is certain that if you start far enough back, by giving a course of out-of-door hygiene, getting them to go "back to the farm" for several months, six or so, and so fundamentally to equalize and invigorate the nervous system, thus making it so active and vigorous that this particular neuromuscular action will be practically swamped out, you may get results. I certainly would not try to "break" a habit as such; but it may be safely and surely, most often, bent and persuaded out of its wrong growth.

The educational system, it seems to me, is *inherently defective,* in that professionally it is not based on a modern knowledge of child-life nor on the nature of the neuromuscular mechanism. One thing in particular that we need to get out of our teachers' consciousness, is that children are "little men and women." They are, of course, just as different from men and women almost as can be, and different in the most fundamental respects. One of the chief practical difficulties in a general reform of this matter is clearly there are far too many children to the teacher. The public has not realized yet what a good *financial* investment education is, and the taxpayers do not spend one-third as much as they should on it; they should spend four times as much as they do now, and have classes of fifteen pupils instead of from thirty to sixty, and then have the teachers properly "fitted"; professional teachers instead of girls waiting for husbands to appear at papa's front door. All the intensive modes of education mentioned are making a start in the right direction, but see what a long road this is!

The breaking of a well-fixed psychomotor habit (as has been anticipated) is wholly, for the most part, unjustifiable. A habit is not like a femur bone which may be forcibly broken and in time made to grow again straight, but, on the other hand, habit is a part of the child's organism, part of his brain action and his muscle action, ingrained in every portion of the mind and body. Too much shock to such a mechanism when young deranges it and may set up very serious undercurrents in the nervous system. As you are doubtless aware, from 60 to 70 per cent. at least of chorea cases are known to start in some sort of nervous shock, usually fright, and it is obvious that an acute form of shock might come from the strict, absolute insistence that a child should not continue certain deeply ingrained habits. It is not safe to break, in that literal sense, those neuromuscular habits; too much shock in such a mechanism deranges it; one stops any child-activity at one's peril, unless it be done along natural methods.

The theoretic cure of a bad habit is a threefold process of (1) normalizing, (2) displacement (substitution), plus (3) enlightenment, the purpose being displacement. The normal way of breaking a habit, the safe way, is to displace it with some-

thing else. The neuromuscular mechanism is far too subtle and sensitive a thing, and these involuntry habits involve too much of a strain, to make it safe to insist that it be broken off short, so to speak. Enlightenment is the crying need of the times, in matters of diet, sex, and how to live in general, and education so far has neglected them. I think the average normal child can be more or less controlled by way of his own interest; and, as I have already said, I believe that the average child even as young as five or six years, can be guided wisely if properly approached along the lines of psychotherapeutics, careful, elaborate explanation adapted to his years, pointing out the really fundamental things. I think a child under such instruction, when it is expedient, can be impressed, or at least his subconscious mind can be impressed, so that it would be effective in many of these habit conditions. But one must start with a normal, that is an out-door, nervous system and musculature.

"Back to the farm!" is one of the most prominent "slogans" of the day. To my mind one of the greatest problems of our crowded civilization is how to get people, when they have children to raise, to go back to the farm, out into the country where there is absolute necessity of building up a neuro-musculo-glandular system which will not allow itself to be beguiled into one-sidedness, into bad habits unworthy the independence of human womanhood and manhood.

Out-of-door exercise and plenty of sleep—that is the dual but shortest road to a strong nervous system. Than to live in some place or in some way so that these are amply available, I do not know any other certain way; in fact I would suggest in every case of bad paradontic or other bad habit that we should urge on the parents the absolute necessity of the victim getting a long and real vaction in the real country. I believe that ordinarily that will have more immediate benefit than anything else they could do, and be wholly safe and hygienic, and as speedy, too, in its action as the conditions of organic life allow.

A change of location and of surroundings assists in breaking up habits in so far as the changes invigorate the organism. When you travel in Europe, hoping to get away from your worries, you hardly succeed in leaving them behind, but in so far as travel or change invigorates, as it often does, I should say that it would lessen all abnormal functional conditions, these malocclusional habits among the rest.

Unless you have had much personal experience and unless you have thought about these habits as found in even the average child, you are not apt to realize how very firmly fixed they become. The most trivial habit soon becomes implanted so that it is *a part of the organism* even in normal individuals, and where there is any lack of inhibitory control, in a child, notably, who is slightly defective, it will become in the most literal and most obvious sense a part of the organism. This is a physiological process, the means to economy taken by the nervous system in the youthful individual. There is a very elaborate inhibitory mechanism in the individual after adolescence, throughout the upper part of the cortex of the brain, if not in the cord and stem, and that is the normal road by which to go after these habits rather than any means which would involve breaking them off short. Restraint and guidance from the neopallium, the upper layers of the cortex cerebri, inhibition through guidance, rather than trauma leading to something akin to paralysis! It may be a long-long way to this particular Tipperary, this education as to how to live, but it is the road that we all desire to see worn hard and smooth at once by the world's ever-hastening feet. The really *right* road, the ultimate golden street of all, is Prevention Way, narrow but straight, leading directly to the heaven of Normal Humanity, victim only of its own deliberate faults.

COMPARATIVE MORTALITY EXPERIENCE AMONG ABSTAINERS AND NON-ABSTAINERS FROM ALCOHOL.*

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DURING no period in the history of the world has the question of the effects of alcohol been so generally considered by all classes of people as during the past year. The rulers of most of the great nations, statesmen, commanders of the army and navy, scientists and philanthropists have all given it serious consideration and study. Statisticians have aided with the work, but unfortunately the Medico-Actuarial Committee were unable to include in their presentation material which would, undoubtedly, have furnished the most accurate scientific data bearing upon this important subject.

As the Mutual Life Insurance Company of New York, through its able Actuary, Mr. Emory McClintock, was the first company in the United States to present statistics of definite value on the subject, it seemed appropriate at this time to present the latest experience of the same company, calculated and tabulated along the lines followed by the Medico-Actuarial Committee in their report. Although the volume of material is not large, care has been taken to make it homogeneous and as free as possible from sources of error likely to affect its scientific value. To eliminate conflicting elements, manifest as a result of habitat, the consideration, confined to domestic males, eliminated those residing in South Carolina, Georgia, Florida, Mississippi, Arkansas, Louisiana, Oklahoma, and Texas. To avoid the errors due to the influence of certain occupations, it has been divided for study into five occupation classes having the largest number of entrants, as follows:

TABLE A.—ISSUE OF 1907-1912. DOMESTIC MALES

Class	Occupation	Insured		Per Cent. of Total Entrants	
		No.	Amount	No.	Amount
224	Indoor clerical service	15,402	$27,522,750	9 3	5 9
226	Merchants and dealers	22,379	76,704,200	13 6	16 6
229	Salesmen (not in liquor business)	13,132	24,495,225	8 0	5 3
233	Farmers	27,859	50,569,450	16 9	10 9
240	Factories and mills proprietors, managers and superintendents	5,824	33,475,825	3 5	7.2
	Total	84,596	$212,767,450	51 3	45.9

These five classes constitute about one-half of the total number of entrants and are divided into three

*Read at the twenty-sixth annual meeting of the Association of Life Insurance Medical Directors of America, Oct. 14, 1915.

groups, namely: (1) Total Abstainers; (2) Temperate (occasional but not daily users); and (3) Moderate (steady, free, though not excessive users).

I will next present Table "B" containing the five occupation classes referred to, that each may be considered in detail.

ease among the abstainers and only 1 of each among the temperate; 2 deaths from appendicitis among abstainers and none among the temperate, and, lastly, 3 suicides among the abstainers and only 2 among the temperate. These factors alone would account for part of the difference, and it is possible that some of those claiming to be abstainers made

TABLE B.—ISSUE OF 1907-1912. EXPOSURE OF 1907-1913. SUMMARY. ALL AGES—POLICY YEARS 1-6 BY THE M. A. TABLE

	ON APPLICATIONS				ON AMOUNTS			
	EXPOSURES	DEATHS		RATIO	EXPOSURES	DEATH-CLAIMS		RATIO
		ACTUAL	EXPECTED			ACTUAL	EXPECTED	
CLASS 224—INDOOR CLERICAL SERVICE								
Total class	39,657	90	192.110	46.9	$70,181,750	$174,700	$345,864	50.5
Total abstainer	16,979	37	76.816	48.1	26,726,975	61,600	122,549	50.3
Temperate	19,926	44	99.790	44.0	38,139,375	90,600	193,151	46.9
Moderate	2,752	9	15.504	58.1	5,315,400	22,500	30,164	74.5
CLASS 226—MERCHANTS AND DEALERS								
Total class	58,090	243	389.150	62.5	$197,852,400	$1,058,900	$1,491,012	71.1
Total abstainer	16,565	42	104.400	40.2	41,421,125	91,800	281,631	32.6
Temperate	34,616	163	236.324	69.1	125,879,200	868,300	949,396	91.2
Moderate	6,909	38	48.426	78.7	30,552,075	98,800	260,012	38.0
CLASS 229—SALESMEN (NOT IN LIQUOR BUSINESS)								
Total Class	32,157	97	159.918	60.6	$59,569,825	$192,400	$307,907	62.5
Total abstainer	11,443	30	52.144	57.6	16,922,400	43,200	78,997	54.9
Temperate	17,987	55	93.256	58.9	36,541,125	123,200	195,005	63.2
Moderate	2,729	12	14.518	82.7	6,106,300	26,000	33,905	76.7
CLASS 233—FARMERS								
Total class	65,399	243	374.109	64.9	$116,901,250	$467,300	$709,017	65.9
Total abstainer	32,026	103	170.966	60.3	53,510,400	211,000	304,379	69.4
Temperate	32,317	133	196.122	67.8	60,798,850	241,800	388,671	62.9
Moderate	1,058	7	7.021	99.4	2,592,000	14,500	15,944	72.1
CLASS 240—FACTORIES AND MILLS—PROPRIETORS, MANAGERS AND SUPERINTENDENTS								
Total class	15,718	76	114.365	66.4	$88,672,725	$358,600	$709,895	50.6
Total abstainer	3,651	17	26.014	65.5	16,020,225	66,600	120,012	55.5
Temperate	10,135	53	74.645	71.0	60,966,525	279,500	504,909	55.3
Moderate	1,934	6	13.706	43.7	11,685,975	12,500	84,911	14.8
TOTAL CLASSES 224, 226, 229, 233 AND 240 COMBINED								
Total class	211,021	749	1229.652	60.9	$533,177,950	$2,251,900	$3,563,725	63.3
Total abstainer	80,664	229	430.340	53.4	154,601,125	474,200	907,621	52.2
Temperate	114,975	448	700.137	64.1	322,325,075	1,606,400	2,231,135	72.0
Moderate	15,382	72	99.175	72.7	56,251,750	171,300	424,969	40.3
Total non-abstainer	130,357	520	799.312	65.0	$378,576,825	$1,777,700	$2,656,104	66.8

Class 224 represents those engaged in indoor clerical service, numbering 15,402, insured by the Mutual Life during the six years from 1907 to 1912, which is 9.3 per cent. of the total number of entrants. The average amount insured was $1,787, and the average amount of death claims paid was $1,941. There were ninety actual deaths as against 192.1 expected deaths, the ratio of actual to expected being 46.9 per cent. by number and 50.5 per cent. by amount. Dividing these into three groups, it is found that 6,523 indoor clerks, or 42.3 per cent. of the total number, who on entering claimed to be abstainers, gave 37 actual deaths and 76.8 expected, a mortality ratio of 48.1 per cent. by number and 50.3 per cent. by amount. The 7,878 temperate, representing 51.1 per cent. of the total clerks gave 44 actual and 99.8 expected, a ratio of 44.0 per cent. by number and 46.9 per cent. by amount. The 1,001 entrants, or 6.5 per cent. who stated that they drank daily but not in excess of the medical limit, showed 9 actual and 15.5 expected deaths, a mortality ratio of 58.1 per cent. by number and 74.5 per cent. by amount. The superiority of the temperate group to the total abstainers in this class is difficult to account for. A study of the cases shows that there were 2 deaths from diabetes among the abstainers and none among the temperate; 3 deaths from apoplexy and 3 from heart disease among the abstainers and only 1 of each among the temperate; 2 deaths from appendicitis among abstainers and none among the temperate, and, lastly, 3 suicides among the abstainers and only 2 among the temperate. These factors alone would account for part of the difference, and it is possible that some of those claiming to be abstainers made false statements as to habits when applying for insurance, or, on the other hand, were abstainers because of impairments concealed from the examiner.

Class 226, merchants and dealers, represents 22,379 insured, or 13.6 per cent. of the total number of entrants with an average amount insured of $3,428, and death claims paid $4,358. The 243 actual as against the 389.2 expected deaths show a ratio of 62.5 per cent. by number and 71.1 per cent. by amount. The 6,500 abstainers, 29.0 per cent. of the total, with 42 actual and 104.4 expected deaths, give a mortality ratio of 40.2 per cent. by number and 32.6 per cent. by amount. The 13,332 entrants in the temperate group, or 59.5 per cent. with 163 actual and 236.3 expected deaths, give a mortality ratio of 69.1 per cent. by number and 91.2 per cent. by amount. Finally, the 2,547 entrants in the moderate group, with 38 actual and 48.4 expected deaths, give a ratio of 78.7 per cent. by number and 38.0 per cent. by amount. The mortality ratio of abstainers in this class is, therefore, superior to the temperate and the latter in turn is superior to the moderate in death-ratio but not in loss-ratio.

Class 229—Traveling Salesmen and Collectors—Not in Liquor Business. Among the 13,132 cases, or 8.0 per cent. of the total number of entrants, there were 97 actual and 159.9 expected deaths.

The mortality ratio was 60.6 per cent. by number and 62.5 per cent. by amount, the average amount insured being $1,865, and the average amount of death claims being $1,984. Of the 4,738 abstainers representing 36.1 per cent of the total number, there were 30 actual and 52.1 expected deaths. The percentage of deaths was 57.6 per cent. and losses 54.9 per cent. The 7,327 entrants in the temperate section, or 55.8 per cent. with 55 actual and 93.3 expected deaths, gave us a mortality ratio of 58.9 per cent. by number and 63.2 per cent. by amount. Finally, the 1,067 moderate drinkers, 8.1 per cent., with 12 actual and 14.5 expected deaths, showed a ratio of 82.7 per cent. by number and 76.7 per cent. by amount. The difference in the death-ratio between the abstainers and temperate was slight, but the former shows a superiority over the latter of 8.3 per cent. in loss-ratio. The abstainers, however, show a superiority over the moderate of 25.1 per cent. by number and 21.8 per cent. by amount.

Class 233, Farmers, constitutes the largest in number of entrants, being 27,859, or 16.9 per cent. of the total, but it is not the largest in amount of insurance. The average amount insured was $1,-815 as compared with $3,428 for the merchants and dealers and $5,748 for the proprietors, managers, and superintendents of factories and mills. The actual deaths were 243, expected 374.1, the mortality ratio being 64.9 per cent. by number and 65.9 per cent. by amount. As a class it furnished the largest number of abstainers, 13,767 or 49.3 per cent. The 103 actual and 171.0 expected deaths gave a mortality ratio of 60.3 per cent. by number and 69.4 per cent. by amount. In the Temperate group there were 13,633 entrants representing 48.8 per cent., with 133 actual and 196.1 expected deaths, giving a mortality ratio of 67.8 per cent. by number and 62.9 per cent. by amount. In the Moderate group there were only 459 entrants, or 1.6 per cent. of the total in this class, giving 7 actual and 7.0 expected deaths, a mortality ratio of 99.4 per cent. by number and 72.1 per cent. by amount. The Abstainers are, therefore, superior to the Temperate group in the death-ratio by 7.5 per cent., but inferior in the loss-ratio by 6.5 per cent. Among the Moderate group the percentage of deaths is 39.19 per cent. above the Abstainers, but the percentage of losses is only about 3 per cent. above.

Class 240, Proprietors, Managers and Superintendents of Factories and Mills—has 5,824 entrants, or 3.5 per cent. of the total. The average amount insured was $5,748 and the average death claim $4,718, and the 76 actual and 114.4 expected deaths give a mortality ratio of 66.4 per cent. by number and 50.6 per cent. by amount. The 1,343 Abstainers, 23.1 per cent. with 17 actual and 26.0 expected deaths show a ratio of 65.5 per cent. by number and 55.5 per cent. by amount. The 3,764 Temperate, 64.7 per cent. with 53 actual and 74.6 expected deaths give a mortality of 71.0 per cent. by number and 55.3 per cent. by amount. On the other hand, the 717 Moderate Drinkers, or 12.3 per cent., give 6 actual as against 13.7 expected deaths, a ratio of 43.7 per cent. by number and only 14.8 per cent. by amount, which is superior to the Abstainers by about 21.8 per cent. by number and 40.7 per cent. by amount. This is the only class in which the Moderate group is superior to both the Abstainers and Temperate and the apparent result is doubtless due to the fact that the numbers are too small to warrant any satisfactory conclusions therefrom.

The combination of the five classes gives a mortality ratio of 53.4 per cent. by number and 52.2 per cent. by amount for Abstainers; 64.1 per cent. by number and 72.0 per cent. by amount for Temperate; and 72.7 per cent. by number and 40.3 per cent. by amount for Moderate. As the mortality ratio for the aggregate experience of the five classes was 69.9 per cent. by number and 63.3 per cent. by amount, the Abstainers show a lower mortality ratio, equivalent to a decrease of 33 deaths or 4 deaths per 10,000 exposures. The Temperate show a higher ratio, which is equivalent to an increase of 22 deaths, or about 2 deaths per 10,000; and the Moderate show a still higher mortality ratio, which is equivalent to an increase of 12 deaths, or 8 per 10,000 exposures. Adding together the Temperate and Moderate groups, there is a mortality ratio for Non-Abstainers of 65.0 per cent. by number and 66.8 per cent. by amount. The non-abstainers are, therefore, inferior to Abstainers by 11.6 per cent. by number and 14.6 per cent. by amount, which is equivalent to an increase of 93 deaths, or 7 per 10,000 exposures.

A careful study of the causes of the deaths showed that, of the decrease of 33 deaths among Abstainers, 28 were from tuberculosis, cancer, apoplexy, heart disease and pneumonia combined, and 5 were from cirrhosis of the liver, Bright's disease, and suicide. Amond the Temperate group, the increase of 22 deaths was chiefly from cancer, apoplexy, heart disease and pneumonia combined, and 5 were from cirrhosis of the liver, Bright's disease and suicide. Of the 12 extra deaths in the Moderate group, 5 were from suicide, 3 from cirrhosis of the liver, 2 from heart disease, and 1 each from pneumonia and Bright's disease.

I will next call your attention to Table "C" showing the ages at which the policies were issued.

As the limited number of deaths does not warrant the study of each class separately, they have been combined and presented so as to show the results for the three respective groups. A study of the table shows that, at every age group, the ratio of the actual to expected deaths is lower with the Abstainers than the Temperate and the mortality of the Temperate is lower than the Moderate. Considering the paucity of the data, regularity of progression at each age-group cannot be expected, but the striking fact remains that there is a difference of nineteen points between the Total Abstainers and the Moderate group, and nine points between the Temperate and the Moderate group.

For the purpose of confirming in a general way the experience of the Mutual Life as to the superiority of the Abstainer class to the Non-Abstainers, I will refer briefly to a few other companies, where a similar class of observations has been reported.

The United Kingdom Temperance and General Provident Institution of England presented its mortality experience of Abstainers and Non-Abstainers, covering a period of 45 years, from 1866 to 1910 inclusive. There were 8,988 actual deaths as against 12,754 expected deaths according to the O. M. table in the Abstainer section; and 14,711 actual as against 15,794 in the Non-Abstainer section. The mortality ratio was, therefore, about 70 per cent. for the former and about 93 per cent. for the latter section, a difference of 23 points in favor of

TABLE C.—ISSUE OF 1907-1912. EXPOSURE OF 1907-1913. SUMMARY BY AGES—POLICY YEARS 1-6. BY THE M.-A. TABLE

Ages	On Applications: Exposures	On Applications: Deaths: Actual	On Applications: Deaths: Expected	On Applications: Ratio	On Amounts: Exposures	On Amounts: Death-claims: Actual	On Amounts: Death-claims: Expected	On Amounts: Ratio
TOTAL ABSTAINERS								
15-19	9,970	27	38 590	69.9	$12,879,375	$38,500	$49,849	77 4
20-29	35,251	73	145 205	50.3	56,244,475	135,100	231,675	58.2
30-39	20,175	45	93,675	48.2	42,108,825	82,400	195,137	42.3
40-49	10,701	37	74,069	50.0	30,610,100	98,500	211,271	46.7
50-59	3,908	37	56 418	65.5	10,869,300	101,200	157,135	64.5
60 and over	659	10	22 383	44.6	1,889,050	18,500	62,554	29.6
15-39	65,396	145	277 470	52.3	111,232,675	256,000	476,661	53 8
40 and over	15,268	84	152 870	54.9	43,368,450	218,200	430,960	50.6
Total	80,664	229	430,340	53.4	$154,601,125	$474,200	$907,621	52 2
TEMPERATE								
15-19	3,451	14	13 388	104.6	$4,774,575	$17,000	$818,553	91.6
20-29	38,384	85	158,443	53.6	74,373,200	132,800	308,189	43.2
30-39	38,218	108	177,967	60.7	107,658,600	459,500	502,954	91.4
40-49	24,711	118	174 182	67.7	91,315,725	456,700	644,954	70.8
50-59	8,757	91	125,739	72.4	39,017,050	442,900	583,277	76.2
60 and over	1,454	32	50, 418	63.4	5,185,925	97,500	173,208	56.3
15-39	80,053	207	349 798	59.2	186,806,375	609,300	829,696	73.1
40 and over	34,922	241	350 339	68 8	135,518,700	997,100	1,401,439	71.2
Total	114,975	148	700 137	64.0	$322,325,075	$1,606,400	$2,231,135	72 0
MODERATE								
15-19	121		.473		$157,375	$	$608	
20-29	4,116	13	17,187	75.7	9,109,500	21,500	37,146	58 1
30-39	5,602	19	26,298	72.2	18,672,125	37,500	87,812	42 8
40-49	3,955	19	28 027	67.8	18,025,025	56,300	129,783	43 4
50-59	1,360	14	19 339	72.4	8,652,225	35,000	119,432	29 3
60 and over	228	7	7 851	88.9	1,635,500	21,000	50,188	41.8
15-39	9,839	32	43 958	72.8	27,939,000	59,000	125,566	47 0
40 and over	5,543	40	55 217	72.4	28,312,750	112,300	299,403	37.5
Total	15,382	72	99 175	72.6	$56,251,750	$171,300	$424,969	40.3

the Abstainers. In the last quinquennium, 1906-1910, which corresponds approximately with the Mutual Life experience, 1907-1912, the mortality ratio was 65 per cent. for Abstainers and 83 per cent. for Non-Abstainers, a difference of 18 points in favor of Abstainers.

The Sceptre Life Assurance Company of England submitted the mortality experience of Abstainers and Non-Abstainers for the 27 years from 1884 to 1910. There were 1,214 actual and 2,311 expected deaths in the Abstainer section; and 2,674 actual and 3,352 expected deaths in the Non-Abstainer section, the mortality ratio being about 53 per cent. for the former and about 80 per cent. for the latter, a difference of 27 points. In the period from 1904 to 1910 there were 422 actual and 871 expected deaths in the Abstainer section; and 794 actual and 982 expected deaths in the Non-Abstainer section, the ratio being about 49 per cent. for the former and about 81 per cent. for the latter, a difference of 32 points.

The Scottish Temperance Life Assurance Company of Scotland published the mortality experience of Abstainers and Non-Abstainers for the 25 years from 1883 to 1907. It showed a ratio of 46 per cent. for Abstainers and 64 per cent. for Non-Abstainers, a difference of 18 points. There were 718 actual and 1,545 expected deaths for the former and 348 actual and 542 expected deaths for the latter. In the last quinquennium, 1903-1907, there were 298 actual and 609 expected deaths in the Abstainer and 123 actual and 223 expected deaths in the Non-Abstainer section, the mortality ratio being 49 per cent. for the former and 55 per cent. for the latter section, a difference of 6 points.

The Australian Temperance and General Life Assurance Society of Australia, in the 10 year period from 1900 to 1910, showed a loss-ratio of about 47 per cent. for Abstainers and about 76 per cent. for Non-Abstainers, a difference of 29 points in favor of Abstainers.

The Manufacturers' Life Insurance Company of Canada, as recorded in Dr. T. F. McMahon's admirable paper, read before this Association, showed a mortality ratio of about 37 per cent. for Abstainers and about 66 per cent. for Non-Abstainers, a difference of 29 points in 9 years' experience from 1902 to 1910.

Dr. E. W. Dwight, in his discussion of Dr. McMahon's paper in 1911, reported the experience of the New England Mutual Life Insurance Company as follows: Abstainers show roughly, a mortality of 59 per cent. of the American Table; Rarely Use, 71 per cent.; Temperate, 84 per cent., and Moderate, 125 per cent. He further presented an interesting comparison showing the results with reference to tobacco. "The Total Abstainers from tobacco had a mortality of 57 per cent. as against 59 per cent. for the Total Abstainer from alcohol; the Rarely Use, 72 per cent. as against 71 per cent. from alcohol; the Temperate, 84 per cent. as against 84 per cent. from alcohol, and the Moderate, 93 per cent. as against 125 per cent. from alcohol." Referring to numbers, Dr. Dwight further stated: "Out of 180,000 cards, 42,700 were total abstainers from alcohol—at least they said they were—while the total abstainers from tobacco were 41,000—almost exactly the same number; 13,000 rarely used tobacco, while 20,000 rarely used alcohol.

In October, 1913, Dr. R. L. Lounsberry reported before this Association the experience of the Security Mutual Life Insurance Company with Total Abstainers, but unfortunately, did not have the results with Non-Abstainers of the same period for comparison. The total number of exposures was 24,725; Actual Losses, 80; Expected Losses by American Table, 240.58; Ratio, 33.25 per cent. By

amounts the figures were: Total Exposed to Risk, $39,337,044; Actual Losses, $188,160; Expected Losses, $396,388; Ratio, 47.47 per cent.

A—Abstainers; B—Beer or wine drinkers; D—Whiskey drinkers and a few large users of beer or wine.

	Number of Policies	Number of Deaths	Expected Death Loss	Actual Death Loss	Per Cent. of Expected Death Loss
AGES 15 TO 29					
A	47,293	1,298	$4,616,350	$2,321,656	50 29
B	17,156	512	2,063,651	1,204,635	58 37
D	3,977	140	630,643	378,449	60 01
AGES 30 TO 39					
A	38,841	1,255	5,755,681	2,824,570	49 07
B	17,177	598	3,336,726	1,614,659	48 39
D	7,363	296	1,804,942	1,073,242	59 46
AGES 40 TO 49					
A	15,802	830	4,351,042	2,212,873	50 86
B	6,838	405	2,546,517	1,391,599	54 65
D	3,952	285	1,845,384	1,157,160	62 71
AGES 50 TO 59					
A	4,315	497	2,518,685	1,700,857	67 53
B	1,800	231	1,412,400	809,215	57 29
D	1,242	193	1,196,951	1,053,429	88 01
AGES 60 TO 69					
A	541	130	667,418	432,213	64 76
B	227	51	323,072	242,244	74 98
D	151	34	292,204	195,026	66 74
AGES 70 AND UPWARD (FULL PAID UNDER THEIR NEW NUMBERS)					
A	16	14	12,953	24,842	191 79
B	2	1	200	94	47 00
D	1	0	483	0	0 00
TOTAL—ALL AGES					
A	106,808	4,024	17,922,129	9,517,011	53 10
B	43,200	1,798	9,682,566	5,262,446	54 35
D	16,686	948	5,770,607	3,857,306	66 84
CLASS B					
Under age 40	34,333	1,110	$5,400,377	$2,819,294	52 21
Age 40 and over	8,867	688	4,282,189	2,443,152	57 05
Total	43,200	1798	$9,682,566	$5,262,446	54 35
CLASS D					
Under age 40	11,340	436	$2,435,585	$1,451,691	59 60
Age 40 and over	5,346	512	3,335,022	2,405,615	72 13
Total	16,686	948	$5,770,607	$3,857,306	66 84

In the June, 1915, number of the *American Underwriter* the editor, Mr. Edward Bunnell Phelps, presented a tabulation furnished by the Actuarial Department of the Northwestern Mutual Life Insurance Company showing the mortality experience of that company on abstainers and non-abstainers for the years 1886 to 1895 inclusive, figured to the end of 1900. As the tables are of interest, in that they furnish results among beer and wine drinkers and whiskey drinkers, in separate classes, I have taken the liberty of copying them and presenting them for inspection. (See above.)

The ratio of actual to expected mortality for all ages among the drinkers of beer and light wines was but 54.35 per cent. as against 66.84 per cent. for whiskey drinkers, a difference of 12.49 per cent., or about ten points less than that found between abstainers and non-abstainers, as an average experience of all observations quoted, with the exception of this group. It might be noted, however, that in age-groups 30 to 39 and 50 to 59, the ratios were lower in the case of users of beer and light wines than in the case of Total Abstainers, and the total ratio of actual to expected mortality was but 11.15 per cent. higher in the case of Non-Abstainers as compared with Total Abstainers. As it is stated in the article quoted that the Northwestern Mutual retained the right to cancel policies for intemperance during the lifetime of the insured, it is possible that the striking differences in their results may in a measure be accounted for by that fact. No mention is made as to the mortality table followed in compiling their figures and it has been deemed best to exclude them in estimating the approximate totals of all observations.

Returning to the consideration of the experience of the Mutual Life Insurance Company, I will refer to the facts brought out by Mr. McClintock in 1895, showing the results with Abstainers and Non-Abstainers for the 15 years from 1875 to 1889. The available material started with the year 1875 when the company's application blank first contained the direct question as to the use of alcohol, requiring a definite answer, "Yes" or "No." The experience was based on amount of insurance rather than policies, and the American Table was adopted as the standard for comparison. To eliminate the element of medical selection, 40 per cent. of the loss expected by the Standard Table was taken for the first policy year; 70 per cent. for the second, third and fourth policy years, and 87.5 per cent. for each policy year after the fifth. The maximum expected loss among Abstainers was $5,455,669, whereas the actual loss was $4,251,050, a ratio of 77.8 per cent. With the Non-Abstainers the expected was $9,829,462, and the actual $9,469,407, a ratio of 96.6 per cent., a difference of 18.8 points in favor of Abstainers.

For further study and comparison, I present Table "D" giving ages at issue and results.

In the earlier period, 1875 to 1888, the Abstainers gave a loss-ratio of 71 per cent. for ages 15-39, and 85 per cent. for ages 40 and over, a difference of 14 per cent. in favor of the younger age group; and the Non-Abstainers gave a loss-ratio of 83 per cent. for ages 15-39 and 107 per cent. for ages

TABLE D.—ISSUE OF 1875-1888. EXPOSURE OF 1875-1889. SUMMARY BY AGES—POLICY YEARS 1-15 BY THE AMERICAN TABLE, GRADED

Ages	ABSTAINERS			NON-ABSTAINERS		
	DEATH-CLAIMS		Ratio	DEATH-CLAIMS		Ratio
	Expected	Actual		Expected	Actual	
Below 20	$14,499	$30,500	210.5	$6,060	$7,500	123.8
20-29	968,558	708,800	73.0	1,252,186	975,700	78.0
30-39	1,690,450	1,157,950	68.6	3,179,573	2,705,150	84.9
40-49	1,410,184	1,038,100	73.6	2,895,750	2,767,775	95.5
50-59	978,863	996,200	101.6	1,884,391	2,288,100	121.5
60-69	373,321	315,500	84.6	594,919	694,182	116.6
Above 69	19,794	4,000	20.2	16,583	31,000	186.9
15-39	2,673,507	1,897,250	71.1	4,437,819	3,688,350	83.0
40 and over	2,782,162	2,353,800	84.7	5,391,643	5,781,057	107.5
Total	$5,455,669	$4,251,050	77.8	$9,829,462	$9,469,407	96.6

Issue of 1907-1912 Exposure of 1907-1913. Summary by Ages—Policy Years 1-6 By the M. A. Table

Ages	On Applications				On Amounts			
	Exposures	Death-Actual	Death-Expected	Ratio	Exposures	Death-Actual	Death-Expected	Ratio
Abstainers								
15-19	9,970	27	38 500	69 9	$12,879,375	$38,500	$49 [illegible]	77 [illegible]
20-29	35,251	73	145 205	50 3	56,244,475	135,100	231,075	58 2
30-39	20,175	45	93 675	48.2	42,108,825	82,400	195,137	42 3
40-49	10,701	37	74 069	50 0	30,610,100	98,500	211,271	46 7
50-59	3,908	37	56 118	65.5	10,869,300	101,200	157,135	64 5
60 and over	659	10	22 383	44.6	1,889,050	18,500	62,554	29 6
15-39	65,396	145	277 470	52 3	111,232,675	256,000	476,661	53 8
40 and over	15,268	84	152 870	54.9	43,368,450	218,200	430,960	50 6
Total	80,664	229	430 340	53.4	$154,601,125	$474,200	$907,621	52 2
Non-Abstainers								
15-19	3,572	14	13 861	101.1	$4,931,950	$ 17,000	$ 19,161	88 7
20-29	42,500	98	175 630	55.8	83,482,700	154,300	345,335	44 7
30-39	43,820	127	204 265	62.2	126,330,725	497,000	590,766	84 0
40-49	28,666	137	202 209	67.8	109,340,750	513,000	774,737	66 2
50-59	10,117	105	145 078	72.3	47,669,275	477,900	702,709	67 9
60 and over	1,682	39	58,269	67.1	6,821,425	118,500	223,396	53 1
15-39	89,892	239	393 756	60.7	214,745,375	668,300	955,262	70 2
40 and over	40,465	281	405 556	69 3	163,831,450	1,109 400	1,700,842	65 2
Total	130,357	520	799 312	65 0	$378,576,825	$1,777,700	$2,656,104	66 8

40 and over, a difference of 24 per cent. in favor of the younger group.

In the later period, 1907 to 1912, the Abstainers exhibit a loss-ratio of 53.8 per cent. for ages 15-39, and 50.6 per cent. for ages 40 and over; and the Non-Abstainers give a loss-ratio of 70.2 per cent. for ages 15-39, and 65.2 per cent. for ages 40 and over. These ratios are very consistent in the second period for the reason that the proportion of Abstainers that begin drinking above middle age is supposed to be smaller than below middle age. A higher loss-ratio is found, therefore, in the younger group than in the older among Abstainers. The higher ratio among the Non-Abstainers in the younger age group is probably due to the same cause, namely, that the proportion of intemperate that become hard drinkers is larger at the younger than at the older ages. In the earlier period just the contrary is true; the younger age group shows a diminution of 14 points among Abstainers and 24 points among Non-Abstainers as compared with the older age group. This anomaly in the earlier period may be due to two causes: First, the use of the American Table as a standard of comparison instead of the M. A. Table accounts largely for the difference in the loss-ratio observed between those entering at young and old ages, as the rate of mortality by the American Table is 170 per cent. that of the M. A. Table up to age 40, and then the ratio decreases rapidly to age 70, when it is 100.5 per cent.; second, the statistics in the earlier period were not homogeneous. They were based upon the total Domestic Business, whereas in the later period, only 5 occupation classes were taken and the Southern States were eliminated. This lack of homogeneity is also responsible for the greater difference of the mortality ratios between Abstainers and Non-Abstainers of the first period, as compared with the second period, there being a difference of 18.8 points in favor of Abstainers in the former and but 14.6 points in the latter, calculated by amounts, and only 11.6 points by applications.

Owing to the technical differences in the experiences quoted and standards followed in calculation, it is impossible to summarize accurately the total results of all of the figures submitted from the various companies, but a general observation excluding the Northwestern, allowing for these differences, furnishes an interesting conclusion. It shows that, roughly, the average mortality ratio among Total Abstainers from alcohol is 68.4 per cent., whereas that of the Non-Abstainers is 91.5 per cent., a difference of 23.1 per cent. This means a reduction of about 2 1 3 years in the average life of the Non-Abstainer, below that of the Abstainer. Although somewhat less than the period indicated as a result of previous calculations, it is most significant and far-reaching in its importance.

At a time when the attention of the entire world is directed to the question of the effects of alcohol, it is well to have as reliable data as possible from which to form conclusions. I submit, therefore, to this Association, as the representative body dealing with medical statistics, this contribution, trusting that Table "B" may serve, until a larger volume of material is presented, as an accurate scientific standard of the comparative mortality among Abstainers and Non-Abstainers from alcohol.

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DEMENTIA AND MULTIPLE TUBERCULOUS BRAIN ABSCESSES.

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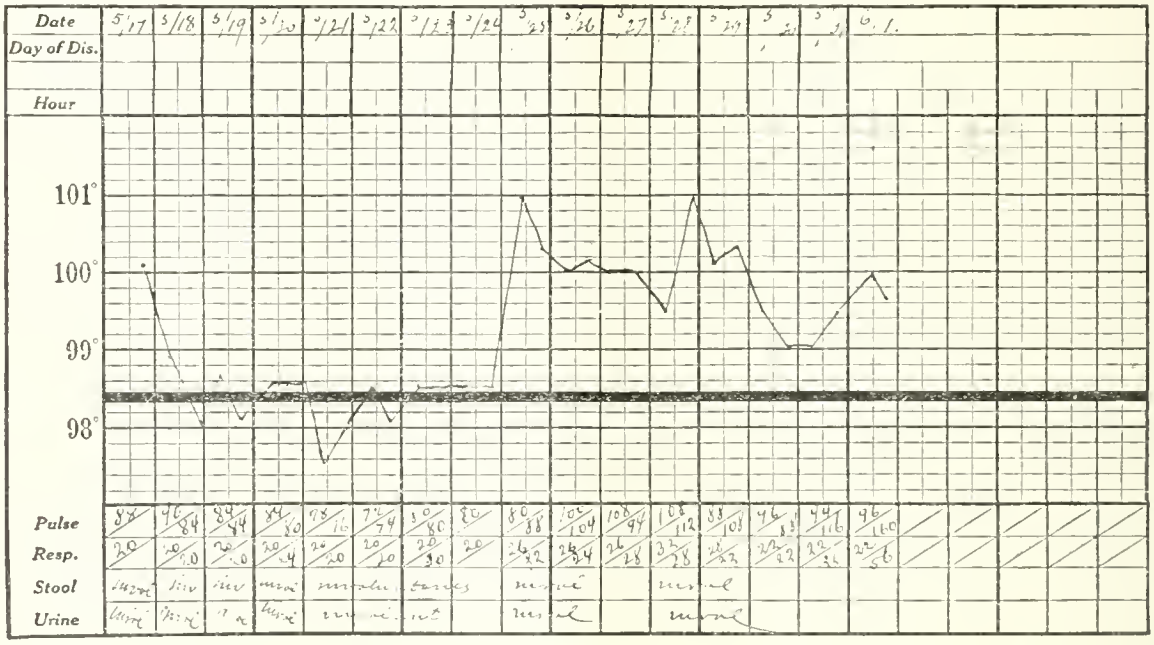
Multiple brain abscesses are, as a rule, of metastatic origin, being caused by some suppuration in organs more or less remotely situated from the brain tissues proper. Of these organs the lungs, when affected, are the most frequent cause of these abscesses, and any lung lesion, as empyema, pneumonia, putrid bronchitis, abscess, or tuberculosis may be their primary cause. According to Roger[1] there were altogether about eight cases reported in which tuberculosis of the lungs was the original cause of brain abscesses, and such an etiology is justly considered very rare and even exceptional. Much rarer still is a simultaneous occurrence of multiple cerebral abscesses and dementia, and it is

occasionally very hard to interpret such cases properly. I mean to say that cases do occur in which multiple brain abscesses are associated with some mental disorder, in which both mental and nervous symptoms are equally pronounced, and in which an explanation of these symptoms, of their mutual relationship, of their diagnosis, is quite difficult. Such was the case in our patient:

Mr. K., 60 years old, a widower. He entered the Cook County Hospital on May 17, 1915, complaining of headache, cough, general weakness, and pain in the chest. These troubles, he said, had existed for about ten days, and began with a slight chill. He did not go to bed, however, until two days before he entered the hospital. The pain in the chest was especially severe during deep breathing. The cough was moist, but without blood. Any previous diseases he denied, but his daughter stated that he was an inmate of an insane asylum some time before. It could not be ascertained how long he had been in the asylum, or what was the nature of the psychosis he had been suffering from. The patient has been drinking eight or ten glasses of beer daily, and about two glasses of whiskey. The examination revealed a rather poorly nourished white man, weighing about 145 pounds. He was brought to the



ward on a stretcher, was very apathetic, refused to answer questions, or answered them only after repeated urging, and often contradicted himself. Obviously, any history obtained from him must be unreliable. He had involuntary discharges on admission, and a temperature of 100.2°, respiration 20, pulse 88 (see chart). The physical examination did not reveal any cranial anomalies, or head injuries, or any disease of the nose, ears, etc. The teeth of the upper jaw were missing, and the lower jaw showed badly decayed stumps and a marked pyorrhea. The tongue was coated and tremulous, the chest symmetrical and well developed. There were no râles in the lungs, no areas of dullness, though the breath sounds were high pitched and harsh over the left chest just below the clavicle. The abdomen and genitalia showed nothing abnormal. The sensibility, the reflexes, including the pupils, the fundi were normal, while the bladder and rectum reflexes were lost, *i.e.* there was incontinence of both. There was some rigidity in the legs with a questionable Babinski on both sides. A proper neurological examination could not be made as the patient did not cooperate, in fact he resisted any examination, and refused to answer most of the questions. He was, as we said, very dull, apathetic, and completely disoriented as to time, place, persons, and recent events. The slightest mental effort would tire him out, and then he would not even attempt to answer the simplest questions. The sputum showed the presence of pneumococci, but no tubercle bacilli. The urine, blood, and spinal fluid were normal. The blood pressure was 125 systolic, 90 diastolic.

During the patient's stay in the hospital he developed, six days after his admission, additional mental symptoms. Thus he aimlessly walked about the ward hiding the drinking cups under beds. But soon, about two days later, he improved and wanted to go home. Suddenly, however, on May 25, he showed a rise in temperature, accompanied by clonic convulsions which first were general, but shortly became localized in the face, left shoulder, and left hand. A new spinal puncture gave a clear, serous fluid, under slightly increased pressure, with no microorganisms in it, but a positive globulin reaction. At noon of the same day the head and the eyes, which were very much congested, were turned to the right. The pupillary reaction was present, but very sluggish, neck rigidity was absent. The convulsions were rapidly following each other in the form of rapid twitchings in the face, left arm, and hand. The blood count gave 7,200 leucocytes. The patient was very irrational and resistive. The following day the same symptoms, conjugated deviation of the eyes and head toward the right, marked congestion of the eyes, the same continuous convulsions and involuntary discharges. The fundi showed no changes, and there was some response to painful stimuli, but none to questions. On May 28, *i.e.* eleven days after admission to the hospital, the convulsions ceased. The patient became semi-stuporous, rigid, and developed some râles in the lungs. Three days later, June 1, he died, a week after the onset of the brain symptoms, two weeks after entrance to the hospital, and three weeks after the beginning of the disease.

From this brief record it can be seen that no neuropathological symptoms or signs could be discovered at the time the patient was admitted to the hospital, but mental symptoms were quite evident, and a tentative diagnosis of senile dementia was made. The important brain symptoms, as convulsions, conjugated deviation of the eyes and head showed a week later, the convulsions having had the form of so-called epilepsia continua, *i.e.* there were continuous clonic contractions in the left leg, left arm, and face which persisted day and night until the patient became stuporous. We assumed that the epilepsia continua was caused by some meningeal or cortical irritation, and a diagnosis of internal hemorrhagic pachymeningitis was made. Such a diagnosis is, according to Oppenheim,[2] more or less justified when the above-mentioned symptoms occur in the presence of alcoholism, senile

dementia, skull lesions, etc. The necropsy, however, showed nothing of the kind:

The meninges were normal in appearance, and showed no adhesions, but the pia-arachnoid membranes were raised from the cortex by a generous layer of clear cerebrospinal fluid. The surface of the hemispheres was not flattened, but the right hemisphere was bulging and fluctuating, especially around the middle portion of the brain, along the fissure of Rolando. The brain tissue was here very soft and moist. Frontal sections of the brain revealed the presence of multiple sharply defined abscesses varying in size from that of an English walnut to a hazelnut. The largest one was situated on the right side just *beneath* the motor area of the cortex, and corresponded to the point of fluctuation mentioned above. Another of smaller size was found in the left hemisphere. The abscesses did not involve the large ganglia, did not communicate with the ventricles, had no capsules and were separated from the cortex by an area of seemingly normal white substance. The abscess cavities were filled with a pea-green to yellow colored pus of a very offensive odor. Smaller abscesses to the number of six were found in the parietal and occipital lobes, and patches of encephalitis and softening were found in the paracentral lobe. The cerebellum, pons, and medulla were normal. In addition multiple abscesses were found in the kidneys, the pus having shown the same properties as in the brain abscesses. Cultures and smears made from the pus proved sterile. There was also a chronic ulcerative and miliary tuberculosis of the lungs, combined with a tuberculous osteomyelitis of the sternum and senile sclerosis of the aorta.

The necropsy thus proved that the patient's cerebral symptoms were due not to a pachymeningitis, but to a multiple brain abscess coupled with an encephalitis. These findings were rather a surprise, as nothing whatever indicated a possibility of an abscess in the brain, except possibly the presence of the continuous clonic convulsions in the left side of the body which we interpreted as epilepsia continua. Nähter[3] and Seeligmüller consider Jacksonian epileptic convulsions typical for pulmonic brain abscesses, but Martius[4] found them absent in 50 per cent. of cases, and then again the epilepsia continua variety also may be caused by any cortical irritation, as encephalitis, gumma, or pachymeningitis hemorrhagica interna.[5] The condition of the lungs was suspicious, but the absence of tubercle bacilli and of pronounced destructive lung lesions did not permit of the suspicion of tuberculosis of the lungs as the possible cause of the brain symptoms. The same can be said of the kidneys which showed no clinical evidence of suppuration, as the urine was all the time negative. Therefore, we were rather inclined to the diagnosis of internal hemorrhagic pachymeningitis for which spoke the history of alcoholism, of previous mental disorder, the motor restlessness, the epilepsia continua, the conjugated deviation of the head and eyes, the resistance, and the absence of basal nerve involvement. My case bears out the correctness of Oppenheim and Cassirer's[6] statement that the diagnosis of a brain abscess, especially a metastatic one, is in the majority of cases impossible, and is first revealed at the necropsy. The abscesses were multiple in both hemispheres, also in the kidneys, which fact speaks for their metastatic nature. The only organ in which they could originate, in our patient, was the lungs, which according to R. Meyer[7] are, next to trauma and otitis, the most common source of brain abscesses. The absence of incapsulation and of optic neuritis indicates that the abscesses were young, not older than four or eight weeks, during which period a membrane usually forms. The absence of tubercle bacilli or of any microorganisms does not speak against their tuberculous or some other microbic origin, as in similar cases, like those reported by Helbron,[8] Roger,[1] and Southard and Ayer,[9] no tubercle bacilli were found. On the other hand, in Fraenkel's[10] case the pulmonic brain abscess was loaded with tubercle bacilli, as if the abscess presented a pure culture of these microorganisms.

The metastatic abscesses of the brain must thus be considered the direct cause of the nervous symptoms and of our patient's death. It remains to be determined whether this etiology had any bearing on his mental condition. It is an established fact that in every case of a brain abscess some psychical anomalies are present. Thus, Huguenin[11] in his classical monograph states that in brain abscess patients "an accurate investigation of psychical functions discovers a psychical defect, a weakness of memory as well as of rapidity and readiness of thinking and judging under such circumstances." If we remember that an abscess may be hidden in the brain for a considerable length of time, as twenty years in the case of Nauwerk,[12] or twenty-six years in that of Haerlin,[13] without causing any definite or marked nervous symptoms, it will be understood that the only clinical symptoms in such cases will be psychic, in the form of various psychoses, as dementia, melancholic states, hypochondriasis, and so forth. Quite a number of cases have been reported in which various psychoses were associated with brain abscesses and ascribed to the latter. Here belong the cases of Zeller,[14] Schmidt,[15] Kern,[16] Dupré and Devaux,[17] Porot,[18] Amberg,[19] Southard and Ayer,[9] Henderson, Muirhead, and Frazer,[20] and Huguenin.[11] In Zeller's case the clinical picture was that of paralytic dementia, while the necropsy showed multiple metastatic abscesses of the right frontal lobe and of both optic thalmi. Schmidt's patient, twenty-four years old, gave the symptoms of catatonia, combined with a cerebral abscess of the superior parietal lobe caused by erysipelas. He could not prove any connection between the brain abscess and the psychosis. More positive is Kern, whose patient also had catatonia associated with tuberculosis of the ear. The necropsy revealed a brain abscess, and Kern thinks that in such a case toxins from the abscess may affect the general nutrition of the brain and give a clinical picture of catatonia. Of the same opinion are Dupré and Devaux. They found in a fifty-five-year-old tuberculous patient multiple brain abscesses that gave, as in my patient, clinical symptoms of meningitis, combined with a psychosis, shown by apathy, torpor, aphasia, and so-called psychical blindness. The post mortem showed absence of meningitis, but one frontal abscess and one larger one in the middle portion of the left hemisphere, combined with necrosis of the cortex. These cortical changes and the psychic disturbances they ascribe to the intoxication exclusively. In Porot's patient, an epileptic, an old encysted abscess was found, and Amberg speaks of a patient who was considered a hypochrondiac, as he always was complaining of having a brain abscess which was, in fact, found after the patient died. Southard and Ayer's patient, twenty-five years old, had tuberculosis of the lungs, associated with dementia paranoides, and was an inmate of an insane asylum for five years. The necropsy showed multiple abscesses of the brain and cerebellum, and also pulmonary tuberculosis. They think that the lung lesion had some influence upon the patient's mental state by caus-

ing toxemia. The same explanation is given by Henderson, Muirhead, and Frazer for the psychic disorders in their patient with an extradural brain abscess and labyrinthine troubles. Finally I must mention the case of Huguenin, whose patient presented the same symptoms as mine and where a diagnosis of intermittent fever was made. The autopsy revealed an abscess of the left frontal lobe and right temporal lobe, and cheesy bronchial glands. The sole comment Huguenin makes is that the case was mistaken for intermittent fever of an irregular type, an error, as he puts it, "hardly to be avoided. In my opinion, the psychosis of Huguenin's patient was, as in the cases of the authors quoted, due to toxemia from the multiple brain abscesses. The toxemia, as I pointed out, was considered by the majority of authors the direct cause of the abnormal mental states of their patients, and it is proper to ask if this etiology is not of the same value in my patient. Of course, the to me unknown psychosis he had been suffering from long before he entered the hospital, had no connection whatsoever with his brain abscesses, as the latter, undoubtedly, were of recent date. But the latest abnormal state, which I myself witnessed during the last two weeks of the patient's life, and which much resembled senile dementia, was most probably the direct result of the multiple brain abscesses, just as in the cases of the authors previously mentioned.

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INFECTIOUS DISEASES OF THE INTRAMURAL INSANE: THEIR PREVENTION AND TREATMENT.

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THE greatest phobia confronting the average hospital superintendent is the fear of fire, accidents, and infectious diseases. These three conditions are fraught with grave and serious dangers. In a series of articles trying to cover these most important subjects, ranking in their rotation of gravity, infectious diseases seem paramount, as, at the present time, the modern hospital is well equipped, fire-proof, and all precautions are taken against fire. Accidents are prone to happen in any institution and the prevention of these depends a great deal on the age, type, structural conditions, limited amount of help and so on, of the hospital in question. All institutions, however, are prone to outbreaks of infectious diseases.

In the Philadelphia Hospital for the Insane, that much berated institution, with its lack of proper buildings, overcrowded conditions, insufficient employees, and with the highest admission rate of any hospital in Pennsylvania, its system of prevention and treatment of infectious diseases is possibly not excelled, as, in the confines of these monasterial walls there are many niches, so to speak, which are of extreme aid in the prevention and the treatment of infectious diseases. The records of this hospital for years past will show a low percentage of infectious diseases, which is rather astounding. This does not apply to tuberculosis, but upon the other hand, the death rate from tuberculosis does not excel that of other institutions.

The exanthemata.—Of acute exanthemata, measles is probably the most common yet the least harmful of all diseases, on account of the fact that the majority of patients who contract the disease are adults and receive proper medication while ill. About four years ago we had a few cases of measles develop in the male and female divisions but, because of thorough isolation, quick diagnosis, and appropriate treatment, no untoward effects were noticed, and a very few cases developed.

As to scarlet fever, so far as we are able to determine from the records we have not had any cases of this disease; the same applies to smallpox with the exception that within the past two or three years we were twice quarantined owing to the development of two cases of smallpox at different intervals in the Philadelphia General Hospital.

The prevention of these diseases deals not so much with causes from within but with those coming from without; for instance, lax quarantine of a Bureau of Health would permit the members of infected districts to visit these institutions. In Philadelphia, however, the excellent system of the Bureau of Health prevents any such avenues of infection, as all known cases of quarantinable diseases are strictly held as such. Occasionally a patient from an infected household is admitted to the in-

stitution and forms a nucleus of trouble, if not properly diagnosed and quarantined. In preventing this, however, many institutions require physicians to certify that patients who are to be admitted have not been exposed to any infectious diseases; if the necessity arise, whereby such a case should be admitted, of course the only course to pursue is to isolate and handle the case as best possible; an excellent ruling of this hospital for years past has been that all patients should be vaccinated, and if there is at any time a smallpox scare within the city, we usually insist that all patients be revaccinated who do not have a perfect scar formation.

Parasitic diseases are quite common in institutions, especially scabies and pediculosis. Diagnosis of these conditions is usually very simple; prevention and active treatment, however, are very important or it will be necessary to quarantine several sections until the pests are eliminated; to avoid any of these conditions the ward should be kept sanitary, the laundry properly disinfected, as well as towels, body clothes, bed linen, and so on. The patient's body should be inspected on bathing days, his head when the morning toilet is made, and the clothing when it goes to and comes from the laundry. The treatment of these conditions briefly consists of isolation, sanitation, and disinfection.

Scabies is the most prone to occur, particularly in dealing with indigent cases and the patients are visited by members of the family who come from the slums of the city. It is not uncommon to find a patient developing scabies after having been visited by a scabetic relative, or having pediculi after having been visited by a pediculosis victim. Sulphur for scabies, fishberry for lice, frequent spraying of beds with a combination of carbolic and kerosene, and replacement of all defective wood work with cement, will eliminate vermin. Fleas sometimes, if cats are around, will thrive in unsanitary cellars.

In indigent hospitals where the maintenance fund is limited, combs and brushes used for making the toilet should be disinfected before being carried from one head to another. Some patients are distinct breeders and, when diagnosed as such, their hair should be either clipped or attractively bobbed, until the source of infection is eliminated. Intestinal parasites in this institution are very uncommon, save for an ameba described by Rosenberger and Terrill, which is apparently of a harmless type and affords no occasion for worriment. This may bear a relation to the ameba found in pyorrhea alveolaris. Although Barrett's first work included a study of a group of cases in this department, and the presence of amebæ affords a plausible cause for pyorrhea, the subject is still open for further study. At the present time, we are conducting some investigations in conjunction with Barrett along this line of work. In this connection, however, it is absolutely essential to keep the mouths and teeth of insane patients in the very best hygienic condition; many State hospitals provide dentists for this line of work; the majority of their work consists, however, in extractions, fillings, and the making of plates. A systematic survey of every patient in hospitals for the insane, by a paid dentist or dental interne, would, no doubt, improve the general health of many patients. This work should include also not only the convalescent, quiet, and mild cases, but the refractory and demented group as well. During the past few years we have had such a systematic extraction and cleansing of patients' teeth in this department. Sometimes food will stain the patients' teeth, particularly molasses of a low grade; therefore, the question of food should always be borne in mind. Meats and vegetables should be inspected at the time of delivery as well as at the time of preparation to eliminate any possible infections of parasitic origin.

Pellagra.—Even if the etiology and pathology of pellagra are still debatable questions from an institutional standpoint, these cases should be handled on a strictly sanitary and hygienic basis. Those who are familiar with this disease, particularly in the hospitals for the insane in the Southern States, appreciate the loathsomeness of the condition, the marked emaciation, increased salivation, diarrhea, and general uncleanliness of the patient, and would certainly insist on isolation, segregation, disinfection, sunshine, and fresh air. Having such a picture in view of the condition, tuberculous shacks and pavilions afford an excellent method for caring for this particular group of cases.

Blockley is the site of many contentions, having its advocates "pros and cons"; pellagra was also found on the "bone" and for years there have been those who argued that we had pellagra and those who said we did not. Within the past five years the writer has seen possibly not more than three cases of true pellagra; in many of the cases in which the diagnosis was made, the diagnosis was based on the marked dermatitis, which was not pellagrous, but solar in origin. The cases lacked the usual characteristic symptoms so common of the disease. Many of these cases of dermatitis cleared up when the patients were given fly tents to protect them from the blazing rays of the summer sun; at the present time we feel we have no pellagra. For those who are inclined to doubt this assertion, the officers of the institution keep an open house and are open for conviction. I am of the opinion that a nutritious diet with a daily change of menu, thus eliminating a constant diet of any one particular food, such as corn bread and molasses, would be a great preventative of pellagra, a disease, no doubt, dependent upon a disturbance of metabolism.

The comparatively recent development of pellagra in this country, its rapid spread, and its invasion into families heretofore unknown to have suffered from the disease, whose dietary to-day is the same as it was years ago, certainly would lead us to infer that the etiology of this disease is of an infectious nature. The fact that the cornmeal and flour which years ago were usually of the home raised variety and ground on the old-fashioned mill-stones, have been replaced by factory-ground products, imported into various country districts, may have something to do with this disease.

Skin diseases.—Diseases of the scalp and other skin diseases, such as psoriasis, tubercular syphilides, and in fact all skin conditions in this particular group, are rather rare among the insane. If one should have such a case in his institution the best course to pursue is to isolate it so far as its bed-linen, hair brushes, clothing, etc., are concerned —being careful not to seclude the patient or deprive him of his pleasures.

Specific infectious diseases.—Erysipelas is undoubtedly the most frequent contagious and highly infectious disease with which the average superintendent of a hospital for the insane, has to contend. The prevention of erysipelas is very essential; great care and precaution should be taken as to sanitary conditions, perfect sterilization of the laundry,

proper disinfection of rubber sheets, frequent renovating of mattresses after disinfection, and so on.

Bed sores, which, by the way, are not very frequent in this institution, by virtue of their conditions, are fertile fields for the streptococci of erysipelas. The prevention of bed sores as well as the proper handling of surgical cases in the infirmaries not only prevent a sporadic case from developing, but undoubtedly check the spread of the disease. One must bear in mind also, the possibility of erysipelas carriers; if such a patient is found it is well to keep him under observation and in strict isolation until all evidences of the disease have disappeared.

Diphtheria, like the exanthemata, in the majority of cases has its origin from without; in other words, cases of diphtheria occurring in this institution are usually brought in by some infected employee or visitor. So important is the relation of the employees to the patient that they should always bear in mind his susceptibility to infectious diseases and the consequent possibilities of infecting the unfortunate under their care. Many hospitals have been put to considerable expense owing to infectious diseases having been brought in by members of the working corps. The writer recalls only one case during the past winter of diphtheria in a patient who undoubtedly contracted it from an employee. The patient was an intelligent individual; she was immediately isolated, and the proper preliminary treatment was given, and later she was transferred to the Hospital for Contagious Diseases. Such a procedure is the usual one for diphtheria, and in case there is no contagious hospital, the case can be properly segregated and treated in the institution without any great fear of impending danger. The practicability of giving antitoxin to the exposed patients would depend a great deal upon whether a subsequent case developed. Personally, I am in favor of waiting to see if a subsequent case does develop, then antitoxin should be given. Never having had a second case develop, I feel quite confident that antitoxin should be freely used among the patients exposed if the occasion should warrant it. Diphtheria is no doubt a contact disease, as I have seen cases suffering from diphtheria taken from crowded wards, isolated, and properly treated and no further cases developed in that ward. I have seen it, not only in this institution, but in other hospitals for the insane.

Vincent's Angina is not an uncommon disease of the insane, particularly so if there has been careless nursing in cleaning the teeth, gums, and lips of toxic cases, as well as advanced paretics and terminal dements. The symptoms are usually those of a persistent ulceration, and smears will reveal the characteristic fusiform bacilli as well as spirilla. Treatment is isolation, being careful to separate the eating utensils, disinfection, and so on, with local applications of weak solution of formalin or copper sulphate.

Influenza, sore throat, and parotitis.—A well established custom in this institution is, if a patient has a sore throat or symptoms of influenza, he is immediately sent to a side room, isolated, and appropriate treatment given. The patients usually make a speedy recovery. They are usually segregated from the rest of the population and in this way these affections are kept under control; too great stress cannot be placed on the early isolation of every case and immediate smear and cultures taken. All eye cases should be handled in a like manner.

Mumps is a very uncommon disease among the insane; this is usually a disease of childhood and the majority of patients come to insane asylums after that age.

Diarrhea.—In many hospital reports we often see statements relative to epidemics of diarrhea; we have had no such epidemics in this institution, with the exception that sometimes after beans have been served, a few patients may develop a diarrhea lasting not more than a day. These are promptly reported, treatment instituted, and the entire situation clears up within 48 hours. The diarrhea common to insane asylums, we have not met. During the summer months if we have a case of diarrhea other than a terminal diarrhea occurring in senile dementia or any terminal state, the patient is isolated and treated as though it were an infectious disease; this, no doubt, has been a great prevention in the occurrence of this disease.

Tetanus, although a very infrequent disease, sometimes develops in insane patients, particularly those who are employed. I recall one such case in the past seven years as having occurred in a patient employed at the farm branch. The point of entrance was a trivial injury to the nail, one which would be readily overlooked on bathing days; the patient shortly thereafter developed tetanus and died. Tetanic serum did very little good as well as enteroclysis of magnesium sulphate, spinal punctures, etc. To overcome such happenings we have instituted a regular examination of all patients employed, in order that no trivial injury or bruise may go unnoticed, thus assuring proper care and attention. In wounds received from rusty nails or under any circumstances which would lead us to suspect the possibility of tetanus developing, serum is given at once.

Tuberculosis.—The high death rate of the insane, due to tuberculosis, can be found in all hospitals ancient and modern. The relation of tuberculosis to insanity has been propounded for several decades. There is one interesting feature, however, on the clinical side of the insane tuberculous which is worthy of mention, viz.: that loss of weight is the principal physical sign significant of the disease; that is, early incipient tuberculosis. Patients rarely cough, seldom expectorate, and few have any intestinal symptoms in the early stages of the disease. Several years ago this institution was covered by experts in the work of tuberculosis and it was amazing that so few cases were found. Some were suspicious, but only a few were classed as positive cases. The ward physicians, upon the other hand, who come in contact daily with these patients, basing their diagnosis upon the attitude of the patient, his languidness, and his emaciation, were not far wrong in their opinions as to the possibility of patients being tuberculous; in fact, upon their reports we based our prospective cases and time has proved that their diagnosis was right. Many patients refuse to breathe, many refuse to cough, many are obstinate; few nasal and oral examinations could be properly made, and the temperature as a rule did not play an important part.

In a special work several years ago at the Central Indiana Hospital for the Insane, the writer endeavored to establish a procedure, following the teaching of Dr. Rosenberger, that acid and alcohol fast bacilli in the feces were significant of tuberculosis, and isolation of the patient would be justified on such findings; there were many difficulties, however, which prevented a diagnosis on these find-

ings, and, at the present time, the writer is convinced that from an institutional standpoint we must rely upon the clinical findings.

Necessarily, the treatment consists of isolation, fresh air, full feeding, proper sanitation, disinfection, and so on; there is no institution so small but what can segregate its known cases of tuberculosis. A ward, or a wing of a ward, may be set aside for their custodial care. Their dishes, utensils and so on can be very readily kept separate, as well as their laundry, bed linen, etc. In the summer time, tents may be erected for the treatment of the bed-ridden cases and a very small infirmary will accommodate those actually confined to bed. In this department we have erected at Byberry City Farms two rather convenient buildings for the treatment of ambulatory cases of tuberculosis; male ambulatory cases are stationed there now; female cases we expect to transfer at an early date. In the interim, we have segregated suspects and treat them along sanitary and hygienic lines. For smaller institutions a small dormitory and tents are extremely useful. The cooking utensils, sputum cups, laundry, etc., are easily disinfected. Garbage should be collected separately and if used for hog feed or chicken feed should be boiled until its contents are perfectly sterilized. The laundry should be collected and carried to the disinfecting plant as soon as soiled; there should be a double system of fly screening so as to eliminate flies. As soon as a patient dies the bed linen, mattress, pillows, rubber sheets and beds should be disinfected as well as single rooms, if such are used, before a new case is confined therein. So far as tuberculosis is concerned every possible measure is used to prevent and cure the disease.

Syphilis.—Occasionally in the admission of cases to hospitals of this class, one sees the secondary eruption of syphilis. Of course, prevention rests upon early diagnosis and strict isolation, as well as the institution of specific treatment.

Paresis.—Owing to our recent enlightened view that the *Treponema pallidum* is found in cases suffering from paresis, the possibility of this disease being infectious is open for discussion. I recall one case of an employee who had been assigned to the paretic room, contracting the disease and dying within a short period; this could not be attributed to the contagiousness of the disease, however, as the man was addicted to the use of alcohol and the possibility of venereal diseases could not be questioned. If the treponemata are found, however, as reported, why is the disease not an infectious one? Until such animal inoculation can be made with cerebrospinal fluid, supposedly infected with *Treponema pallidum*, we are no doubt safe in saying that paresis itself is not a contagious disease. We must bear in mind, at the same time, however, the unexplainable etiology of connubial paresis. Owing to the nature of the disease, aside from its possibility of contagiousness, all of our cases of bed-ridden paresis are assigned to a room known as the "paretic room"; this has many advantages, owing to the uncleanliness of the patients, their tendency to fall out of bed, and predisposition to decubitus. All these can in part be overcome by having them segregated and under specially trained nurses.

Typhoid Fever, in certain districts, is undoubtedly the most serious of all infectious diseases; the prevention of this disease is a very important one and in hospitals located in municipalities, prevention is well covered by the Bureau of Health. In institutions in the agricultural districts, however, due consideration should be given to the very important subjects of a pure-water supply, milk supply and vegetable supply; that is, being careful not to use vegetables raised on farms in infected districts, or in where house soil has been used as fertilizer. The possibility of typhoid carriers, although at times one cannot help but feel that this avenue of infection is exceedingly overrated, must be borne in mind. To ascertain if the employees of an institution are free from typhoid germs seems impracticable at the present time; in view of this the immunization of all asylums' inmates and employees with typhoid vaccine would be advantageous, and such a course, if it could be done, would be the proper course to pursue. Legal compulsory typhoid vaccination would, no doubt, eliminate one of the greatest phobias of hospital superintendents in the city and agricultural districts. If such a case should occur at any given institution much can be done to prevent the spreading of the disease by the proper isolation of the patient; disinfection of excreta, laundry and so on, provided that the source of infection has been extraneous; that is, one outside of the institution, and the water, milk and vegetable supply free from infection. Carriers should be looked for.

The *treatment* of these conditions is briefly as follows: Any patient showing any signs of a suspicious infectious disease is immediately sent to one of the small isolation rooms in the building (these isolation rooms are a part of an antique ward system); bichloride sheets are suspended; gowns are in readiness for physicians and nurses; utensils, etc., are set aside for the patient's use and all excreta, sputum, etc., are disinfected before leaving the room. As soon as the patient is ready for transfer, the disease having been cured, he is given a disinfectant bath and supplied with new underclothing and the room with all of its contents is disinfected with formaldehyde. The laundry, particularly during the course of infection, should be placed in a disinfectant solution and kept adjacent to the room; this, however, should be again disinfected in the laundry sterilizer before being washed with the general laundry.

Especial attention should be paid to the source of infection and the wards from which the patient came. If necessary, quarantine the ward.

Conclusions.—1. Infectious diseases are prone to occur in all intra-mural insane. The proper prevention and subsequent treatment of these diseases will not only alleviate the sufferings of many who are not responsible for the dependent state, but, at the same time, is quite a civic and essentially economic saving.

2. Every institution, it matters not how large or small, should make an effort to safeguard the general health of its inmates by insisting upon sanitary and hygienic measures being not only installed but actually operated.

3. All institutions for the housing of insane should have an isolation section, preferably an isolation building.

4. The resident medical staff of such institutions should have free access to consultation with experts in this particular line of diseases. The Philadelphia Hospital for the Insane is exceptionally fortunate in having access to the trained experts in this line of work in the Bureau of Health.

5. Early isolation and quick diagnosis, appro-

priate treatment, including sanitation, disinfection, etc., will prevent the spread of all infectious diseases, unless their source of infection is a general one such as milk, water and so on.

6. In cases of infectious diseases occurring in institutions, it behooves superintendents working in conjunction with the Board of Health to ascertain if possible the avenue of infection and the correction of the same. Vaccines in general for the prevention of diseases should be recommended as a harmless preliminary prevention of some of the most fatal disorders.

7. In the actual handling of a case of infectious disease one should adhere as much as possible to the brief outline under the heading of "Treatment."

8. The greatest adjunct in the prevention and treatment of infectious diseases of the insane is a progressive medical staff, preferably of young, enthusiastic graduates, well versed in the diagnosis and treatment of physical diseases, with free access to laboratory facilities and free consultation with men experienced in this line of work.

THIRTY-FOURTH AND PINE STREETS

LIME THERAPY OF DIABETES.

PRELIMINARY COMMUNICATION.

BY MAX KAHN, M.D., PH.D.,

AND

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NEW YORK.

(From the Chemical Laboratory of the Beth Israel Hospital.)

IN a number of metabolism experiments conducted on diabetic patients, we have found it an invariable rule that there is a negative calcium balance. With the onset of acidosis this calcium loss increases so that high figures for calcium excretion will be obtained; but it is not only characteristic of the acidosis stage. Diabetes is characterized, throughout its course, by calcium loss. We will here quote a passage from Von Noorden's "Metabolism and Practical Medicine":

"A very important and interesting question is whether this diminution in alkalinity (in diabetic acidosis) is due only to increase of acid, or whether it may also be due to the loss of alkali in diabetic acidosis; the ash still bears the normal relation to the nitrogen (Magnus Levy). Nevertheless there is a diminution in calcium. Several observers (Bocker, Neubauer, Toralbo) long ago found more calcium in diabetic than in normal urine. Van Ackeren, in Gerhardt's wards, was the first to carry out a complete experiment upon the balance of inorganic constituents in a severe case of diabetes. In 1893, I (Von Noorden) made the following observations but did not publish them: The patient excreted far more phosphorus, calcium, and magnesium in his urine and feces than he took in his food. . . . It was concluded that bone was being disintegrated. . . . The loss of calcium in diabetic acidosis was shown by some experiments of Gerhardt and Schlesinger. . . . When the daily intake was 0.81 gm. of calcium, and the diet was constant, a healthy man excreted 0.62 gm. calcium and a diabetic patient excreted 1.127 gm. calcium. The results obtained by Von Limbeck, Tenbaum, and Moraczewski agree with those of Von Ackeren, Gerhardt and Schlesinger. Dengler showed that the administration of calcium can stop the loss of calcium in diabetic acidosis for some time."

Towles stated that generally, there is a calcium loss found in diabetes.

In certain experiments which one of us (Max Kahn) carried out on rabbits (in collaboration with Dr. Wm. Salant), it was noticed that animals which had developed glycosuria upon caffeine administration, ceased to excrete glucose in the urine when calcium was administered intravenously. The development of glycosuria, it was found, could be prevented by the simultaneous administration of lime with caffeine. In the literature there appeared synchronously several communications from various pharmacological laboratories, in which it was reported that adrenalin glycosuria and nicotin glycosuria could be prevented or stopped by administration of calcium salts.

In a number of rabbits to which sodium tartrate had been administered, glycosuria developed. In the literature it has been reported that citrate and oxalate may induce the appearance of sugar in the urine, and the phenomenon has been explained on the basis of a calcium abstraction from the body; for it is known that these salts precipitate the lime salts out of solution.

Marquis states that there is evidently a physiological loss of lime during pregnancy, manifested by the looseness of the pelvic articulations; if it reaches a pathologic state there is pain in the symphyses, and this he regards as the first stage of osteomalacia, believing that this degree of osteomalacia is quite common; in the second phase there is considerable pain in the bones and walking is difficult, but the pelvis is not deformed. The third stage in which the pelvis is actually deformed, is the only form of the affection recognized by other authors to date, and this is why the prognosis of osteomalacia is generally considered so grave. Examination of the proportion of lime in the blood is a reliable method of determining the condition in regard to lime waste. In two typical cases described in detail, the blood contained 0.12 parts per thousand lime in one and 0.162 parts in the other, instead of the normal average of 0.052 parts for the pregnant woman. The proportion of lime in the blood has always paralleled the severity of the osteomalacic disturbances in his clinical experience. The disturbance in osteomalacia is a decalcification while in rachitis it is more impossibility of recalcification. The decalcification in pregnancy is probably due to some disturbance in ovarian, suprarenal, or similar functioning, with a predisposition afforded by frequently repeated pregnancies and deficiency of lime in the food.

If the above communication of Marquis is carried in mind when one reads the report of the researches of Geelmuyden, one sees some connection between the diabetes of pregnancy and the calcium loss which is characteristic of the period of child bearing.

Geelmuyden comments on the connection between the functioning of the female internal genital organs and carbohydrate metabolism, saying that glycosuria develops regularly in about 10 or 12 per cent. of all pregnancies. Some have encountered it in 40 per cent. Usually lactose is the sugar in the urine in this benign pregnancy glycosuria, but it may be grape sugar or both. The proportion of sugar in the urine may be so large as to suggest severe diabetes with acidosis. Differential points are its onset first during pregnancy, its independence of carbohydrates in the diet, and the absence of polyuria and excessive thirst. He has known

instances of these latter symptoms, polyuria, thirst, and pruritus occurring with unmistakable pregnancy glycosuria. Knowledge that the urine before pregnancy was free from sugar is a great help. Also the findings that the acidosis does not fluctuate with the intake of carbohydrates. Normal or subnormal proportion of sugar in the blood sustains the assumption of the benign form.

Certain observations have been made regarding diabetic lipemia that are interesting. Klemperer states that in this condition the blood contains much cholesterin and lecithin, which originate from the subcutaneous fat. The fat of the viscera is unchanged. The lipoids enter the blood because of the breakup of the body cells. Once in the blood they attempt to regenerate the impaired cells. In brief, diabetic lipemia represents a mobilization of the cell lipoids to form new cells. This procedure enables us to understand certain results of therapy, particularly of severe cases. Albumin of the diet results in a splitting up of all albumin, which is accompanied by lipoid escape. Hence the observance by the patient of fasting days, vegetable days, and in general a low protein diet goes far to antagonize the extreme tendency toward the breaking up of the cells.

Drennan draws the following conclusions as to the pathogenesis of diabetic lipemia. (1) The lipemia of diabetes mellitus is due to the abstraction of calcium salts from the lipoid circulating in the blood; (2) This abstraction is an attempt on the part of nature to neutralize the organic acid which results from the imperfect oxidation of the sugar in the body, fat in the blood being the lesser of two evils. Fat embolism may result in the lungs, but may exist quite extensively without causing serious symptoms; (3) The indications in diabetes would be an increased administration of calcium salts, in the one case sufficient to neutralize the acids and to unite with the neutral fat, and in the other case sufficient to unite with the neutral fat.

In a communication made a few years ago, Von Noorden summarized the pathogenesis of diabetes as follows: Von Noorden states that the liver is evidently the source of sugar production, and that this function is controlled by the pancreas and suprarenals—the pancreas inhibiting sugar production and the suprarenals stimulating it. The pancreas in turn is under the control of the thyroid, the secretion of which has an inhibiting action on the functioning of the pancreas as is shown in the increased tendency to glycosuria and thyroid hyperfunctioning. After thyroidectomy, the pancreas exerts such a strong inhibitory action on the liver that it is almost impossible to induce glycosuria The hypopthysis cerebri seems to have the same action in the pancreas as has the thyroid; with tumor of the hypophysis there is remarkable tolerance for large amounts of sugar. The suprarenals are under control of the sympathetic nervous system and are very sensitive to the action of certain toxins. Formerly it was assumed that the glycosuria resulting from puncture of the medulla ("sugar puncture") was due to direct stimulation of the liver from the central nervous system, but recent research has demonstrated that this stimulation is transmitted by the left sympathetic nerve and at first to the left suprarenal, whence the stimulation is forwarded to the right suprarenal by the connecting nerves. If the left suprarenal is cut off from the left sympathetic nerve, no glycosuria follows the sugar puncture. Puncture of the medulla stimulates the suprarenals to greater secretion, and this secretion in turn stimulates the liver to excessive output of sugar. A number of toxic influences act in the same way, partly by the influence on the sugar center in the medulla, partly by the stimulation of the sympathetic nerve or the suprarenals thus causing exaggerated functioning which entails overproduction of sugar in the liver. These facts, V. Noorden says, explain the influence of the central nervous system on the intensity of diabetic glycosuria and show the necessity for studying each individual case with special care, and the importance of warding off emotional stress and injurious nervous and toxic influences.

McCallum and Voegtlin found that after parathyroidectomy there is a decrease in calcium content of the tissues and blood; and that the symptoms disappeared when calcium was administered.

Underhill and his collaborators performed thyreoparathyroidectomy upon five dogs. In two they gave injections of 30 per cent. dextrose solution subcutaneously and two solutions of calcium lactate at the time when hypoglycemia became marked. The conclusions which they drew are:

1. Hypoglycemia resulting from thyreoparathyroidectomy is neither the cause nor the effect of the accompanying tetany; for although dextrose injections restore blood sugar content to normal, such injections have little influence on tetany. Moreover the condition of hypoglycemia precedes that of tetany. It is therefore suggested that the removal of the thyroid and parathyroid give rise to two distinct effects, one being manifested upon the blood sugar regulating mechanism, causing hyperglycemia, the other acting upon the nervous system producing tetany.

2. Calcium appears to be intimately associated with both effects, for injections of calcium lactate will temporarily restore blood sugar to normal and also abolish tetany for a time.

3. Calcium may play an important rôle in maintaining the equilibrium of the blood sugar regulating mechanism during normal life.

Hyperglycemia which is so characteristic of diabetes is also present in other conditions. The following paper by Hopkins is interesting:

According to Hopkins in health a moderate rise in blood sugar (0.14 to 0.15 per cent.) occurs after feeding 100 gm. of glucose, reaching its height in from one-half to two hours and quickly subsiding. There is no constant blood sugar level at which sugar appears in the urine. Evidently absorption after rectal and subcutaneous injection is slower than after feeding by the mouth; however, owing to the discomfort produced by the former methods this series is too limited to permit of definite conclusions in regard to this point. In a case in which a disturbance in carbohydrate metabolism exists there may be a normal sugar concentration associated with a most pronounced alimentary hyperglycemia. In diabetes, alimentary hyperglycemia is pronounced, the height of the sugar level appearing at any time from one-half to three hours after the ingestion of glucose, and the duration being more prolonged than in other conditions. Pancreatic, nephritic and pituitary cases all furnish very high figures after feeding glucose, the duration lying between that of normal and of diabetic patients.

A moderate hyperglycemia occurs in many high pressure nephritic cases, and frequently in those with low pthalein elimination. In most cases of nephritis with low pressure the blood sugar is nor-

mal. Edema and hepatic congestion do not influence blood sugar values, though the rôle they may play in alimentary hyperglycemia, which is pronounced in nephritis, Hopkins says, he is not prepared to say at this time. A rise in blood sugar occurs in pneumonia and may be present in the absence of fever. It is apparently uninfluenced by blood pressure, leucocytosis, or renal involvement. Hyperglycemia occurs quite constantly in apoplexy, typhoid and tuberculosis, in the presence of fever, and in some cases of cancer. The test, simple and accurate, is a practical method for early diagnosis and control of dietary therapeusis.

Now it is known that in pneumonia there is a calcium loss from the body and it has been recommended that this disease be treated by calcium administration. The French school of physicians has observed a constant loss of calcium in tuberculosis, which they call "demineralization." It is curious to observe hyperglycemia in both of these diseases.

We have endeavored to touch in the above superficial review on the relations of lime to hyperglycemia. It seems as if the organic lime combination in the various glands of the body seems to influence the glucose production. Thus in the liver the calcium seems to functionate as an aid to glycogenbiosis, and a lack of the calcium salts seems to induce a glycogenolysis.

We wish now to report the result of treatment of several cases of diabetes on the theory above enunciated. We shall, in this preliminary communication, cite one case as an example.

The patient, a middle-aged woman, was excreting on a standard diet, from 90 to 115 grams of sugar daily. Upon treatment with lime, the diet remaining the same, in a manner to be subsequently reported, her glycosuria fell in less than ten days to less than 10 grams of glucose per day. The glycemia ran a parallel course.

We hope soon to make a complete report of the results of our investigations.

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TREATMENT OF OPIUM OR MORPHINE ADDICTION.

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Almost every drug in the materia medica has been used or recommended to treat opium or morphine addiction. Belladonna and hyoscyamus were early used and found favor with some physicians, and these drugs and their alkaloids are still relied on to lessen the pains and suffering a patient goes through when the opiate is discontinued entirely. Some ten years ago I tried out thoroughly these drugs in treating opium-morphine addiction and found them uncertain and unsatisfactory. I soon abandoned their use, except that of atropine in the after treatment.

The Harrison Narcotic Law having caused a largely increased number of "drug-users" to apply to physicians for relief, I feel it an opportune time to offer to the profession an improved method of treatment, based on rational procedure, the results of which have been uniformly good. The horrors and intense suffering incident to discontinuing the use of opium or morphine are eliminated. The patient is kept in bed, asleep or drowsy for two days and a night, after which a fairly rapid convalescence takes place and he is sent home well.

The habitual use of opium or morphine lessens activity of the secretory and excretory organs, inhibits intestinal peristalsis, and disturbs the process of metabolism, hence diaphoretics, diuretics, and purgatives are indispensable in treating the withdrawal symptoms. My treatment is divided into (1) preliminary, (2) special, and (3) after-treatment.

1. When a patient presents himself for treatment a conference is had with him to ascertain something of his character, motives, and the amount of drug used. He is examined physically and a laboratory examination of the blood and urine is made. If he is using 2 gr. or less of morphine per day, and his condition is good, he is given purgatives for two or three successive nights and an electric light bath every day, and is put to sleep the third or fourth day after he enters for treatment. If a large amount of morphine has been taken for years the preliminary treatment is extended to one or two weeks, according to the condition and needs of the patient. He is given a purgative of 5 to 10 gr. calomel and soda and two or three pills containing aloin, strychnine, and belladonna, at about 8 P.M every other night, the electric light bath being given every other day. The drug is also reduced every other day. If the daily dose has been 10 or 15 gr. of morphine, he is reduced to 6 or 7 gr. in the first cut, then, say, 1-gr. reduction until about 2 gr. are reached.

2. Then the special treatment may be given, which is carefully carried out as follows: On the afternoon preceding the special treatment, 10 gr. calomel and soda, 10 gr. compound jalap powder, and two or three pills containing aloin, strychnine, and belladonna are given at 5 P.M. The last dose of morphine is given not later than 6 P.M. the same day. No supper is given. At 8 P.M I give 15 gr. calomel and soda, 10 gr. compound jalap powder, and three of the aloin, strychnine, and belladonna pills. The patient is left alone until 6 A.M next day (first day of special treatment), when Epsom salt or some active effervescing saline is given in a tumbler of water. The patient is given a warm tub bath about 6.30 A.M., and put to bed in a different room from the one previously occupied. The room vacated and also the clothes of patient are carefully searched some time during the day for any drug he might have secreted. At 7 A.M. a dose of 30 to 35 gr. of trional is given, followed by a glass of hot sweet milk. At 10 A.M. and 2 P.M. the same size dose of trional is given, if the patient is awake, followed by the hot sweet milk. If the patient is asleep when the times for the second and third doses of trional come, one should wait until he awakens himself, then repeat the trional powder.

The patient is kept in bed, shades down and room darkened, and a special nurse assigned to care for him and give treatment for two or three days, or longer if necessary. The nurse is instructed to keep things quiet in the room, to give the patient water or milk when he is wide awake, and to feel his pulse occasionally. No one is allowed to see him during the special treatment except the doctor and nurse.

At 6 A.M the second day a 90-gr. dose of sodium bromide is given in a tumbler of water. At 10 A.M. and 2 P.M. another dose of 60 to 90 gr. of sodium bromide is given in a tumbler of water if the patient is awake. The patient is kept in bed the second day, and the room is kept darkened and quiet. Physician should go in to see how patient is doing at least twice a day.

At 8 P.M the second night 5 gr. of calomel and soda and two or three aloin, strychnine and belladonna pills are given, with 7 or 8 gr. of veronal.

3. At 6 A.M. the third day after treatment is begun with a saline in a tumbler of water. A tonic prescription of fluid extract cimicifuga 6 drams, avena sativa 9 drams, and aromatic elixir enough to make 3 ounces, one teaspoonful in water at 7 and 10 A.M., and 2 and 5 P.M. I also give hypodermically strychnine nitrate 1/30 gr., and atropine sulphate $\frac{1}{100}$ gr. at 8, 12, and 4 o'clock. These drugs are given in reduced dosage for two or three weeks. The patient is allowed to get up on third day, if he feels like it. Baths are begun and continued every other day. Light, regular meals are allowed on the third day and increased as the patient's appetite gets better. As a rule, the patient improves rapidly and soon feels better than when taking opiates.

Drug users can stand large doses of purgative medicines. Calomel will not salivate when combined with other purgatives and followed by a saline to properly work it out of intestines. The gums may become a little tender, but this will pass away in a few days. Drug patients will also tolerate large doses of hypnotics and will take 90 to 100 gr. of trional (in three doses) during the first day of the special treatment, without bad effects. Anuria occurred in one patient, but I believe this was due to the patient's condition, rather than to trional. The electric light bath is extremely useful; it is a powerful stimulus to the general circulation of the blood and increases the action of the skin and kidneys. It is also calmative to the nervous system and induces sleep. I have taken patients off of morphine without giving the electric light bath, but they do so much better with it that it has become part of my routine treatment.

Complications and suffering, if any, occurring during or after the withdrawal period are due either to neglect in strictly carrying out the plan of treatment, or to some inter-current bodily ailment. In some patients minor aches or pains may be caused by a bad tooth, a neuralgic diathesis, and intestinal stasis. Such conditions, when they arise, must be treated symptomatically and by such remedies as the judgment of the physician may prompt. Some patients will go through treatment without complaint and they seldom ask for an opiate.

The psychic side of treatment must not be ignored. There is marked psychic deterioration in some drug users. They develop a weak will, a lack of self-confidence, a fear of suffering, and a tendency to falsify. Ethical ideas depreciate, and the moral standard is lower. This class of patients should be taught how to discipline and control the emotions, how to re-educate confidence and will-power, and be urged to cultivate the ability to endure bodily ills and discomforts like persons who do not use opiates, instead of resorting to drugs to relieve every little ache or pain.

Finally, I will say that while this method of treatment is safe and successful when properly carried out, like other good things, it is capable of producing harm in the hands of the careless or ignorant. The treatment should be administered in hospitals and sanatoriums where nurses, baths, and other necessary facilities are available, and by physicians who will take the time to familiarize themselves thoroughly with the method of treatment and who will take the pains to see that every detail of treatment is carefully carried out.

GOODWYN INSTITUTE.

Medicolegal Notes.

Medical Services—Evidence of Balance Due.—A practising physician sued the defendant for an alleged balance due him for professional services. It was admitted by the defendant upon the trial that he had visited the defendant 123 times; that the charge for each visit was, by arrangement with the plaintiff, fixed at the sum of $2 per visit. It was conceded by plaintiff that $236 had been paid him, leaving a balance of $10 due. The defendant testified that, "I believe in all I have paid him around $290," but he could give no reason for such belief. He also testified that, when he ceased visiting the plaintiff's office he "thought he owed him probably $10 or $15." He said that it ran along about a year, and then he got a bill for $60, upon which he paid plaintiff $50, and upon consultation with his employers, to whom the plaintiff had written letters, was told by them that "they considered the bill was well paid." This was held to be corroborative of the plaintiff's claim that there was still due and owing him the sum of $10, and there was no testimony from which it could be reasonably said that plaintiff's bill was incorrect. The plaintiff should therefore have had a judgment for $10.—Bedell vs. Malloy, New York Appellate Division, 153 N. Y. Supp. 167.

Privileged Communications—Physical Examination—Physician Not Called by Patient.—In an action for personal injuries received in a railway wreck it appeared that the plaintiff sent its own surgeons to take care of the injured and to carry them to a hospital. There was some evidence tending to show that the plaintiff was not given that care and consideration which he was entitled to receive while he was at the scene of the wreck. To rebut this evidence the railroad offered to prove by its surgeons that they examined the plaintiff at the time, and that his wounds had been dressed and properly treated, and that this was all that could have been done under the circumstances. At the instance of the plaintiff the trial court excluded this evidence from the jury. This was affirmed on appeal. The Mississippi statute regarding privileged communications provides: "All communications made to a physician or surgeon by a patient under his charge . . . are hereby declared privileged." "It is not necessary," the appellate court said, "that the communication should be made by words in order to make it privileged. There is no more sacred relation of confidence than the relationship of physician and patient, and it was, in our opinion, the intention of the Legislature to close the lips of the physician concerning any and every thing he knows about the patient by oral communication or from a physical examination of the patient. . . . The statutes of the several States vary in the language employed, but in our view they were all designed to accomplish the same purpose. Our statute in protecting the patient makes privileged 'all communications,' and we think it would be absurd to say that what the patient says to the physician is privileged, but what is communicated to the physician by his expert examination and exploration of his patient's body is not privileged. The oral communications are usually of little importance, but the physical examination is always of prime importance. The fact that the physicians in the present case were not called by the plaintiff, but were sent by the defendant to examine or treat plaintiff, does not change the legal aspect of the case. The physicians were acting in their professional capacity, and the plaintiff was their patient, and all communications to their professional senses are privileged, and the physician, however willing he may be to violate the condence of his patient, will not be permitted to do so by the wise provisions of the statute. In the light of such authorities as we have been able to find, the overwhelming weight are in accord with this view of the law."—Yazoo & M. V. R. Co. vs. Messina, Mississippi Supreme Court, 67 So. 963.

Duty to Patient—Negligence of Patient.—A physician contracts with his patient that he has the ordinary skill of members of his profession in like situation, that he will exercise ordinary or reasonable care and diligence in his treatment of the case and that he will use his best judgment therein. On the other hand it is the duty of the patient to follow the reasonable instructions and submit to the reasonable treatment prescribed by his physician or surgeon. If he fails in his duty, and his negligence contributes to the injury, he cannot maintain an action for malpractice against his physician or surgeon, who is also negligent in treating the case.—Merrill vs. Odiorne, Maine Supreme Court, 94 Atl. 253.

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SPECIFIC PROPHYLAXIS AND TREATMENT OF PNEUMONIA.

LOBAR pneumonia is one of the most familiar of the diseases with which we come into contact and it is one of the best known. Its etiology and pathology are well understood and the bacteriology has been very thoroughly investigated. In spite of these facts its treatment is still very unsatisfactory. The course in a typical case of the disease indicates an infection, local as a rule though sometimes general, against which the body develops an immunity which is able to bring about a sudden termination of the infection if not a destruction of the invading organisms. The mechanism of the crisis is, however, unexplained and attempts to produce it artificially have hitherto been unsuccessful. The pneumococcus is the most vulnerable of the Gram-positive organisms when exposed to the action of bactericidal agents *in vitro* and yet it often apparently remains unaffected by materials which we are able to introduce into the body. Many forms of treatment have been devised but the nature of the disease is such that it is extremely difficult to judge accurately of the value of any one of them. The virulence of the attack varies so much from year to year or even from month to month that results obtained in any restricted series of cases are worthless when applied to the disease as a whole. This is best evidenced by the manner in which widely heralded methods of treatment have quietly dropped out of notice within a year or two of their introduction. Since the crisis is obviously an immunity reaction the principal attack upon the problem in late years has been made by the immunologists and some definite advances have been noted. Cole and his co-workers have shown that the pneumococcus may be divided into groups which give different immunity reactions and different mortality statistics and furthermore that the pneumococcus which normally inhabits the mouth belongs to a nonvirulent type. But the use of serums and vaccines has as yet yielded no striking results.

The subject of pharmacotherapy and preventive inoculation has lately been the object of study by Sir Almroth E. Wright who has been investigating the disease as it occurs among the natives of South Africa.* He had unusual facilities in studying the disease as it occurs among the native Africans working in the mines, who are extremely susceptible to it. The work was undertaken under the auspices of the Witwatersrand Native Labor Association and extended over the better part of three years. He naturally, at first, directed his attention to ethylhydrocuprein hydrochlorate, a drug whose specific action against the pneumococcus *in vitro* was noted in these columns in the issue of Oct. 9. He found, indeed, that the blood of patients who had received the drug showed an increased bactericidal effect upon the pneumococcus but that when it was administered to patients suffering with pneumonia it was "either inefficacious or doubtfully efficacious." In addition there was a certain amount of danger from the toxic action of the drug upon the eye. He thereupon devoted his attention to the action of vaccines administered not only after the onset of the disease but also as a prophylactic measure. After determining that the disease was, in fact, due to the pneumococcus, great difficulty was experienced in the attempt to find some method of examination whereby it could be discovered how the patient was reacting to the inoculation. Estimation of the agglutinating and the bactericidal power of the serum failed to give any information of value while the opsonic index varied so much and in such an irregular fashion that it also could not be used. An estimation of what Wright calls the phagocyto-bactericidal power of the blood proved to be impracticable under the conditions of the research, and he was therefore forced to go ahead and decide the size and frequency of the doses in an empirical manner and to estimate the effects from the mortality and morbidity statistics. In the treatment of the disease, when fully developed, he had almost exactly the same mortality in 159 cases as he had in the 149 control cases treated in the usual way. In this connection, however, there are some exceedingly interesting figures presented as to the results of vaccines given presumably during the incubation period of the disease. In groups receiving doses up to 1000 millions of pneumococci, in the first four days after inoculation, 2500 inoculated had an incidence rate of 0.52 per cent. and a death rate of 0.16 per cent., while 750 controls had an incidence rate of 1.4 per cent. and a death rate of 0.84 per cent. "In other words, the uninoculated had an incidence rate nearly three times, and a death rate five times greater than the inoculated." In larger doses the inoculated seemed to suffer more than the uninoculated which apparently showed the existence of a negative phase. This certainly shows that the vaccine had some beneficial effect upon the infection and yet the practical application of the observation is limited, for it is almost always impossible to determine when a patient is in the incubation stage of a pneumonia. Nevertheless the vaccination of those exposed to the disease might have favorable results. It is not a rare thing for the attendants of a patient suffering with pneumonia to develop

*On Pharmacotherapy and Preventive Inoculation Applied to Pneumonia in the African Native. By Sir Almroth F. Wright, M.D., F.R.S. Price, $2.00 net. New York: Paul B. Hoeber, 1915.

the disease and Dochez and Avery have shown that such attendants frequently carry in their mouths a pneumococcus of the same type as that infecting the patient. There might very well be a distinct indication for the use of vaccine under such circumstances.

Wright's most striking results were obtained by the use of pneumococcus vaccine as a prophylactic measure. He was fortunate in having a very large mass of material and his observations extended over a considerable period of time so that he is justified in drawing definite conclusions. The experiments are divided into sections so that all the figures cannot be presented here and we shall give only sufficient to indicate the nature of the results he obtained. During a period of three or four weeks following vaccination, 5963 inoculated natives showed a morbidity of 2.6 per cent., and a mortality of 0.83 per cent., while 5671 uninoculated gave a morbidity of 3.5 per cent and mortality of 1.53 per cent. When these cases were followed for a longer period of time it was seen that this immunity was of a short duration, for after the end of the second month following inoculation the case incidence among the inoculated and uninoculated was practically the same. This corresponds with the clinical observation that one attack of pneumonia does not protect against another. Curiously enough, after the introduction of prophylactic vaccination there seemed to be an improvement in the condition of both groups of natives so that even the uninoculated derived some advantage from the procedure. Thus he gives the following figures for the workers of one mine. In 1911 with a population of 10,426 none of whom were inoculated there was an incidence of 4 per cent. and mortality of 0.97 per cent. In 1912 about 50 per cent. of the 12,549 natives were vaccinated. In this year the incidence rate was 0.86 per cent. for the inoculated and 1.7 per cent. for the controls. The following year the population reached 15,284 of whom about 92 per cent. were inoculated, and among these the incidence rate was 0.6 per cent. while 3 per cent. of the controls developed pneumonia. It is easy to make the objection that Wright's results will prove of practical value only under certain special conditions and that to some extent is true. Surely one would hardly propose to vaccinate the whole population of the city on the first of January in each year. Nevertheless he has shown us that vaccines will do something toward developing an immunity against the disease and further extension of this work may increase their value in its treatment.

THE AUTOPSY, WAR, AND TUBERCULOSIS.

It is eminently characteristic of the German scientific spirit that an attempt should be made to transport the methods of the autopsy room to the battlefield and military hospital—as if those who died for their country might yield a further sacrifice or service, this time to humanity at large. The victims of war are generally those who are cut down in the bloom of life, who die as the result of severe injuries or of rapidly terminating acute infectious diseases. Aschoff has suggested that anatomical data of considerable value may be obtained from the autopsies of those who die in the strength of full manhood—particularly with reference to the normal weight of the individual organs. J. G. Mönckeberg (*Zeitschrift für Tuberkulose*, May, 1915) finds a still greater value in these autopsies as a means of determining the presence or absence of latent pathological processes. In his own investigations he has confined his attention to tuberculous lesions. In 27 out of 85 cases (31.76 per cent) he found evidences of tuberculosis, either active or healed. The above 27 cases comprised 22 German and 4 French soldiers and 1 Belgian soldier, of ages varying from 21 to 43 years. In five of these cases tuberculosis was to be regarded as the cause of death, but in the remaining 22 it was an accidental finding. In three of these there were recent or fresh lesions. In most of the cases the seat of the disease was the right lung.

A question of considerable practical importance arose in the study of the above cases, namely, to what extent are latent tuberculous lesions liable to become active ones under the stresses and privations of military life? No evidence was forthcoming that any of the latent lesions in the above cases had become active, whereas the five recent cases of tuberculosis concerned individuals who were tuberculous at the beginning of their military service, and in whom the disease made rapid progress and terminated fatally in a short time. This last fact, emanating from an authentic source, is one of more than mere scientific interest: it shows how under the stress of national necessity even tuberculous individuals are enlisted to fight the battles of their country! The history of the following case requires no comment: A 24-year-old farmer who had suffered from an intestinal trouble since July, 1913, was operated upon in January, 1914, and there was demonstrated the presence of tuberculosis of the cecum and miliary tuberculosis of the peritoneum. Nine months later he was enlisted as a reservist and in one month more was admitted as a patient to a military hospital and died a little over two months later. Autopsy revealed the widely disseminated and extensive lesions of a chronic general tuberculosis.

CIRCUMCISION OF THE TONSIL.

Circumcision of the tonsil signifies its complete detachment from the pillars and the breaking up of other adhesions that may be found about the tonsil. Dr. F. G. Murphy discusses this operation in the *Journal of the Iowa State Medical Society*, August, 1915. He points out that circumcision of the tonsil is indicated in the case of those who have septic tonsils and who are not physically able to withstand enucleation or who hesitate to do so. The results have been equally favorable in hypertrophied tonsils. The reasons for this operation are given at some length, and it is stated that with the tonsils entirely separated from the pillars and when these pharyngeal muscles milk the tonsil crypts, there can be no retention cysts and consequently no chronic lacunar tonsillitis. If, as

MacLachlan thinks, peritonsillitis is likely to come from extratonsillar origin, there is little probability of an attack of quinsy occurring when the anterior fossa and supratonsillar fossa are freed from all adhesions. Murphy further draws attention to the fact that for the past few years the trend of the profession has been toward the total extirpation of apparently non-essential organs such as the gall-bladder, appendix, and tonsils. However, if it were possible to render the gall-bladder and the appendix permanently inoffensive, no surgeon would advise their removal. After pointing out the dangers of total extirpation of the tonsil, the writer goes on to say that it is safe to state that three times more people will submit to circumcision of the tonsil than will submit to enucleation. He concludes that, as it is now conceded by the profession that the infection in appendicitis, cholecystitis, pancreatitis, and ulcer of the stomach is frequently of tonsillar origin, therefore the circumcision of the tonsil, being an operation which causes so little inconvenience to the patient, should find ready acceptance as a prophylactic measure.

Alcoholism in France.

Without necessarily being definitely aligned on either side of the subject, one is led to believe that the present war is a trial on a large scale of the popularity and value of alcoholic liquors. Already France has put the ban on absinthe, Russia on vodka, England looks with disfavor on spirits, while Italy has begun to limit the distribution of wine. The medical men of England were divided last winter over the daily allotment of spirits to the soldiers in the trenches (the so-called "rum ration") and many were the heated arguments and even personalities which filled the columns of the medical press over this subject. On Feb. 12, the French Chamber of Deputies passed a clause prohibiting the manufacture and sale, wholesale or retail, of absinthe and similar beverages. Naturally the French medical profession took sides on the question. The Academy of Medicine of Paris debated it at length and finally recommended in a series of resolutions the stopping of the sale of all beverages of high alcoholic content. These resolutions were so worded as to include liqueurs, brandies, and strong wines. They also recommended a heavy tax on all liquors containing over 15 per cent alcohol. It is noteworthy that these resolutions contain nothing which might be construed as disapproving of the use of light wines; in fact, the general opinion of the members of the Academy seemed to be that the amounts of these furnished the soldiers might be increased. Beer, cider, and similar drinks were also not restricted. The consumption of light wines, as every one knows who is at all conversant with the customs of the Latin races, is very general among them, wines being served with meals in lieu of water. These wines are usually of a very low alcoholic content and are often rendered still further innocuous by dilution with water.

A Warning.

We have several times called attention in these columns to the collection of subscriptions for the Medical Record or *The American Journal of Obstetrics and Diseases of Women and Children* by unauthorized persons. There is apparently an organized band of these rascals working the cities and larger towns in many sections of the country. Their scheme, or one of their schemes, is to represent themselves as an association of indigent students who are given free tuition in a medical college in return for a certain number of paid subscriptions, new or old, to either or both of the abovementioned journals. They thus work upon the sympathies of their dupes who feel they are helping deserving young men to get a medical education, while at the same time they are treating themselves to some of the best obtainable medical literature. We would again warn our present subscribers not to give money for renewals to any but our authorized agents, or preferably to send it direct to the subscription department of one or the other journal. As to the intending new subscribers, we are doing our best to protect them by notifying the police of the States where these gangs of sharpers are working. We would also suggest to our friends that they would be doing a favor not only to us, but, and especially, to their colleagues if they would speak of this matter in their society meetings, cautioning their fellow-members never to pay money for books or for subscriptions to this or any other journal to any but authorized agents of the publishers. By giving such warning they would help the readers not only of this but of other journals, for the subscribers to several of our contemporaries have been defrauded in the same way and by the same persons.

News of the Week.

Red Cross Excluded from Turkey.—The Turkish Government has informed the State Department at Washington that the American Red Cross will not be permitted to send surgeons and nurses to the aid of the Armenian people of the Turkish Empire. The number of Armenians thus far massacred by Turkish soldiers or sold into the harems is estimated at over 850,000.

Medical Deserters.—Among the nine German naval officers on the *Prinz Eitel Friedrich* and the *Kronprinz Wilhelm,* interned at Norfolk, who broke their parole, we regret to say there were two medical men, Drs. Koch and Kronecker. We had hoped the medical profession at least would have come out of this war without dishonor.

Tuberculosis Conferences.—The second annual New England Tuberculosis Conference was held last week at Springfield, Mass., with over 200 delegates in attendance. The opening address was made by Dr. Stephen J. Maher.

The second annual meeting of the North Atlantic Tuberculosis Conference and the annual tuberculosis conference of the State Charities Aid Association will open in Albany on November 4. The meetings will continue four days and will be held under the auspices of the State Department of Health, the National Association for the Study and Prevention of Tuberculosis, and the State Charities Aid Association. Governor Whitman, Dr. Hermann Biggs, State Commissioner of Health, and Mr. Homer Folks, secretary of the State Charities Aid Society, will deliver addresses at the opening meeting.

New York City Death Rate.—During the week ended October 16 there were 1,287 deaths in this city, giving a rate of 11.56 per thousand population, as compared with 1,185 deaths and a rate of 11.07 during the corresponding week of 1914. The real death rate is probably higher than this, for the partion cessation of immigration and the exodus of

Italian and other reservists has brought the population of the city below the estimate upon which the returns are made.

Chicago Death Rate.—During the week ended October 16 there were 583 deaths in Chicago, giving a rate of 12.4 per thousand, as compared with 559 deaths and a rate of 12.2 during the corresponding week of 1914.

Health of the Canal Zone.—Dr. Chas. F. Mason, chief health officer, reports that during the month of August there were 50 deaths in the Isthmian Canal Zone, of which 46 were from disease, giving a rate of 18.26 per thousand, as compared with 16.23 for the month of August, 1914. The rate in Panama City was 29.02 per thousand, as compared with 23.55 for the corresponding period of last year. In Colon the rate was 20.86 for August, 1915.

Deaths from Walking on Railroad Tracks.—In a bulletin recently issued by the New York & New Haven Railroad it is stated that during the past year 5,471 persons in this country were killed while walking on railroad tracks; that is to say, 15 persons lost their lives through this form of carelessness or recklessness every day in the year.

Dr. Bulkley's Lecture on Diseases of the Skin.—The governors of the New York Skin and Cancer Hospital announce that Dr. L. Duncan Bulkley, assisted by the attending staff, will give a seventeenth series of clinical lectures on diseases of the skin in the Out-Patient Hall of the hospital on Wednesday afternoons, beginning November 3, 1915, at 4.15 o'clock. The lectures will be free to the medical profession on the presentation of their professional cards.

Harvey Society Lecture.—The second lecture of this series will be given at the New York Academy of Medicine on Saturday, November 6, at 8.30 P.M., by Prof. A. J. Carlson of the University of Chicago. The subject of the lecture will be "Recent Contributions to the Physiology of the Stomach."

Cornell Medical School.—At the opening exercises of this school, held last week, the Dean, Dr. William M. Polk, delivered the address of welcome to the students. He said that fifty years ago there was practically only one course open to the graduate in medicine, viz., practice, whereas now there are many lines, such as public health and sanitation, the army and navy, research and teaching, as well as medical missionary work, which he regarded as one of the highest of callings. The number of students enrolled at the beginning of this session was 172.

The Elizabeth Steel Magee Hospital in Pittsburgh was dedicated with appropriate ceremonies on Wednesday of this week. Addresses were made by the Rev. David Jones, representing the trustees; Dr. C. E. Ziegler, medical director; the Rev. S. B. McCormick, chancellor of the University of Pittsburgh, and Dr. W. W. Chipman, of McGill University Medical School.

Dr. Henry A. Strecker has been appointed chief medical inspector of the Philadelphia Bureau of Health, in succession to Dr. Charles A. Groff resigned.

Dr. Florence C. Child has been appointed medical inspector in the Division of Child Hygiene of the Philadelphia Bureau of Health.

Dr. A. J. Barker Savage has been appointed superintendent of the new Broad Street Hospital in this city.

Dr. S. P. Beebe has resigned from the medical staff of the New York General Memorial Hospital and from the faculty of Cornell Medical School.

Dr. A. W. Taves has removed to 71 West Eighty-fifth Street, New York.

Dr. John O. Blake has been appointed health commissioner of Baltimore in succession to Dr. Nathan R. Gorter, who has been made a member of the Maryland State Board of Health.

Dr. William G. Spiller has been elected professor of neurology in the University of Pennsylvania in succession to Dr. Charles K. Mills resigned.

Dr. Melvin M. Franklin has been appointed orthopedic surgeon to the Philadelphia General Hospital in succession to Dr. Gwillym G. Davis resigned.

Dr. Ray Lyman Wilbur, professor of medicine, has been elected president of Leland Stanford Junior University. He will assume his new duties on January 1.

General Practitioners and Osteopaths.—Attorney-General Woodbury, in an opinion given to the New York State Educational Department, holds that general practitioners may employ osteopathy in cases where the condition of a patient warrants such practice, but they may not advertise and hold themselves out to the world as osteopaths, unless they are licensed to practice that system.

Alvarenga Prize.—The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Señor Alvarenga, and amounting to about $250, will be made on July 14, 1916, provided that an essay deemed by the committee of award to be worthy of the prize shall have been offered. Essays intended for competition may be upon any subject in medicine, but cannot have been published. They must be typewritten, and if written in a language other than English should be accompanied by an English translation, and must be received by the secretary of the college, Dr. Francis R. Packard, on or before May 1, 1916. Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author. The successful essay or a copy of it must remain in possession of the college; other essays will be returned upon application within three months after the award. The Alvarenga Prize for 1915 has been awarded to Dr. J. E. Sweet of Philadelphia for his essay entitled: "The Surgery of the Pancreas."

Philadelphia Medical Club.—A reception was tendered on the evening of October 15 to the Surgeons General of the United States public services. Dr. William C. Gorgas, Surgeon General of the United States Army, was unavoidably absent. Rear Admiral William C. Braisted, Surgeon General of the United States Navy, urged the formation of an active reserve force of seven hundred medical men for the United States Navy, all less than forty-five years of age, who should bind themselves for a period of five years' service, and to be trained and ready for duty in case of war. Also he advocated the formation of a reserve hospital corps of five hundred men of high type as nurses, to be trained in naval hospitals together with at least eight hundred women nurses. Surgeon Rupert Blue, of the United States Public Health Service, urged the passage of legislation for the systematic trapping and extermination of rats, with a view to preventing the invasion of bubonic plague. Dr. Judson Daland was nominated for president of the club, Dr. William Duffield Robinson for vice-president, Dr. Wm. S. Wray for secretary and Dr. Lewis H. Adler, Jr., for treasurer.

No Insurance Against Malpractice Suits.—The Ohio State Superintendent of Insurance has ordered the cancellation of policies issued by liability companies to indemnify surgeons in case of loss of malpractice suits. The reason given is that the issuance of such policies is in probable contravention of public policy as permitting insurance against lack of skill or carelessness.

Charitable Bequests.—By the will of the late Charles Fox of Philadelphia the sum of $3,600 is bequeathed to the Methodist Hospital.

By the will of the late Sarah J. Robeson of Philadelphia the sum of $15,000 is bequeathed to St. Timothy's Hospital of Roxborough for the endowment of three free beds, the sum of $3,000 to the Mercer Memorial Home, Atlantic City, for the endowment of a free bed, and $1,000 to the Children's Seashore House at Atlantic City.

By the will of the late Elizabeth Pile of Philadelphia, a residuary estate of about $50,000 is bequeathed to the Pennsylvania Hospital for the endowment of free beds.

By the will of the late Julia Baeder of Philadelphia bequests of $5,000 each are made to the Polyclinic Hospital and St. Luke's Hospital.

Red Cross Christmas Seals.—Two hundred million Red Cross Christmas Seals are now being printed and distributed by the American Red Cross and The National Association for the Study and Prevention of Tuberculosis, according to a statement issued by the latter organization to-day. The proceeds from the sale of these seals will go for the fight against tuberculosis in the communities where the seals are sold. Of this number the New York State Charities Aid Association expects to sell ten million, an increase of more than a million and a half over the sale of last year.

Examinations for Admission to the Medical Corps, U. S. Navy.—The next examination will be held November 15, 1915, at Washington, D. C.; Boston, Mass.; New York, N. Y.; Philadelphia, Pa.; Norfolk, Va.; Charleston, S. C.; Great Lakes (Chicago), Ill.; Mare Island, Cal., and Puget Sound, Wash. Applicants must be citizens of the United States and must submit satisfactory evidence of preliminary education and medical education. The first stage of the examination is for appointment as assistant surgeon in the Medical Reserve Corps and embraces the following subjects: (*a*) Anatomy, (*b*) physiology, (*c*) materia medica, (*d*) general medicine, (*e*) general surgery, and (*f*) obstetrics. The successful candidate then attends a course of instruction at the Naval Medical School, during which course he receives a salary of $2,000 per annum, with allowances for quarters, heat, and light, and at the end of the course, if he successfully passes an examination in the subjects taught at the school, he is commissioned an assistant surgeon in the navy. Full information with regard to the physical and professional examination may be obtained by addressing the surgeon-general of the Navy, Navy Department, Washington, D. C.

Pathological Society of Philadelphia.—At a stated meeting held October 14 Dr. Eugene L. Fiske delivered the Samuel D. Gross lecture, taking up for consideration "The Increasing Mortality from Diseases of the Heart, Blood Vessels, and Kidneys." He pointed out, as a result of careful, painstaking and extensive statistical studies, that while communicable diseases in general, and prominently tuberculosis, have in recent decades diminished in frequency in the United States and exhibited a lower mortality than in the past, the so-called degenerative and recessive disorders, and more especially those involving the heart, the blood vessels, and the kidneys, have increased in frequency and have yielded a growing mortality, when compared both with the past in this country and with existing conditions in the countries of Europe.

National Committee for the Prevention of Blindness.—The annual meeting of this committee will be held at the New York Academy of Medicine on Thursday afternoon, November 4, at 4.30 P.M. Hon. Joseph H. Choate will preside, and the speakers will be ex-President William H. Taft and Dr. George E. de Schweinitz.

Bust of Dr. Battey.—Mrs. Martha Smith Battey has presented the Emory University a marble bust of the late Dr. Robert Battey of Rome, Ga.

The Late Dr. Austin Flint.—At the meeting of the faculty of the Cornell University Medical College held at the college on Friday, October 15, 1915, the following memorial was read and adopted: Austin Flint, M.D., LL.D., Professor Emeritus in the Cornell University Medical College, passed away September 22, 1915, in the eightieth year of his age. A student of Claude Bernard and of Robin, he early achieved distinction. Thus, in 1862, at the age of twenty-five, he discovered a substance in human feces which he called stercorin, recognizing it as a derivative of cholesterin. This discovery was awarded honorable mention by the Institute of France. It did not receive full recognition because of an unfavorable pronouncement by Hoppe-Seyler. However, in 1896, stercorin was again discovered, this time by Bondzynski, and given the name of koprosterin. To Flint, however, working with older, cruder methods, belongs the credit of having first isolated the substance in pure crystalline form.

Austin Flint was one of the greatest teachers of the old school of American medicine. A forceful orator and skilled experimentalist, he was the first in this country to expound the doctrines of the French school of physiology which in his early life was at the height of its renown. Dr. Flint took pride in being of the fifth generation of noted physicians, his great-grandfather and his father having borne the name Austin Flint, a name which outlives him in a surviving son.

We, the faculty of the Cornell University Medical College, with which Dr. Flint was associated during ten years, hereby record our appreciation of this life and beg to tender our sympathies to his family.

Obituary Notes.—Dr. PATRICK WILLIAM CREMIN of New York, a graduate of the College of Physicians and Surgeons, New York, in 1866, and a member of the New York State and County Medical Societies, died at his home on October 17, aged 74 years.

Dr. WILLIAM NOYES of Boston, Mass., a graduate of the Harvard University Medical School, Boston, in 1885, and a member of the American Neurological Association, the Boston Society of Psychiatry and Neurology, the American Medico-Psychological Association, and the Massachusetts Medical Society, died at his home, after a short illness, on October 20, aged 58 years.

Dr. E. S. MCCAIN, deputy State health officer at Brownsville, Tex., a graduate of the University of Texas, Medical Department, Galveston, in 1903, was killed by Mexican raiders at Brownsville on October 18.

Dr. ADOLPH KESSLER of New York, a graduate of the University of Berlin, Germany, in 1855, in

charge of the United States Military Hospital at Baltimore during the Civil War, formerly a member of the Board of Coroners of New York and assistant sanitary superintendent of the Bronx, and a member of the New York State and County Medical Societies, died at his home on October 20, aged 82 years.

Dr. WILLARD K. DYER of Boston, Mass., a graduate of the Eclectic Medical College, Cincinnati, Ohio, in 1908, died in a Boston hospital on October 18, aged 64 years.

Dr. WILLIAM MILLER BAIRD of Atlanta, Ga., a graduate of the Bellevue Hospital Medical College, New York, in 1877, died at the home of his son in Baltimore, Md., after a long illness, on October 10, aged 56 years.

Dr. SAMUEL CHASE THAYER of Boston, Mass., a graduate of the Medical School of Maine, Portland, in 1882, died at his home, from pneumonia, on October 11, aged 54 years.

Dr. GEORGE W. PRUGH of Cincinnati, Ohio, a graduate of the Medical College of Ohio, Cincinnati, in 1875, died suddenly, while attending a reception, on October 12, aged 66 years.

Dr. EDMUND R. BOLDING of Elbing, Kan., a graduate of the College of Physicians and Surgeons, Kansas City, in 1898, died suddenly in Kansas City on October 9, aged 44 years.

Dr. JAMES A. MCGUIGAN died at Philadelphia on October 21, at the age of 69 years. He was graduated from Jefferson Medical College in the class of 1862. He served as surgeon in the United States Army during the Civil War.

Dr. JOSEPH BENSON PARKER, rear admiral and medical director in the United States Navy, retired, died at Philadelphia on October 21, at the age of 74 years. He was graduated from Bellevue Hospital Medical College in the class of 1866. He served as acting assistant surgeon in 1863, becoming assistant surgeon in 1866. Passed assistant surgeon in 1867 and surgeon in 1868.

Dr. EUGENE A. GROVE died of paralysis at Carlisle, Pa., on October 23, at the age of 65 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1870.

Correspondence.

OPPORTUNITIES FOR HOSPITAL STUDY IN PARIS.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—Will you not publish the fact that now is the time for students and doctors with a knowledge of French to come to Paris if they would improve an exceptional opportunity to see and even help in the hospitals?

Professors Tuffier, Pozzi, Brouardel, Robin, Moreston, and all in fact are doing their operating and hospital work with the aid of nurses. All the younger doctors are in the military hospitals and at the front. Any of our men coming to observe hospital work in Paris now would easily work into position as assistants and profit more than ordinarily.

At present I am at the front, but if any of the men coming over will inquire for me at the American Embassy, if I am in Paris, I will be only too happy to guide them into any of the special lines in which they may want to work.

SHERWOOD DUNN, M.D.

PARIS.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

WINTER SESSION—ADDRESSES—PRIZES—THE BUDGET, A TAX ON PATENT MEDICINES—COLORED BACKGROUND FOR OPERATING—OBITUARY.

LONDON, Oct. 8, 1915.

WITH October comes the opening of the winter session of our medical schools. So there have been meetings and congratulations among teachers and students, with welcomes to new entrants. These last, it must be observed, are less numerous than usual and there was a corresponding air of depression among the assemblies of the early days of the week, except at the women's school, which was able to boast of an increase. The war is held accountable for limiting the number of entrants as well as for depleting the staffs of men who have gone to the front or otherwise undertaken work for the wounded.

The introductory addresses, at one time so marked a feature at all the schools, have fallen off of late years in the important part they played in the ceremonies, and in some instances have been discontinued—to the regret of not a few old students who took pleasure in renewing acquaintances and partly forgotten associations. Then they afforded a number of persons engaged in medical teaching an opportunity of expressing their views or considering questions relating to the education and training of students that might be attracting attention at the time, as well as offering to the students themselves kindly and practical advice for which scarcely another occasion was available.

At Charing Cross Hospital Dr. Ronald M. Burrows, principal of King's College, distributed the prizes and delivered the address, in which he insisted on the importance of the work of the universities and colleges which loomed larger in the national life than ever before. The army in this war had been officered by university men to the extent of 80 or 90 per cent. Their scientists and also those of the hospitals had placed their brains at the service of their country during this war time and it should be remembered that military successes were as dependent on education as literature or science.

At the Middlesex Hospital there was no formal "introductory," but the distribution of the prizes by Sir Kingston Fowler. The dean read his annual report, which was of a congratulatory tone. A number of beds were reserved for wounded soldiers and the convalescent home had been handed over to the War Office. Most of the staff were engaged in some sort of military service, as were many practitioners, former students, some of them having been awarded honors, but not a few having lost their lives.

Sir K. Fowler said a few words to the students. He told them the place where they could best serve their country was the place to which duty called them. All could not be at the front, but all could help in some way. War was a great sifter and separated men and things that mattered from those that did not matter. Play and work were not antagonistic. The profession had done its duty; many doctors had made great sacrifices. The R. A. M. C. had done magnificently, for Sir A. Keogh, to whom we owe so much for system with military hospitals, foresaw the necessities of such a time as this.

The budget this year, on account of the war, is

necessarily a heavy one and has been anticipated with some anxiety by needy professionals. The increased tax on so-called "patent" medicines might well have been greater. Indeed, most people who have any knowledge of these articles admit that they might be taxed out of existence to the advantage of the deluded purchasers. The only people to lose income would be those who derive it from dishonest pretensions.

Sir Berkeley Moynihan has called attention to the advantage of a green background to operation areas. It is much more restful to the eyes than the white usually found and a full light is, of course, essential. Mr. Hamilton Whiteford reports that for three years his operating theater has been painted a pale French blue, which he finds a great relief to the eyes. Mr. Frank Jeans reports that for five or six years he has used pale blue towels for his operations in private practice, his object being the practical one of distinguishing at a glance his own sterilized towels from those of other people.

The winter session of most of our medical societies has begun work during the week. The obstetrical and gynecological section of the Royal Society of Medicine is postponed until December 9.

Mr. Joseph Smith, J.P., D.P.H., Cantab., died on September 18, aged 77. He was the leading advocate of the rights of the members of the College of Surgeons, the president of the society formed for the defense of those rights, and may be considered its founder. Year after year he presided at the meetings and enforced their claims, with a natural and genial eloquence. He had a large general practice for several years, on retiring from which he became medical officer of health for Guildford, honorary surgeon to the Royal Surrey Hospital, and a magistrate for that county. Withal he will, I think, be most remembered in the profession for his earnest, self-denying work on behalf of the great mass of its members.

Sir James M. Moody, medical superintendent of the Cane Hill Asylum, died suddenly on the 20th ult. He was a recognized authority on psychological medicine and was twice offered a commissionership in lunacy, but preferred the work of a superintendent. He was considered a great organizer and administrator. Many who had served under him received analogous appointments in other asylums. He was knighted in 1909.

Lt.-Col. John Henry Dauber, who died on the voyage to Gallipoli, graduated at Oxford in both arts and medicine (1892-4) and was a Fellow of the Royal College Surgeons of Ireland. He was on the staff of hospital for women and a member of the committee, on which he worked assiduously. He was also president of the Chelsea Clinical Society. He was in the Sussex Yeomanry several years before the war.

Progress of Medical Science.

Boston Medical and Surgical Journal.

October 14, 1915.

1. An Analysis of 308 Cases of Typhoid Fever in Children. K. G. Percy.
2. The Therapeutic Value of Occupation for the Insane. E. L. Haines.
3. The Teaching of Applied Therapeutics at Tufts Medical School. F. H. McCrudden.
4. The Workmen's Compensation Act and the Physician. H. J. Crenon.
5. A Method of Testing Gastric Secretion by the Use of a Self-closing Dredge. A. H. Burgess.
6. Sunshine: Its Neglected Analgesic-Sedative Action. J. Bryant.
7. Neuroma of Ulnar Nerve: Analysis of a Case. J. B. Ayer.

1. Typhoid Fever in Children.—K. G. Percy analyzes 308 cases of typhoid fever which have been treated in the Children's Hospital of Boston since 1913. This series embraces children from infancy through the twelfth year. The author comes to the following conclusions: Typhoid is a relatively common disease in childhood and far more prevalent in infancy than formerly supposed. Symptomatically it is ushered in very much as in adults, with headaches, fever, malaise, and abdominal pain as the most frequent symptoms. In this series and in a large collected series from the literature, the spleen is enlarged in 71 per cent. of all cases, rose spots are seen in 61 per cent., positive Widals are seen relatively early in 88.2 per cent., white blood count is below 10,000 in 73 per cent. The fever lasts an average of twenty-five days. Relapses occur in 11.8 per cent., intestinal hemorrhages in 4.2 per cent., perforation of intestines in 1.2 per cent., complications in 10.6 per cent., and the mortality is 5.3 per cent. Therapeutically, a diet, bland, high caloric, and suited to the individual need of each patient, is most important. Hydrotherapy seems to have a vital place in the treatment of the febrile and delirious stage of the disease. Enemata are essential in a high percentage of cases. Stimulants and other symptomatic drugs are to be used as need arises, for typhoid is a disease, cured not by medicine, but by good nursing, and keen, sensible therapy.

5. Testing Gastric Secretion by the Use of a Self-closing Dredge.—A. H. Burgess calls attention to the fact that of the many attempts which have heretofore been made to find a method of obtaining a sample of gastric contents without the use of a stomach tube, none has been absolutely successful. The failures are due chiefly to the fact that contamination with esophageal and pharyngeal mucus has been found unavoidable. His method consists of the use of a capsule, which is so constructed that it automatically closes as it leaves the stomach, and thus protects its contents from contamination. The author gives diagrams and describes this capsule, a dredge, in detail. He points out that by the use of his method an adequate qualitative examination of the gastric contents is possible without the discomfort to the patient which attends the passage of the stomach tube. With the two smaller sizes it is convenient to use a bit of congo red paper in the dredge to indicate the presence of hydrochloric acid, and to transfer a little of the fluid to a slide with a capillary pipette for microscopical examination. The capacity of the two larger sizes is such that 0.1 c.c. or more of gastric contents is obtained, and with care an accurate titration of the acidity can be made. For this purpose it is convenient to use N/200 NaOH solution in an ordinary burette. By the use of the larger dredges it is possible to carry out, if desired, a study of the variations of acidity in the course of gastric digestion.

6. Sunshine.—J. Bryant points out that the healing power of the sun has been known for countless ages. Modern scientific application of this knowledge is, however, limited. Solaria are numerous enough, but there is little attempt to get direct application of the sun to the skin, except in the case of the artificial Finsen light for lupus, or more recently in the case of bone and joint tuberculosis. The author is of the opinion that insolation is not only beneficial to the tuberculous, but to the many other cases suffering from chronic pain, especially in the bones or joints, or from nervous irritability. Sunshine, when properly used, has both a powerful analgesic and a sedative action. The author hopes that if hospitals or sanatoria cannot be equipped for giving patients adequate insolation, advantage may

at least be taken of the value of carrying out this efficacious form of treatment at the home of the individual sufferer. Sunshine is a simple, cheap, and efficient analgesic sedative, of which more extensive use can be made with correspondingly gratifying results.

7. Neuroma of the Ulnar Nerve.—J. B. Ayer publishes a case of neuroma of the ulnar nerve, following an insignificant cut across the elbow, and leading to complete ulnar paralysis, with serious residual palsy. Three operations throughout a period of six years did not remove the disability. According to the author, this case teaches the importance of never allowing ourselves to be deceived by an apparently slight accident when in the region of a nerve; if progressive disability occurs, due to nerve involvement, thorough surgical investigation is indicated, with complete freeing of the nerve from scar tissue as early as possible, and precautions should be taken to prevent the formation of a similar situation. If delayed several years, regeneration may not take place.

New York Medical Journal.

October 16, 1915.

1. Rectal Fistula. J. R. Pennington.
2. The Exciting of the Cardiac Reflex in the Treatment of Enlargement of the Heart and Aorta. M. Solis-Cohen.
3. Acid Autointoxication Accompanying Hyperemesis of Pregnancy. E. E. Cornwall.
4. New Growths of the Prostatic Urethra in Relation to Tuberculosis. P. S. Pelouze.
5. The Identity of Peculiar Traite and Neuroses. A. Stern.
6. Creatinine as a Test for Renal Function. A. K. Detwiler and M. L. Griffith.
7. Pituitary Disease. W. Timme.
8. Some Uses for Xylol in Dermatology. J. E. Lane.
9. Obesity and Its Treatment. F. A. Cummings.
10. The Schick Test. J. Zuckermann.

2. Exciting of the Cardiac Reflex in Treating Enlargement of the Heart and the Aorta.—M. Solis-Cohen calls attention to the heart reflex of Abrams, which is a contraction of the heart and aorta produced by means of concussion of the spinous process of the seventh cervical vertebra. He has been exciting this reflex in many cases of dilated heart and aorta in both private and hospital practice. There were several failures, chiefly in children suffering from severe endocarditis and resulting myocarditis, with loss of compensation. In most other cases the response was marked—a lateral contraction of over an inch being usual and of over two inches being not uncommon. Before performing venesection on a patient with acute cardiac dilatation, the author concusses the seventh cervical spine, often with such success that venesection proves unnecessary.

3. Acid Intoxication in Hyperemesis of Pregnancy.—E. E. Cornwall publishes a case of hyperemesis gravidarum accompanied by an acidosis of considerable severity, in the management of which it was found possible to carry the patient through the period of intoxication without interfering with the pregnancy, thereby affording an especially favorable opportunity to observe the clinical features of this metabolic perversion, and also to test practically certain therapeutic procedures. Among the observations made on this case the following seem of special interest: The hyperemesis developed with considerable rapidity, lasted about a week and a half, and was followed by irregularly recurring nausea and vomiting, which lasted for about two weeks. No acetone nor diacetic acid were found in the urine five days before the hyperemesis appeared, but were found on the first examination made after it appeared, which was four days later; they persisted in large quantity until two days after the hyperemesis began to abate; and the acetone, not the diacetic acid, was found in the urine in gradually diminishing quantity for a week after the abatement of the hyperemesis and for one day after the urine had become alkaline. The patient craved alkalies in everything taken by mouth during the period of the acidosis. During the height of the acidosis, 20 per cent. of the total nitrogen excreted in the urine was found to be ammonia nitrogen. Half pint enemas of a 10 per cent. solution of dextrose, given every four hours, were fairly well retained, but an attempt to administer this solution by Murphy drip produced irritability of the rectum. The dextrose solution was retained better than a corresponding solution of levulose. The nausea and vomiting which persisted after the abatement of the hyperemesis, occurred more frequently in the afternoon than in the forenoon. Three months after the disappearance of the acidosis the patient appeared to be in good general condition.

4. New Growths of the Prostatic Urethra in Relation to Tuberculosis.—P. S. Pelouze, cystoscopist, Jefferson Medical College Hospital, observed during the last two years nine cases with urethral growths which presented urethroscopically almost an exact isomorphism; the symptoms bore a marked similarity, and the evidences of a coexisting tuberculosis were too constant to suggest mere coincidence. The growths were found only in the prostatic urethra, confined almost entirely to the roof and lateral walls, being most numerous just external to the vesical sphincter. They ranged from about one-twelfth to one-quarter the size of the average normal verumontanum; they were paler than the mucous membrane from which they sprang, which was usually healthy in appearance; were generally arranged in clusters, though at times isolated; were either moderately pedunculated or sessile; had none of the watery, translucent appearance of edema bullosum or the usual benign papillomata; and tiny bloodvessels could be distinctly seen passing over their perfectly smooth surfaces. From the findings in these cases and the fact that in the rather large cystoscopic service at the Jefferson Medical College Hospital the author has never encountered these masses in a patient in whom there was not very strong evidence of the existence of tuberculosis, he feels that they are in themselves sufficient warrant for a probable, if not a positive diagnosis of tuberculosis. Certainly in their presence a most careful study should be made to prove or disprove its presence.

6. Creatinine as a Test for Renal Function.—A. K. Detwiler and M. L. Griffith think that uremia is due to the failure on the part of the kidney to eliminate some products of protein decomposition or splitting which are nitrogenous; and they believe that the use of some approximately harmless normal nitrogenous constituent of the urine, as a test substance, would give a better idea of the function of the urinary tubules and also of the onset of uremia and kidney failure, than any foreign substance such as a dyestuff or drug. According to the author's experience up to now the creatinine test shows more perfectly than any other functional test, functional weakness of the kidney. Many times it is the only test which shows disturbance, and it may be that this special function is the one which is damaged especially early. This makes the test of special value in determining whether disease of the kidney exists or not, but as far as they know now it gives no basis for the classification of the lesion.

9. Treatment of Obesity.—F. A. Cummings gives the following suggestions in the treatment of obesity: Take a careful history and make a complete physical examination. Give a written diet list of what the patient may have. Be sure it is liberal and gives a variety. Do not allow fish and meat at the same meal. If the patient does not lose weight, cut down the amount of food at a meal and reduce the foods of higher starch content. Have your patients weigh

themselves regularly and report as often as necessary. Study the percentages of fats and carbohydrates as well as the caloric values of foods. Give small meals. Vary the food as much as possible.

10. Schick Test.—J. Zuckermann reports interesting observations about the Schick test and its relation to diphtheria immunity. For example, of the many cases of true clinical diphtheria occurring during the year, all had shown positive skin reactions previously. A few cases with negative reactions showed positive cultures to diphtheria. These at no time developed any clinical manifestations and were therefore considered bacilli carriers. In some cases with doubtful clinical signs, diphtheria was ruled out by the presence of a negative reaction. Thus the Schick test can to some extent replace cultures and aid materially in the diagnosis of diphtheria. The fact that it is necessary to immunize only cases giving a positive reaction has many points of advantage; the saving of antitoxin, the doing away with the labor involved in inoculating an entire ward of children, the prevention of more or less marked anaphylactic reactions, and it has replaced to some extent the isolating rooms for diphtheria. In a large institution, diphtheria is constantly making its appearance and in most asylums the problem of providing isolation, with the expense involved, is a difficult one. The author has placed diphtheria carriers among children who gave a negative skin test, and in no instance has infection resulted.

Journal of the American Medical Association.

October 16, 1915.

1. Some Aspects of Ophthalmia Neonatorum. G. S. Derby.
2. A Discussion of the Cancer Mortality. F. V. Beitler.
3. Hospital Internships in Ophthalmology. E. C. Ellet.
4. Chronic Nephritis, Analysis of 250 Cases in Private Practice. W. J. Barlow and R. L. Cunningham.
5. Prenatal Care, Deductions from the Study of Three Thousand Four Hundred and Sixteen Cases. M. L. Edward.
6. Observations on Incipient Hypertrophy of the Prostate. A. L. Wolbarst.
7. Experiences with the Sodium Citrate Method of Indirect Transfusion of Blood (Lewisohn). I. Simons.
8. Studies on the Localization of Cerebellar Tumors. Posterior New Growths Without Nystagmus. E. G. Grey.
9. The Diagnosis of Tumors in the Posterior Cranial Fossa. T. H. Weisenburg and P. Work.
10. Galvanometric Studies of the Cerebellar Function. I. L. Meyers.
11. Operative Treatment of Bunions by the Mayo Method. M. S. Henderson.
12. Vaccine Treatment of Hodgkin's Disease. Report of a Case. A. R. Hatcher and W. G. Lemmon.
13. Polypus of Fallopian Tube. L. H. Hoffman.
14. An Unusual Appendix. W. W. Grant.
15. Two Favus Families. J. E. Lane.

2. Cancer Mortality. — F. V. Beitler, chief of the Bureau of Vital Statistics, State Department of Health of Maryland, in reviewing the cancer mortality over a ten-year period, from 1904 to 1913, inclusive, noted a steady increase. In the year 1904 there was a mortality of 70.15 per one hundred thousand; in the year 1913 it had increased to 78.88 per one hundred thousand, a gain of 8.73 per one hundred thousand in a ten-year period. This represents an increase of 12.47 per cent. in the cancer mortality per one hundred thousand for a ten-year period. The relation of the cancer mortality to the general mortality during the same period shows a corresponding increase. In the year 1904 the deaths from cancer represented 4.24 per cent. of the total deaths, while in the year 1913, 5.60 per cent. of all deaths, an increase in its relation to the general mortality of 32.07 per cent. The cancer mortality in this ten-year period, both in its relation to the general mortality and in its relation to the population, shows a steady increase. The decline of the death rate in several of the major infectious diseases, namely, tuberculosis, pneumonia, typhoid fever, diphtheria and croup, stands in contrast to the cancer mortality.

4. Chronic Nephritis.—W. J. Barlow and R. L. Cunningham analyze 250 cases of chronic nephritis occurring over a period of twenty years in their private practice and come to the following conclusions: The prognosis of chronic interstitial nephritis is favorable when patients can be placed under proper conditions. Many cases of so-called interstitial nephritis are not true disease of the kidneys, and often these patients have no return of the abnormal urinary secretion. Patients with chronic interstitial nephritis, with good vascular and cardiac compensation, may live comfortably, and indeed, enjoy good health, for twenty-five or thirty years, and probably longer. Such patients may reach an arrest of the disease, they may be clinically well, and can be classified as apparently cured, quite as surely as in other chronic diseases.

6. Incipient Hypertrophy of the Prostate.—A. L. Wolbarst points out that the urinary symptoms associated with incipient prostatic hypertrophy are liable to be confused with functional disturbances of the bladder due to central nerve lesions, such as tabes dorsalis. Every patient with suspected prostatic hypertrophy should be carefully examined for evidence of spinal cord disease. The Wassermann test and the physical examination will often indicate that the urinary disturbances are due to central nerve disease, rather than to prostatic obstruction. The cystoscope is not to be used in the diagnosis of prostatic hypertrophy, unless the clinical data are insufficient. While the cystoscope is usually a perfectly safe instrument in the hands of the expert, it is potentially capable of doing much damage. The diagnosis of hypertrophy should be made on the clinical findings. Prostatectomy should be undertaken as a last resort, and not as a routine procedure. The bladder should be given an opportunity to compensate for the obstruction of the enlarged prostate. This can be encouraged by the application of hygienic measures tending to prevent congestion of the prostate and bladder. Massage of the bladder walls, by gently filling the bladder to its capacity, is extremely useful in stimulating compensatory hypertrophy. Prostatectomy is demanded as soon as a catheter is required to keep the patient in comfort.

7. Sodium Citrate Method of Indirect Transfusion of Blood.—I. Simons is of the opinion that we are not yet in a position to discard the direct for the indirect transfusion. In spite of the difficulties in technic attending the former, he believes it would be better to obtain the services of one skilled in arterial surgery. There is no reason to believe that hemoglobinuria may not occur with either type of transfusion with equal frequency. Having had an experience of a large number of direct transfusions, the author can say that shock is a negligible factor, that infarction occasionally occurs (lung, kidney), and that hemoglobinuria is quite common and can occur even when the tests in vitro are negative.

8. Localization of Cerebellar Tumors.—E. G. Grey points out that practically all authorities agree that nystagmus is a valuable localizing sign in diseases of the posterior cranial fossa. The author studied 51 cases of cerebellar new growths, which were localized at operation or at necropsy, to determine the proportion of patients with certified subtentorial new growths who have shown no nystagmus previous to operation. Of the thirty-four verified cases of cerebellar tumor and seventeen verified cases of extracerebellar tumor, eleven showed no nystagmus previous to operation on repeated examinations. All of the cases in which it was absent contained intracerebellar new growths. This suggests that when a patient exhibits a cerebellar tumor syndrome without nystagmus, the absence of rhythmic movements of the eyes points toward an in-

tracerebellar localization of the lesion. Among the members of both groups (that is, the group with and the one without nystagmus there were marked differences in the degree of intracranial tension. In each group there were new growths which involved the vermis and others which replaced a part or the whole of one or both hemispheres. Caloric examinations made in six of the cases in which there were no rhythmic movements of the eyes resulted in characteristic nystagmus from either labyrinth in five. Of forty verified cases of tumors lying anterior to the cerebellum, eight showed nystagmus previous to operation. Caloric examinations made in seven of the cases without nystagmus provoked characteristic rhythmic oscillations of the eyes from either labyrinth in six. These results indicate that in many cases of intracranial tumor the absence of nystagmus cannot be accounted for by an impairment of the fundamental mechanism of nystagmus.

12. Vaccine Treatment of Hodgkin's Disease.—A. R. Hatcher and W. G. Lemmon report a case of Hodgkin's disease successfully treated by autogenous vaccine and *x*-ray. They call attention to the fact that from 1832, when Hodgkin recorded a series of cases, up to 1913, the treatment of Hodgkin's disease was futile and the outcome fatal.

The Lancet.

October 2, 1915

1. Operative Findings in 12 Cases of Chronic Intestinal Stasis. W. S. Bainbridge.
2. The Prevention of Fistula in Ano. P. Lockhart-Mummery.
3. The Duration of Treatment in 1500 Cases. J. Rae.
4. Two Cases of Plumbism from Unusual Sources. A. J. Hall.
5. Tonsils and Chronic Cervical Adenitis. H. Gardiner.
6. Shrapnel Located at Back of Orbit. Successful Extraction. Sir W. J. Collins.
7. Massage in the Aftertreatment of the Wounded. J. B. Mennel.
8. Breathing and Physical Exercises for Use in Cases of Wounds in the Pleura, Lung and Diaphragm. C. MacMahon.

1. Chronic Intestinal Stasis.—W. S. Bainbridge states that the indifference with which Lane's earlier pronouncements concerning chronic intestinal stasis were received has been largely overcome. The author describes the symptoms and diagnosis of chronic intestinal stasis and in addition calls attention to a series of symptoms and diseases which Lane believes to be the outcome of chronic intestinal stasis and which have been called the end-results. Lane has enumerated a rather comprehensive list of diseases which he believes to be traceable to chronic intestinal stasis or to the lowered resistance which results therefrom, among which may be mentioned rheumatoid arthritis, tuberculosis, goitre, and cancer. It is to the last-named disease that the author wishes to direct especial attention. He is not prepared to say at the present time how far, in his opinion, chronic intestinal stasis affects the development of cancer. The whole problem of cancer is so involved that he can today merely hypothesize concerning its etiology. The interrelationship, however, of ulcers of the gastrointestinal tract and cancer of this region, of chronic irritation and cancer, and of these conditions with chronic intestinal stasis, furnishes food for serious consideration.

2. Prevention of Fistula in Ano.—P. Lockhart-Mummery points out that fistula in ano is, in the great majority of cases, an entirely preventable condition, provided that the abscess which nearly always precedes it is treated correctly in the first instance. The common mistake that is made in such cases is to temporize for a few days and to treat the case with fomentations in the hope that the abscess will subside or will become sufficiently obvious to be easily opened. The fact that this treatment gives considerable relief to the patient apparently justifies its adoption. What occurs is that in the course of a few days the abscess begins to point or bursts; there is complete cessation of pain and everybody is satisfied that the correct treatment has been adopted. The result of such treatment, however, will be almost inevitably the formation of a fistula in ano, and a subsequent operation for its relief. No harm can come from making an incision in the tissues at an early stage, even supposing that a mistake is made and no abscess is really present; the wound will rapidly heal up and cause no trouble. This is a far less serious mistake than to leave the abcess to reach a stage at which the subsequent fistula is inevitable.

4. Plumbism.—A. J. Hall states that it is curious to contrast the regularity with which we look at a patient's tongue and the rarity with which we look at his gums. And yet it is very rare to see a case of plumbism in which a careful inspection of the gums does not reveal the blue line at some part of the gum margin. One reads of the blue line being absent in persons whose teeth are kept scrupulously clean, and theoretically that is possible; but a careful search will usually find it, even in the best-kept mouths of those suffering from symptoms of plumbism. Within the last few months the author has seen three sporadic cases of plumbism which were entirely unsuspected; two were diagnosed as gall-stones and the third as alcoholic gastritis. In all three cases the blue line was present. In none of them had it been looked for. Recently some doubt has been thrown on its hematogenous origin, and it has been suggested that it may be due to lead dust in the mouth, deposited in the epithelium of the gum. If that is so, it follows that a person may have a blue line without having absorbed lead into the circulation. It is claimed that this happens in lead workers. Whether it is true or not in the case of lead workers, there is no doubt whatever that in ordinary sporadic cases of plumbism the lead-line is due to lead salts deposited in the gum from the blood, and if it is present, even though the symptoms are atypical and incomplete, no pains should be spared to find the source of the poison.

5. Tonsils and Chronic Cervical Adenitis.—H. Gardiner points out that in the majority of cases of chronic cervical adenitis where no obvious source of infection is present, the tonsils are infected. The size of the tonsil makes no difference to their infectivity, except that the small fibrotic variety is likely to be more dangerous than the large. The number of cases in which tubercle bacilli are present is relatively small, but is larger than in simple cases of enlarged tonsils. The frequent presence of other organisms than the tubercle bacillus in these cases suggests that a large proportion of the so-called chronic tuberculous glands are in reality chronic septic glands. The organisms are present in the deepest parts of the gland, and are therefore only removed by operations involving complete enucleation.

British Medical Journal.

October 2, 1915.

1. Injuries of the Superior Longitudinal Sinus. G. Holmes and P. Sargent.
2. The Treatment of Gunshot Wounds of the Head, with Special Reference to Apparently Minor Injuries. J. E. H. Roberts.
3. The Treatment of Gunshot Wounds of the Head, Based on a Series of Ninety-five Cases. Captain G. G. Tabuteau.
4. Treatment of Septic Wounds by Continuous Oxygenation or Irrigation. W. A. Wood.
5. Sandfly Fever and Bacteriology; Vaccine Treatment. C. J. Stocker.
6. An Adaptable Eye Shade for Microscopic Use. S. G. Shattock.

1. Injuries of the Superior Longitudinal Sinus.—G. Holmes and P. Sargent write that experiences in the present war have made them acquainted with many conditions which are rarely seen in civil practice, and

have especially presented to them groups of uncommon neurological symptoms or clinical pictures; these are also often less complicated and more sharply defined than those due to the ordinary pathological lesions with which they were previously familiar. The vascular lesions of the brain met with in civil life, for instance, are most commonly due to arterial disease, to thrombosis, hemorrhage or embolism, while primary affections of the cerebral veins are uncommon; on the other hand, in gunshot injuries of the head, especially when tangential or superficial, disturbance of the cerebral venous circulation by depression of fragments of the skull is frequent, owing to the superficial course of the cerebral veins and the fact that their thinner walls and the lower pressure of the blood that flows through them make them more liable to be blocked by pressure than the arteries. The most striking clinical effects are, however, produced when the cranial sinuses into which these cerebral veins flow are affected, and in the authors' experience much the most common of these to be involved is the superior longitudinal sinus. They have up to the present seen over seventy cases in which the longitudinal sinus was injured or the circulation in its venous tributaries disturbed in its immediate neighborhood. In many of these cases there was no direct damage to the brain, either by the projectile or by depressed fragments of bone, but in others the disturbance of the venous circulation was associated with gross cerebral lesions. The symptoms in these cases have varied very much according to the severity of the injury and the region in which the sinus was damaged.

2. **Gunshot Wounds of the Head.**—J. E. H. Roberts states that the number of patients who arrive at the base hospitals with gunshot wounds of the scalp is large. As their injuries are apparently superficial and their symptoms few or none, there is a tendency to overlook the fact that among them there is a fairly high percentage of cases with definite injury to the skull or to the skull and brain. Any scalp wound should be viewed with grave suspicion and the necessary measures to determine the presence or absence of a fracture of the skull taken. The methods adopted by the author in treating such cases are: Careful preliminary examination. Early operation on every scalp wound, however slight. Complete excision of septic tissues at the commencement of the operation. Removal of all accessible foreign bodies from the brain. Primary suture of wounds.

4. **Treatment of Septic Wounds.**—W. A. Wood points out that he has recently treated a severely lacerated and septic wound about the knee in a child by continuous oxygenation under pressure. He had a rubber bag constructed open at both ends and provided with sleeves at the ends and with a valve through which the oxygen can be introduced. The bag was slipped over the leg like a stocking and the two ends were rendered gastight by firm bandaging or the application of a Martin's rubber bandage. Oxygen was introduced from a cylinder up to the pressure of 3 to 4 lb. which the rubber easily stands. The wound rapidly cleaned and the granulation tissue assumed a most healthy appearance in a shorter time than one would have expected. The discharge collects at the bottom of the bag and can be either drawn off by a drain tube, or the bag can easily be removed, boiled, replaced, and refilled within a short time and without pain. This method, apart from keeping the wound in an atmosphere of oxygen, keeps the wound protected and saves the patient the pain of removing and replacing the dressings. This bag, with slight additions, can also be used for continuous or intermittent saline or antiseptic irrigation; by adding a fairly large sized rubber exit tube at the bottom of the bag, connection can be made to a vessel under the bed, and when it is in position on the limb saline may be run in from a large elevated vessel, the rate of entrance and exit being regulated by nipping the tubes more or less with clips. The advantages are as follows: The wound can easily be flushed and cleansed at any time, thus removing the dead and toxic lymph and leucocytes without removing the bag. The pain of repeated dressings is obviated. The saving in dressings is enormous. There is no pressure on the limb or soiling of sheets as in the ordinary saline bath. There is no pus poultice, and the patient is comfortable in all positions; he can move the limb with bag and bath attached.

Berliner klinische Wochenschrift.

September 6, 1915.

Influence of Antityphoid Inoculation on Typhoid Cases in the German Army.—Goldschieder and Kroner begin a serial article on this subject. In the first instalment the following conclusions are reached: The duration of the fever was often abbreviated; the fastigium was absent in the inoculated twice as frequently as in the non-inoculated, and this effect varied directly with the number of inoculations which had been practised. In the inoculated, the fastigium when present was of shorter average duration than in the non-inoculated (this was due to the extreme shortness of this stage in some of the inoculated); the maximum elevation of temperature in the fastigium of the inoculated was, on the average, notably lower than in the non-inoculated; a so-called amphibolic stage was very seldom pronounced in the inoculated; a remittent course, wholly or in preponderance, was seen much more frequently in the inoculated; the fever curve in the inoculated was often seen to constitute a mild form of the typical curve, and in many cases was shortened, flattened or otherwise deformed in a manner seldom seen in the non-inoculated.

A New Form of Wound Treatment.—Salomon has devised an application for wounds which consists of some form of petrolatum of low melting point to the extent of 97 per cent., the remainder consisting of a solution of crude rubber in ether or toluol. This ointment may also serve as a vehicle or base for resorcin, extract of hamamelis or other drug. The base itself is a wax-like substance which liquefies at 40° C. In order to apply it, it should first be heated to 90° C. in a water bath. It causes a marked hyperemia and is of striking benefit in tenosynovitis, arthritis, inflamed varicose veins, furuncles and carbuncles. In the latter the cores soon showed liquefaction and were readily impressed. The melted ointment was brushed directly upon and around wounds and cotton laid over all. A coating was then applied over the cotton. After cooling the cotton was stripped off along with the ointment. In this manner, all impurities were removed from the wound and a more permanent dressing applied. This was renewed daily. Offensive odors sometimes noticed had no bearing on the course of healing. When the latter had advanced to a certain degree, milder ointment or powders were substituted. The remedy was applied directly to suppurating surfaces, as large shell wounds, and served well for cleansing them. The author, however, speaks of applying sublimate solutions as well, and this alternation of water with greasy substances made it necessary to remove the latter from the surrounding skin with benzine. The principal motive of the author in devising this application seems to have been to secure economy in dressings, together with its natural simplicity. It is also especially valuable for

large defects made by shell fragments which heal, the author says, in a surprisingly short time, when treated in the manner described.

Münchener medizinische Wochenschrift.

September 7, 1915.

Treatment of Diphtheria.—Seidel claims to have made some novel observations on this subject. Diphtheria is a simple affection. Certain microorganisms begin to flourish in the tonsils and secrete a poisonous substance which enters the blood, in which it remains but a short time, its fate being to traverse the walls of the vessels and anchor itself in the tissues. An antiserum to be of certain worth must be thrown into the blood while the toxin still circulates within it. The toxin and antitoxin unite very slowly, not instantly, as was once believed. Hence when given early enough intramuscular injections are indicated, although one good intravenous injection should be associated with the first one. In the adolescent and adult it may be repeated, but in the young child the practicability of such a course is questionable. In making an early intravenous injection the author is not guided by the membrane but the general symptoms. In a material of 32 cases, all those injected before the third day lived. All fatal cases had not been injected until after the third day. In establishing the diagnosis the author finds that tonsillar smears are frequently sterile as far as the Klebs-Loeffler baccillus is concerned, while in not more than 20 or 30 per cent. do culture attempts succeed. To inject a negative case with antitoxin means to invite a possible anaphylaxis on repetition of the step but anaphylaxis cannot develop in the first six days, and the real danger lies in reinjection after intervals of weeks or months. In other words to inject without sure indication might handicap the child should it develop the actual disease within a year. But the danger of death is infinitesimal—perhaps one fatal case of anaphylaxis in 200,000 injections. The author's experience has been that the early combined method of injection prevents complications and that tracheotomy is never required.

Salt as a Preventive of Sweating in Consumptives, Soldiers on the March, etc.—Link proceeded in a research with the datum that the night sweats of the consumptive rob him of much salt. A man under excessive sweating can lose nearly half an ounce of NaCl, and if a consumptive is given a teaspoonful or so of the latter in half a glass of water upon retiring he will fail to perspire as usual. The mechanism of the phenomenon is not clear but the salt must confer some property upon the blood in virtue of which it does not readily part with its water. The author then tested this property of salt in healthy subjects—troops on the march in the hot sun. These men normally sweat, become thirsty, drink and sweat again—a vicious circle. There was a possibility also that loss of salt in this manner might be responsible in part for sunstroke. One hundred soldiers received each an even teaspoonful of salt before a march. The men were to march about 30 kilometers in sultry weather, and they sweat much less than their fellows and also drank much less water. Other tests, however, did not result in these differences, so that only under special weather conditions when men sweat profusely is a difference in marked evidence. Several years ago sodium bicarbonate was recommended as a preventive for sunstroke upon the theory that it maintained the isotonic quality of the blood. But this salt, the author says, has the disadvantage of neutralizing the gastric juice and very often of deranging the gastric functions while sodium chloride is entirely free from this drawback.

Deutsche medizinische Wochenschrift.

September 9, 1915.

Meningococcus Sepsis.—Professor Bittorf has seen recently four cases of this sort, the clinical picture having been uniform. An angina was accompanied, or followed, by a chill or fever or both, which ushered in a complete picture of general sepsis. On the first or second day a typical septic-embolic examination appeared most pronounced distally on the extremities. The lesions were extremely small, livid, round or elongated, invested by an areola itself not larger than a lentil, of a hyperemic-hemorrhagic character. New crops continued to appear and there was perceptible a slight induration at the center, which coincided with a minute focus of suppuration. Vesiculation and umbilication were at times in evidence. Crusting and cicatrization were seen in some lesions. There were also efflorescences which did not extend beyond the roseola stage. Herpes labialis was present in every case; once there was an intercostal zoster seen and once herpes of the cornea. In general there was an initial tendency to joint manifestations—pain and swelling. Individual cases showed individual phenomena which need not be detailed. All complained of a general prostration and headache. Meningitis appeared only as a late symptom, and lumbar puncture then made the diagnosis. The meningococcus was not found to a marked degree until after repeated examinations. Three patients recovered, the fourth dying of paralysis of the respiratory center. The diagnosis of a primary sepsis was evident from the exanthem, the initial joint disturbances, splenic tumor (absent, however, in one case), and character of the fever. The meningococcus doubtless caused an initial angina — in three cases tonsillitis, in the fourth swollen lymph nodes at angle of jaw—and proceeded at once to infect the blood. The meningitis was a blood metastasis. In regard to treatment and whether it affected the outcome it can only be said that the spine was tapped several times and that salicylic acid and urotropin were pushed. Serum was not used. Cases of this type have occasionally been reported, although perhaps not interpreted like the present ones.

Glycerophosphate vs. Sulphate of Magnesium in Subcutaneous Narcosis.—Professor Kobert inspired one of his students, Krause, to write his inaugural dissertation on this subject. The sulphate has undoubted narcotic powers in tetanus but lowers the blood pressure. A complete case had been made out in connection with the glycerophosphate and a well known drug house had placed a glycerophosphate on the market, when Zuelzer got in print with the announcement that this salt given in 25 per cent. solution 10 c.cm. eight to ten times daily was of service in tetanus. But while the author and Krause worked with animals only and were not convinced that magnesium controlled the nerve centers, Zuelzer tested the glycerophosphate on mankind and apparently with satisfactory results, *i.e.* it maintains the narcotic action of the magnesium. The author, however, had a large mortality among his animals, even in the absence of blood pressure lowering, and was forced to conclude that the glycerophosphate was more dangerous than the sulphate for man. He is pleased to find that his misgivings in this respect may have been causeless.

Age of Parents a Sex-Determining Factor. — R. J Ewart in a study of the influence of the age of the parents on the number and the sex of the offspring, both in the first and second generations, infers from the evidence collected that more males are born, the older the grandparents were at the time of the birth of the parents.—*Journal of Hygiene.*

Insurance Medicine.

The Role of Traumatism in Disease Calling for Compensation.—Sir Thomas Oliver, M.D., F.R.C.P., Professor of the Principles and Practice of Medicine, University of Durham College of Medicine, Newcastle-on-Tyne, England, in a paper read before the Assurance Medical Society of London, on May 5, 1915, showed that in the evolution of industrial legislation employers have been forced to accept responsibility for all accidents to their workmen occurring in service. By the Employers' Liability Act, liability was possible only if there had been negligence on the part of the employer, but by the Workmen's Compensation Act negligence as a contributory qualification is no longer necessary, on the part of either the employer or the workman. As legislation proceeded it became difficult to separate accident from industrial disease. Upon suddenness of development and unexpectedness County Court judges descanted, laying stress upon these phenomena as the distinction between accident and disease, but a fatal attack of anthrax in a workman who had opened a bale of infected wool demonstrated the unreliable foundation upon which this distinction rested. The malady in this case was both a disease and an accident.

More interesting, however, are the cases where, given the history of an accident, the injured person dies through the development of disease, and the dependants claim damages on the ground of the disease having been the outcome of the injury received. In view of the liability of employers for accidents under the Workmen's Compensation Act, the subject of traumatism and tuberculosis is not only interesting but important, and one on which medical men should have, as far as possible, a definite opinion. Sir Oliver cites the following case: Eighteen months ago a mason's laborer who had never lost time through illness fell from a scaffolding a distance of six feet, injuring his right hip and chest against a brick wall. At the close of the day's work the man walked to an adjoining railway station and took the train home. Nine days later he had his first hemoptysis. He recovered from this and returned to work. Six weeks after the accident he complained of pain in the right chest. On examination signs of pleurisy were found. The patient gradually became worse and emaciated rapidly. Cough increased in frequency and severity, expectoration containing tubercle bacilli. There was evidence of disease at the apex of the right lung. The case went into Court, and the judge awarded full compensation to the claimant on the ground that the pulmonary disease was the result of the accident. This shows the relation of chest injury to subsequent development of pulmonary tuberculosis, in which there would appear to be a distinct relationship between the two.

But a sequence of tuberculosis is also observed in injuries to the joints and bones. In the great majority of joint cases, however, the injury at the time of occurrence is of such a slight nature that it fails to attract the attention of the patient, while in the cases of injury to the chest wall with subsequent tuberculosis the injury has been of a serious nature. Hemoptysis has been one of the earliest signs of internal injury, occurring one or two hours after the accident or not until several days later. The result was the same, pulmonary tuberculosis.

Is there such a malady as that of which the textbooks speak, viz., *phthisis ab hæmoptoë?* Experimental investigation throws light upon the subject. Animals have had the trachea opened and healthy blood injected into the bronchial tubes. When kept in a warm atmosphere they recover without any bad effects, but if allowed to run about in the open air, exposed to cold, a low grade of inflammation in the lungs has been discovered. From this it would appear as if the presence of blood in the pulmonary alveoli and the bronchial tubes could induce pulmonary disease, the terminal stage of which by infection becomes tuberculous. The blood in the alveoli acts as an irritant, the local resistance of the lungs is lowered, and the lung tissue becomes a prey to all kinds of microorganisms, including tubercle bacilli. What is the cause of the hemoptysis which follows an injury? The delay in its development and the manner in which it recurs suggest the presence of preexisting disease, and, as a result of the contusion lung tissue which had undergone some change of structure had become more friable and therefore more easily torn.

Can we speak of such a disease as traumatic pulmonary tuberculosis? Where localized tuberculosis has declared itself after an injury, inquiry ought to be made into the previous health of the patient, always bearing in mind the fact that in about seventy per cent. of post-mortem examinations made in infirmaries upon the bodies of persons not having died from tuberculosis, there are evidences in the lungs of healed or latent tuberculosis so that if an injury to the chest wall had happened to any of these persons, the lung tissue at the site of a pulmonary focus might have been injured, tubercle bacilli have been liberated in conditions favorable to their growth, with the resultant established pulmonary disease. It is interesting to remember that when death has followed injury to the chest wall the lung opposite to the side injured has sometimes shown more serious lesions than the lung on the injured side.

Diabetes insipidus is known to follow some cases of head injury. Sir Oliver cites a case of his in which a healthy man fell from a scaffolding on a ship and hit the back of his head. He was rendered unconscious for several days. On recovering consciousness his first request was for water. Thereafter polyuria and polydipsia were established and persisted. Changes occurred in the optic disc proceeding to atrophy. This case was one of diabetes insipidus as the result of injury and it was one for compensation.

Locomotive engineers as a class die from diabetes mellitus in larger numbers than men engaged in most other occupations. The prolonged strain upon the nervous system created during long distance running may be responsible for the malady. Admitting this, the type of life, the heredity and other influences cannot be ignored altogether in decision for compensation. Apart from these, if it can be demonstrated that persons employed in any particular occupation die from a disease in larger numbers than persons engaged in other trades, some occupational influence must be at work over and above those alluded to.

With reference to cancer and traumatism, experiments on animals have proved that inoculation with cancer growths produced no results, but when the previous healthy tissue was injured and then inoculation occurred, cancer was produced. The local injuries produced as important a part in causing the disease as the inoculation itself.

Book Reviews.

DISEASES OF THE DIGESTIVE ORGANS. With Special Reference to Their Diagnosis and Treatment. By CHARLES D. AARON, Sc.D., M.D.; Professor of Gastroenterology in the Detroit College of Medicine and Surgery; Consulting Gastroenterologist to Harper Hospital. Illustrated with 154 Engravings, 48 Roentgenograms, and 8 Colored Plates. Price, $6.00. Philadelphia and New York: Lea & Febiger, 1915.

THIS is a volume of 790 pages and comprises 51 chapters, of which the first 13, including 231 pages, are devoted to the subjects of the physiology of digestion, the examination of the stomach contents and of the feces, Roentgen-ray examination, diet in gastric and intestinal diseases, artificial food preparations, lavage of the stomach, massage and electricity, treatment of diseases of the intestine through the rectum, hydrotherapeutics and mineral waters, and medications in gastric and intestinal diseases. The following chapters start with diseases of the mouth and take up in succession the pharynx, esophagus, stomach, liver, gall bladder, bile ducts, pancreas, small intestine, vermiform appendix, cecum, colon, sigmoid flexure, rectum, and anus. Considerable attention is paid to the subjects of diagnosis and treatment. All the latest methods of examination are given in detail. Thus, the various tests and reactions for the diagnosis of carcinoma of the stomach are fully described, including the Wolff-Junghans, Abderhalden, Gluzinski, Salmon, tryptophan, hemolytic, antitryptic, meiostagmin and cystodiagnostic tests. The methods of *x*-ray examination are fully presented and the Roentgenograms accompanying this section of the work are particularly helpful. These and the numerous other illustrations are of a high order of artistic merit. On the whole, one may characterize this work as an eminently practical treatise which covers the ground fully in an interesting manner. It is well written and may be used both as a textbook and as a work of reference.

KLINISCHE BEITRÄGE ZUR KLINIK DER INFEKTIONSKRANKHEITEN UND ZUR IMMUNITÄTSFORSCHUNG (mit Ausschluss der Tuberkulose). Herausgegeben von Professor Dr. L. BRAUER, arztlichem Director des Allgemeinen Krankenhauses Hamburg-Eppendorf. Redaktion, für die Originale: Professor Dr. H. SCHOTTMÜLLER (klinischer und bakteriologischer Teil) und Professor Dr. H. MUCH (immunitätswissenschaftlicher Teil), beide am Allgemeinen Krankenhaus Hamburg-Eppendorf. Für die Ergebnisse: Professor Dr. H. LUDKE, im Würzburg. Vol. III, No. 3. Vol. IV., No. 1. Price per volume, 20 marks. Würzburg: Curt Kabitzsch, 1914.

THE two numbers here presented contain important contributions and reviews in the domain of the infectious diseases and immunology, some of which have already been referred to in the editorial columns of the MEDICAL RECORD. The first of these numbers contains the following articles: The Influence of Immunological Research upon the Study of Specificity, Digestion and Assimilation, by Hamburger; Hemorrhages in Scarlet Fever, by Klimenko; The Partial Antigens of the Staphylococci, by Strubell-Böhme, and reviews by Kleinschmidt on The Natural and Artificial Formation of Diphtheria Antitoxin in Man; and by Luckenbein on Treatment with Tumor Extracts and its Results. The second number contains the following articles: Etiological Researches on Typhus in Serbia in 1913 and Hamburg in 1914, by von Prowazek; A Case of Purpura with an Eruption of Hemorrhagic Vesicles, by Lindvall; Abscess of the Lung, by Josefson and Bladini; and Clinical Manifestations Following Prophylactic Typhus Inoculation, by Romer. The reviews are by Jochmann on Septic Endocarditis and by Schmitt on The Specific Treatment of Gonorrhea.

THE CLINICAL ANATOMY OF THE GASTRO-INTESTINAL TRACT. By T. WINGATE TODD, M.B., Ch.B., Fr.R.C.S., Eng., Henry Willson Payne Professor of Anatomy in the Western Reserve University, Cleveland, Ohio; late Lecturer in Anatomy University of Manchester. Price, $1.75 net. London, New York and Bombay: Longmans, Greene & Co., 1915.

IN the volume before us Mr. Todd has embodied the substance of the course of lectures on the alimentary canal as given in the Anatomical Laboratory of Western Reserve University. The alimentary canal is discussed from the clinical standpoint, but the mouth, pharynx, tongue and salivary glands have not been considered owing to the fact that only results of recent investigation which are of value for clinical purposes have been included. Also clinical research on the mouth and pharynx has not progressed so rapidly as has investigation on the abdominal part of the alimentary canal. Elementary facts have been omitted and the book is an outline of advanced anatomical knowledge regarding the alimentary tract. The work should prove useful to students and practitioners.

FEWER AND BETTER BABIES or The Limitation of Offspring by the Prevention of Conception. The Enormous Benefits of the Practice to the Individual, Society and the Race Pointed Out and all Objections Answered. By WILLIAM J. ROBINSON, M.D., Chief of the Department of Genito-Urinary Diseases and Dermatology, Bronx Hospital and Dispensary; Fellow of the American Medical Association and of the New York Academy of Medicine; Member of the American Urological Association, American Medical Editors' Association, etc.; Editor of the *Critic and Guide* and of the *American Journal of Urology, Venereal, and Sexual Diseases*. With an Introduction by A. JACOBI, M.D., LL.D., Ex-President of the American Medical Association. Price, $1.00. New York: The Critic and Guide Co., 1915.

THE title-page indicates the purport and tone of this book. The author believes "that under any conditions and particularly under our present economic conditions, human beings should be able to control the number of their offspring.....the knowledge of preventing undesirable conception should not be considered criminal knowledge.....and its dissemination should be as permissible and as respectable as is the dissemination of any hygienic, sanitary, or eugenic knowledge." The supposed physiological, hygienic, economic, and moral objections to the prevention of conception are discussed in detail and attempts are made to answer them. The subject is one that requires careful philosophical analysis and perhaps false impressions may be created by rhetorical phrases which merely tend to cover what some more careful readers may regard as poor logic. The author has, however, written an interesting brief that cannot fail to stimulate thought.

CHIRURGISCHE OPERATIONSLEHRE FÜR STUDIERENDE UND AERZTE von Prof. Dr. FRIEDRICH PELS LEUSDEN ord. Prof. der Chirurgie und Direktor der chirurgischen Universitätsklinik und Poliklinik zu Greifswald. Zweite, wesentlich verbesserte Auflage mit 766 Abbildungen. Berlin und Vienna: Urban und Schwarzenberg, 1915.

THE first edition of this work appeared in 1910 and the present one is enlarged to the extent of sixty pages only; even this accession could be accounted for by the addition of a hundred illustrations. The author states in his second preface that his principal efforts have been in the direction of increasing the quality rather than the quantity. Slight gaps have been filled, defects have been made good and errors corrected. The one addition mentioned by him is in the domain of local anesthesia. Although the war was well under way when this preface was written the author states that his patriotism is not involved in a scientific effort like the present. If there is more German surgery than foreign surgery, it is because he knows more about the former and its literature is more accessible; but he has endeavored to do justice to the work of colleagues in other countries. The number of illustrations is practically equal to the number of pages which virtually makes the work an atlas, allowing for the omission of colored plates. The surgical advances of the past five years are represented largely by the additional illustrations. Two omissions worth noting are a list of illustrations and a register of proper names. These might have indicated almost at a glance the real amount of progress represented.

THE INSANITY OF YOUTH AND OTHER ESSAYS. By BAYARD HOLMES, B.S., M.D., author of "The Friends of the Insane." Price, $1.00. Cincinnati: Lancet Clinic Publishing Company, 1915.

THE essays on the insanity of youth and other subjects are reprints of articles written for the most part as editorials for the *Lancet-Clinic* by Dr. Holmes. They are interesting and to a considerable extent instructive and should serve to attain the author's object, that of arousing attention to various conditions relating to the insane.

Society Reports.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

Sixty-fifth Annual Meeting Held at Philadelphia, Sept. 20-25, 1915.

SECTION ON SURGERY.

Tuesday, September 21—First Day.

Treatment of Fractures a Lost Art.—Dr. JOHN B. ROBERTS of Philadelphia read this paper, saying that the bone wounds had been neglected in recent years. Adherence to the ancient idea that loss of rigidity and displacement of fragments alone needed treatment was a common error. Some closed fractures must be incised and "fixed" directly. Some were treated well either by operative attack or a non-blood-shedding method. Others should not be operated upon even by the most sanguinary surgeons. Vivisection and carpentry were not the sole method of obtaining good union and good function. Mechanical instinct, anatomical knowledge and surgical common sense were the keys to success. The esentials of subcutaneous fracture treatment so far as the injury was concerned were anesthesia, with comparison of the normal limb and accurate reconstruction of bony contours; verification of the line of fracture and accuracy of reduction by *x*-rays when practicable; anatomical and physiological knowledge of muscles and bones; well fitting retentive appliances; early frictions, skillful early mobilization and careful massage with frequent inspection.

The Treatment of Complicated Fractures and Present Opinion of Operative Treatment.—Dr. JOHN B. LOWMAN of Johnstown read this paper stating that the open treatment of fractures had taught us that in some cases delayed union was caused by too close approximation, thus inhibiting callus-formation, producing bone absorption and leading to infection and necrosis of bone; it had also taught us never to plate a compound fracture. The open treatment was indicated in fractures which could not be properly reduced, especially complicated fractures around joints. Bone-grafting seemed to be superior to all other methods, although these other methods had their advantages. In all fractures of the bone shaft plating was the best method and should be done as early as possible. Out of twenty-five cases of fractures of the shaft of the femur plated, 23 of the men were back at work at their former occupation; this had been the exception in those treated by the closed method. Bone transplants from one species to another did not grow; those from one person to another grew in 40 or 50 per cent. of cases, while those which were autogenous grew with very trifling exception. The success of open treatment depended upon the mastery of the very careful technique which bone surgery required.

Dr. WILLIAM L. ESTES of South Bethlehem said that the American Surgical Association had appointed a committee two years ago to standardize as far as practicable the various results as regards treatment of fractures, but at the very outset their work had been almost entirely nullified by the sad fact that they could get proper records from only a very few sources in the United States, and for that reason the committee had elaborated a form of record which they were trying to have introduced and which they believed would give them an opportunity to collect data which would finally lead to some sort of result in establishing what ought to be the proper treatment of the ordinary fracture.

Dr. P. G. SKILLERN, Jr., of Philadelphia said that nitrous oxid gas should always be administered to afford the surgeon as well as the patient the best conditions for a complete reduction. After the attempt at reduction a skiagram should be taken. If the fragments were still unreduced, the cycle of administering gas, reducing, and taking a skiagram should be repeated. It might be necessary to repeat this cycle two, four, or even six times in obstinate cases, but each cycle was harmless, though perhaps slightly inconveniencing to the patient. It was only after such repeated attempts by their failure proved the fracture to be irreducible clinically that operative treatment was indicated. After reduction a copiously padded and carefully applied fixation dressing should be put on, treating each fracture in an individual, and not a routine manner. Of the methods of operative fixation, that by the use of metal plates was the least desiroble, and, if indicated at all, metal fixation was best employed for fresh fractures and not—and Mr. Lane himself had emphasized this—for cases of non-union. For non-union by far the best method was the employment of the autogenous bone-graft.

Dr. EDWARD MARTIN of Philadelphia made an appeal to the assembled surgeons to aid in the work of the Fracture Committee of the American Surgical Association by each in his own institution insisting upon the keeping of adequate records both graphic, mensural and verbal, of his cases of fracture. The treatment they received, the complications which might have developed and the immediate and remote functional and anatomical result. Thus quickly would be available a mass of accurate information upon which might rationally be based a formulation of the successful treatment of fractures. He was in accord with the dictum that metal plates always delayed union and were to be avoided save in exceptional cases. The statistics studied by Estes showed that operative treatment was less frequently required in children than in adults. This in part is due to the fact that in the young a moderate deformity had a tendency on use to gradual correction. Such tendency was never exhibited in the adult. In the latter a good union with moderate and allowable deformity, if the bone were a weight-bearing one, might become on use a crippling and deforming one. Hence, given even a slight angulation of the leg bone, weight-bearing should not be allowed for many months. And, moreover, for his own protection it was of vital importance that the surgen should have written measures and *x*-ray records of the case on discharge and evidence that advice against weight bearing had been given.

Dr. CARLES E. THOMSON of Scranton said that it had always seemed to him that the atmosphere of mystery surrounding fractures was being cleared up very rapidly to-day when we were all working on the subject. Mr. Martin alluded to the often delusive or defective Buck's extension. He would say the always delusive or defective Buck's extension and say it because the objection to it was that it did not extend. In regard to Dr. Estes' statement that fractures should be treated by skilled surgeons, that was not practicable. Fractures were occurring in the country and the skilled surgeons were expected to live in the big medical centers. The general practitioner had to treat them and they would continue to have to treat them. Dr. Roberts said, "Teach your students to treat fractures." That was the key to the situation.

Acute Pancreatitis.—Dr. JOHN B. DEAVER of Philadelphia read this paper saying that by acute pancreatitis we ordinarily understood the classical severe type described by Fitz in which there was hemorrhage and extravasation of pancreatic juice resulting in profound general shock, intoxication, and local destruction of tissues with ensuing gangrene or suppuration. In the last few years surgery had revealed that the lesser inflammatory lesions of the pancreas were common. It had not been sufficiently pointed out that acute pancreatitis without the severer manifestations of hemorrhage and ferments was not uncommon. Many cases had been operated upon, unrecognized and attributed to disease of the biliary tract. The treatment of pancreatitis had not as yet been standardized, because of lack of knowledge of its exact cause and the mechanism of its production. Pancreatitis was a result of infection or duct obstruction or a combination of the two. Operative intervention should aim to establish the cause and relieve it. Infective pancreatitis secondary to disease of the biliary tract should be treated by the measures adapted to relief of biliary infection. Obstructive pancreatitis due to stone in the papilla of Vater or to other abnormality of the papilla demanded relief of the obstruction. In ultra-acute cases the question of operability entered strongly and might forbid everything of acute abdominal cases to the medical wards of the hospital. By the time they reached the surgeon in this roundabout way much valuable time had been lost.

Dr. ERNEST LAPLACE of Philadelphia said that there had always been some mystery connected with the question of disease of the pancreas. This question of pancreatitis was in the same condition as appendicitis had been fifteen or twenty years ago. There was no such thing as a pancreatitis alone any more than an appendicitis alone. When a violent pain takes place in the epigastrium with symptoms of shock, immediately that patient should be transferred to the surgeon and we would be able to drain at once. Some of these cases were accompanied by a dilated duodenum with intestinal sepsis as a predisposing cause to the infec-

tions which traveled up through the ampulla of Vater and gave to the pancreas whatever infection had found its way up there. In regard to the complications of pancreatitis and cholecystitis they traveled together. It was the same infection. Dr. Deaver had rendered the profession a very great service when he called attention to the lymphatics. The duodenum and pancreas were supplied by the same lymphatics and the spleen and body of the pancreas by the same lymphatics. He made a plea for early operation.

Dr. Lawrence Litchfield of Pittsburgh said that he had been associated with medical wards for the past twenty-five years and had often regretted the time lost by the fact that these cases were first sent to the medical wards. He wished to emphasize also the fact that valuable time was lost in many cases by delaying operation too long in the hope of making a definite positive diagnosis. There were several conditions in which an operation must be undertaken before a positive diagnosis could be made if the patient's life was to be saved.

Management of Toxic Goiter.—Dr. Charles H. Frazier of Philadelphia read this paper, stating that toxic goiter might be either that which began as simple goiter and became transformed into the toxic variety or the true exophthalmic goiter. The principal distinction to be made surgically was in reference to the severity of the case. The treatment of this condition belonged essentially to the domain of surgery. If the circumstances of a person suffering with moderate thyrotoxicosis were such as to render impracticable a prolonged period of rest, he strongly urged immediate operation and proceeded to the removal of as much of the offending gland as conditions indicated. The mortality was insignificant; personally he had not lost a case of the type. In a grave form of intoxication the watchword was caution. It was out of the question to say what the order of procedure should be until after the patient had been under observation in bed for a few days during which a study of the body functions and all the available secretions and fluids had been made. Each case presented its own problem as to whether it should be treated by boiling water injections, ligation of one or more vessels at once or more sittings or by partial thyroidectomy. A good working rule when in doubt was to err on the side of conservatism. A patient should not be operated upon in the stage of acute exacerbation. Rest was the most fruitful non-operative measure. He had tried the *x*-rays and radium without appreciable effect. In all operative cases anoci-association was employed routinely and successfully. Nitrous oxid anesthesia was always used. The relation of the thyroid to other ductless glands, especially the thymus, should not be overlooked. In 76 thyroidectomies for toxic goiter he had no death and in twenty-four ligations two deaths. He would not at this time consider such cases as the two fatal ones suitable for that particular operation at that cycle of the disease.

Dr. John de V. Singley of Pittsburgh said that so many interesting points had been taken up that it would only be possible to refer to what Dr. Frazier had very wisely emphasized as to the necessity for discriminating between the acute exacerbations of toxic goiter and the terminal stages of the disease with impending death. Careful interpretation of the history and of the clinical manifestations of toxic goiter had taught us to avoid operation during the periods of exacerbations, and in the final stages of the disease. To this, much more than to any great improvement in operative technique, was due to the marked reduction in operative mortality that had taken place in recent years. The earlier goiter patients were operated upon, after the onset of toxic symptoms, provided operation was not done during acute exacerbations, the better the results, both immediate and remote. No operation was of any avail and any would probably prove fatal in the most serious advanced cases, with widespread terminal degenerations, especially of the heart muscle, with irregular pulse, low blood pressure, and periodical attacks of delirium cordis (Kocher). The after-treatment was of the greatest importance. These patients should not be discharged from the hospital after operation to work out their own salvation as they too often were. Careful supervision by a competent medical advisor should be carried out for several years at least.

Dr. James D. Heard of Pittsburgh said that the severity of the cardio-vascular disturbances in toxic goiter made it important that patients of this type should be carefully studied in regard to disturbances of cardiac mechanism before submitting them to operation. Alternation in force of ventricular systole should be diligently sought for, and when found in connection with a heart rate which was approximately normal, it was to be regarded as greatly increasing the gravity of prognosis in a given case. The administration of belladonna should not be routine. It should be remembered that belladonna in full dosage removed the inhibiting action of the vagus and that this result would be undesirable in cases where the heart rate was already unduly accelerated. For like reason, the administration of tropin to guard morphine would be unscientific. Morphine required no guarding. It acted favorably in these cases, partly through its action on the vagus and it would be a distinct disadvantage to remove this inhibitory action in cases where the heart rate was already accelerated.

Dr. G. M. Astley of Philadelphia said that Dr. Frazier had said that between partial resection or ligation choose ligation, or if boiling water and ligation choose the boiling water. From what he had seen it was a question in his mind as to whether injections of boiling water should not be used first. The problem seemed to be the throwing out of commission of a certain amount of gland substance. That was done by ligation or boiling water. The boiling water would promptly throw out of commission that substance. He had known that where boiling water had been used the subsequent surgical sections were very simple.

Dr. S. J. Waterworth of Clearfield stated that if we avoided the trachea he believed we would have fewer symptoms following operation. As to operation following hot water injections, he had injected it with hot water and knew it rendered operation much more difficult. There was produced a general thyroiditis. The tissues became matted together and there was more difficulty in getting the goiter out. He thought there was a great distinction to be made between the cases coming into the office with the first flush of hyperthyroidism and those which are older. Upon the discrimination of the surgeon will rest his mortality rate.

Dr. Frazier, in closing, said that he was not prepared to speak very enthusiastically about boiling water, as he had used it in only three cases. He had been interested in regard to what Dr. Heard said in reference to careful studies of heart action before operation was performed. Certainly surgeons should avail themselves of opportunities to have experts and consultants come in and study these cases whenever possible. The suggestions Dr. Heard made in regard to tracings and belladonna he was very grateful for.

Rectal Anesthesia in Thyroidectomy.—Dr. Walter Lathrop of Hazleton read this paper, saying that in the oil-ether rectal anesthesia the brain was not deeply narcotized and the patient regained consciousness rapidly, while the sensation of pain was held in abeyance for a considerable time. The eye reflex was seldom lost, but muscular relaxation was complete. The method was very valuable where fear was a prominent element as was the case in hyperthyroidism. The postoperative effects were much milder than after inhalation narcosis. In thyroidectomy, where freedom from obstruction in the operative region was desirable, the rectal method was ideal. Also the patient could be anesthetized in bed and removed to the operating room and thus have no conception of what had occurred. This was a great aid in realization of the anoci-association method. He had used the method in 118 cases since June, 1914, with most satisfactory results.

Dr. John W. Luther of Palmerton stated that his experience with colon-oil-ether anesthesia was limited to 47 cases. However, his experience differed from Dr. Lathrop's in that 36 had been abdominal operations, where complete muscular relaxation was of greater importance than in head and neck work. In 22 of his cases no additional anesthesia had been required and in 18 of the remaining cases only a dram to an ounce of ether by inhalation had been needed. The duration of operation varied from 15 minutes to 2 hours. On account of the slowness in preparation the method was not suitable when several cases were to be operated upon in succession. One of his cases died of pneumonia 7 days after operation, but this had been a septic case and the result could not be attributed to ether. The narcosis was uniform from start to finish.

Dr. W. Hersey Thomas of Philadelphia said that his experience in operating upon 73 patients under colonic anesthesia had convinced him of its value in selected cases. He had not found that rapid return to consciousness was the rule. Although the presence of some of the superficial reflexes would indicate a light

anesthesia, the great majority of his patients had been profoundly anesthetized. He had seen the anesthesia deepen after return of the patient to the ward in spite of rectal irrigation. The conviction had grown that the liver, which bore the brunt of the attack in this method, was markedly affected and that it was a toxic change in this viscus that prolonged the anesthesia. The return of consciousness was hastened by the introduction of saline solution. The patient should be kept under skilled observation for several hours after return to the ward.

Dr. LATHROP, closing, said that in abdominal cases he had had quite an experience, especially in miners having asthmatic conditions. If you started ether in these cases they choked right up and you had to stop. These cases slept perfectly under rectal aesthesia. So far as arousing them was concerned, he had seen very few who could not be aroused.

Wednesday, September 22—Second Day.

Surgical Treatment of Ascites.—Dr. ROBERT T. MILLER, JR., of Pittsburgh read this paper, in which he said that it dealt only with that group of cases in which ascites was associated with cirrhosis of liver Five cases of ascites were considered, 4 of which were due to alcoholic or luetic cirrhosis of the liver and the fifth almost certainly due to malignant diseases. The patients varied in age from 18 to 60 years. Ruotte's operation was done in each case, 4 times unilaterally and once bilaterally (two sittings); in 3 cases general anesthesia was used and in two local anesthesia. There was no mortality except in the malignant case whose death was apparently in no way due to operation. In all but the malignant case, abdominal paracentesis had been necessary at frequent intervals before operation; after operation, the necessity for tapping the abdomen had been absolutely done away with in 2 cases and all but eliminated in 2 other cases, while in the fifth case (malignant) the abdomen had not been tapped either before or after operation. In 1 case operation (double) had been followed by a decrease of the umbilical circumference from 110 cm. to 97 cm. and an increase in average daily urinary output from 480 cc. to 1250 cc. Of the 4 cases of cirrhosis of the liver, 3 were restored to self-support and the fourth, a boy of 18, was advanced from a condition of invalidism to a position of helpfulness in the household. In no instance had any ill effect been observed from drainage of the ascitic fluid directly into the circulation. Five cases were too few from which to generalize, but the writer felt that the results obtained in this series were encouraging; so good, in fact, as to warrant him in warmly recommending a trial of this method.

Dr. JAMES D. HEARD of Pittsburgh said that it was probable that surgical procedures would soon largely supplant the so-called medical treatment of ascites due to cirrhosis of the liver. Statistics available as to the result of the Talma operation showed that 35 per cent to 50 per cent of cases of ascites due to cirrhosis of the liver might be cured as the result of early operation. These statistics should be brought prominently to the notice of internists. The statistics of Ruotte, Soyesima and Miller indicated that venoperitonostomy was capable of yielding such favorable results that a further trial of this method was to be strongly recommended. Operative measures should be resorted to in early stages of ascites before the patient had been subjected to the local irritation which resulted from frequent tappings, repeated withdrawal causing loss of proteid, and general failure of patient owing to the continuous presence of a condition which, in spite of repeated tappings, usually slowly progressed toward an unfavorable end.

Dr. J. E. SWEET of Philadelphia said that in 1876 a Russian army surgeon, von Eck, had devised his operation called the Eck fistula, that is, anastomosis between the portal vein and the vena cava. This operation had been applied only three or four times. Usually in true cirrhosis the portal vein was so tied up in adhesions that a true Eck fistula was not feasible. Dr. Edward Martin and Dr. Sweet had devised a modification of the Eck fistula, consisting of an anastomosis of one of the large mesentric veins with the iliac vein at the point where they crossed. He felt that some modification of the Eck fistula such as he had referred to would be a more positively curative procedure than would this operation developed by Dr. Miller, which amounted to continuous tapping.

Fulguration Treatment of Bladder Papilloma.—Drs. A. A. UHLE and W. H. MACKINNEY of Philadelphia read this paper in which they said that at the present time it was agreed by all urologists that high frequency destruction was the method of choice in the treatment of benign papilloma, and that it had no value in the treatment of true infiltrating carcinoma. Diagnosis must be established by a careful cystoscopic examination, or by the examination of portions of tissue passed or removed by special instruments. Since November, 1911, when they first employed high frequency destruction, they had observed 51 primary neoplasms of the bladder. A diagnosis of benign papilloma had been made in 22 cases, of papillary carcinoma in 3, and carcinoma in 26. High frequency destruction had been employed in 19 of the benign papillomata, in 3 cases of papillary carcinomata, and 7 cases of infiltrating carcinomata. In all cases of tumor of the bladder, hemorrhage was the predominating and frequently the only early symptom, the bleeding was usually marked and ceased as promptly as it began. With 3 exceptions the monopolar Oudin current, generated from a Wappler coil was employed and found perfectly satisfactory. The illumination was derived from a dry cell battery and the spark from the circuit. General anesthesia was not necessary, a satisfactory local anesthesia being obtained by the use of novocain. In nervous patients or patients with a highly sensitive urethra, treatment may be facilitated by a hypodermic of morphine administered one hour previously. A clinical cure was based upon freedom from symptoms, a clear urine, microscopically free from blood and pus, and the absence of any evidence of tumor by cystoscopic examination 3 months after the last treatment. Every patient was impressed with the possibility and danger of recurrences and advised to return at intervals of 6 months for cystoscopic examination.

Dr. B. A. THOMAS of Philadelphia said that to treat a papilloma of the bladder by any means other than high frequency sparking or electro-coagulation, must be regarded as a serious surgical error, poor judgment, or selfishness. On the other hand, any form of endovesical treatment for a malignant growth, pre-eminently sessile carcinoma, provided it was curable radically was the height of folly. His experience comprised not less than 69 tumors, varying in size from a pin-head to masses almost completely filling the bladder. Almost invariably bleeding had been a prominent factor, but fortunately, as a rule, the first effect of electro-coagulation was hemostatic. A few patients had been so exsanguinated as to require preliminary supporting measures. In one case with a hemoglobin of 19 per cent, two transfusions were done before undertaking the treatment of the tumor of the bladder. Without exception cure had resulted in each case of papilloma, also papillary carcinoma with a non-degenerated pedicle. In no case of sessile carcinoma or other malignant growth involving the bladder wall has cure been obtained. Both the Oudin and d'Arsonval currents have been employed by Thomas, and he prefers the former. It seemed to make little or no difference whether the current was degenerated by a static machine or a coil; the results were equally good with the latter.

Dr. JOHN L. LAIRD of Philadelphia said the the character of the bladder growth in relation to its amenability to this form of treatment was a serious consideration, the benign and the superficially malignant tumors being appropriate, the infiltrating malignant growths demanding immediate surgical intervention. The treatment of the various types of benign papillomata required a selection of the kind of current to be used. The interval between treatments was important and should be governed by three factors: viz., the extent of the bladder involvement, the type of current employed and the degree of reaction to the treatments. He wished to emphasize that all vesicle papillomata are potentially malignant and, therefore, early diagnosis and eradication are of the utmost importance. High frequency destruction was beyond doubt the method of choice. For the same reason, after an apparent cure, each case should be carefully followed for a possible recurrence. Some cases of severe and obstinate character require patience and frequently the result was unsatisfactory and disappointing; but the majority respond promptly with a result little short of miraculous.

Dr. EDWARD MARTIN of Philadelphia said in regard to the operative treatment of bladder tumors, by which he meant the cutting operation, those who observed and wished to hear from patients notice that to their astonishment the old operating cystoscope gives results in papilloma operation very much better than the open operation. Those who have a certain number of these

papilloma have observed a widespread recurrence after the operation and there seemed no adeuate explanation of this excepting the disturbance caused by gross traumatism. We had, first, the lesson that the local treament, nontraumatizing, was better and modern local treatment by desiccation was much better than by instrumentation. The second point he wishes to bring out was the innocuousness of this desiccation in the ordinary run of cases. For all practical purposes the majority of these people could go to their ordinary business. They had no further discomfort and their lives were not materially interfered with. When the cystoscopist was unable to decide as to the malignancy or the benign nature of the lesion, he felt that this desiccation treatment should be tried and resort to perhaps grosser methods of instrumentation follow.

Dr. H. M. CHRISTIAN of Philadelphia said that he wanted to emphasize the point made by Uhle and MacKinney that every so-called benign tumor of the bladder must be considered potentially malignant and that a man with a so-called benign tumor in his bladder had to all intents dynamite in that bladder. In cases on the borderline, where there was a chance he thought that the patient should be given the high frequency current. He wanted to empasize again the point which Dr. Uhle made of the importance of looking on sudden, inexplicable, rapidly disappearing hematuria, rapidly reappearing hematuria, with or without pain, as very significant of bladder tumor and requiring examination directly.

Dr. ALEXANDER RANDALL of Philadelphia said that he wished to call attention to the efficiency of electric fulguration of vesical papillomata (benign); the recognition of the ultimate and potential malignancy of all such growths and that in their early stage, therefore, while still benign, vesical papillomata represented precancerous state and by its prompt and early recognition and treatment we would be taking a definite step forward in the present campaign for the eradication of cancer.

Treatment of Empyema. — Dr. EDWARD MARTIN of Philadelphia read this paper, in which he said that in order to avoid infection from the skin a puncture was made through the skin, deep fascia and into the muscle by means of a cataract knife. The trocar was pushed into the pleural cavity, stopping when the resistance of the chest wall was no longer felt. The location of the pus thus having been determined, an incision 1½ inches long was made through the skin and a large trocar thrust into the pus cavity. The stylet was removed and a silver tube was passed through the canula. The canula was then withdrawn and the flanges of a tube were stitched to the skin by means of silver wire. The silver was not irritating to the tissues and provided against compression or kinking as was the case with a rubber tube. If necessary a cupping glass or suction apparatus could be intermittently applied to produce negative pressure. Pulmonary exercises were to be instituted early. A dressing dampened with mild antiseptic solution was applied over the tube. If there was much adhesion between the pleural layers, these should be freed through a large incision in the intercostal space.

Dr. JOHN H. JOPSON of Philadelphia said that his own practice had been in favor of the ordinary methods of drainage and following Richardson's advice to make large holes. We could do this operation early and painlessly on a child if we could carefully and systematically anesthetize everything down to the pleura. He believed we should do this under general anesthesia. Under local anesthesia if the patient was in bad condition. He liked to get a look into the chest and free light adhesions in the lungs in the early stage and remove large loose masses of lymph which would clog any tube and probably break down and disintegrate. If one could do that and introduce the tube, Dr. Martin advised, we were making a great advance.

Dr. JOHN DE V. SINGLEY of Pittsburgh said that as regarded breathing exercises in these cases of empyema, it had been his custom for years to have the patients use an ordinary football to blow into. The amount of pressure was limited only by the will of the patient and it could be carried out of doors, where he liked to keep these patients most of the time.

Dr. H. C. WELKER of Norristown said that he believed the keynote to success was a liberal separation of adhesions and breaking up of locules and serum that could not be gotten by the ordinary timid methods of opening up. Instead of that a liberal opening up and going up to the apices, remembering that the accumulation frequently extended to a point where we had no idea it was possible for it to extend.

Venous Thrombosis and Embolism: Its Cause, Significance and Consequences.—Dr. ANGUS MCLEAN of Detroit, Michigan, read this paper in which he said that although various causes had been assigned for thrombosis their experiments had shown that an infection or toxine was necessary to its production. In his series of 1610 laparotomies, 33 cases were followed by thrombosis or embolism. The embolus appeared on an average about two weeks after operation. The usual symptoms were chill, fever, and if the obstruction was near the surface, pain was a prominent symptom. As for treatment, when once the condition had developed, absolute rest, warmth and measures to encourage the venous circulation were indicated. In the case of a thrombus, absolute rest should be insisted upon as a precautionary measure against secondary embolism. This rest must be continued until the clot had had a chance to become thoroughly organized, a process which would usually take from 3 to 4 weeks.

Dr. EDWARD MARTIN of Philadelphia said that Dr. McLean's ingenious and yet simple explanation had corroborated the view that many surgeons had had that there must be an infectious basis in all these or nearly all these cases of thrombosis. We saw less of it now than we used to, particularly in the direction of the lung.

Treatment of Puerperal Infection and Septic Abortion. —Dr. JOHN M. FISHER of Philadelphia read this paper, saying that in cases of puerperal sepsis, the severity of the infection with the same microorganism even, varied in type from the most malignant, fatal in a few hours, to a type with symptoms so mild that in the absence of extraordinary precautions it might escape detection. He still believed alcohol to be of service in the treatment of profound toxemia characterized by feebleness of heart action, depression of the nervous centers, and the so-called typhoid states with either high or low temperature. The importance of eliminating toxic products through the excretory canals could be too strongly emphasized. The influence that the ingestion of water exercised on the skin and kidney was well understood. By whatever method administered it added to the volume of the circulation, raised blood pressure, improved the quality of the heart's action, promoted nutritive changes incident to constructive and destructive metamorphosis, diluted toxic products and promoted their elimination by its stimulating action on the kidney structure. The profession had been slow in estimating the value of outdoor life in tents or porches in the care of patients suffering from puerperal and other forms of sepsis. By the open-air treatment was meant the actual outdoor exposure of the patient and not merely her removal to a sun parlor or veranda with closed sides.

Prevention of Fecal Fistula in Suppurative Appendicitis. — Dr. DONALD GUTHRIE of Sayre read this paper, stating that his choice of incision was the muscle-splitting, or McBurney's. In those who had well defined abscesses lying near the mid-line a straight incision was made over the most prominent part of the mass. Wherever possible he inverted the stump, using catgut. Where this was impossible the cuff operation was done. An effort was made to further reinforce the field by tying in the cut meso-appendix. Drainage was afforded by large caliber soft rubber tubes placed as far from the head of the cecum as possible and removed by the end of the first week. Laxatives were never given until all drains had been removed. He had had 3 fecal fistulæ develop in 853 cases.

Dr. C. E. THOMSON of Scranton said that he always used gauze for drainage and allowed it to remain until it came away itself and always used linen thread for ligating the stump of the appendix.

Dr. G. M. DORRANCE of Philadelphia said that he must get hold of a different kind of appendicitis case from those spoken of by Dr. Guthrie. In a large number of his cases the appendix as well as the head of the cecum was gangrenous and came away when taken hold of by forceps. Therefore, he had a great many cases of fecal fistula. He always regarded these cases as favorable because they invariably got well.

Treatment of Cancer by the Use of Radium in Conjunction with Surgery.—Dr. GUY C. POUGHTON of Erie read this paper, saying that most of the cases of cancer in which radium treatment had been used had been inoperable cases, many almost moribund, and in this

type of cases radium treatment had achieved what no other treatment could do. He wished to emphasize that what was necessary now was co-operation rather than destructive criticism if we were to be able to establish the value of radium therapy in the treatment of malignant growths. Those who pioneered in any field had and expected to have hard work before them. The days of pioneering in work with radium were far from being past, yet this agent had been demonstrated and was being accepted more and more widely as a most valuable adjunct to the older methods of treatment. We would not replace surgery by radium therapy, but rather by combination with radium therapy make surgery more effective. The surgeon could remove the greater part of the malignant tissue, but the radium rays in suitable cases could go in and destroy all of the remaining malignant cells and in the treatment of even inoperable superficial cancers, carcinoma of the uterus, the prostate, the rectum, and the breast and in spindle celled or round celled, sarcoma, lymphosarcoma, in rodent ulcers, radium had been shown to be of definite value.

Dr. RUSSELL H. BOGGS of Pittsburgh said that radium had brought relief in many hopeless cases and many times extensive growths had disappeared and a clinical cure had been brought about. All inoperable cases should be radiated not only as a most excellent palliative measure, but in hope that the cases might either become operable or else that the disease might be arrested and the patient gain months or even years of comfortable life. He believed it was just as important to add Roentgen therapy to radium treatment as it was to use radium in conjunction with surgery, because it was a well-known fact that radium would destroy the cancer cells only at a distance of from 2 to 3 cm. from the tube.

Thursday, September 23—Third Day.

Surgical Treatment for Absent Vagina.—Dr. E. E. MONTGOMERY of Philadelphia read this paper, saying that he advised such patients not to have the operation but to accept the situation and give up the idea of marriage. Where conditions seemed to make it desirable that a vagina should be constructed it was important that it should have a lining of mucous membrane. The best plan was to line the constructed canal with a section of the intestine, either utilizing a portion of the ileum or of the rectum. He preferred the latter. The lower end of the rectum above the sphincter was utilized for the vagina and the rectal canal was reconstructed by loosening the rectum and bringing it down and making an anastomosis of the anus.

Late Results in Acute Appendicitis.—Dr. GEORGE P. MÜLLER of Philadelphia read this paper, stating that in order to determine the late results of operation for acute appendicitis an attempt had been made to follow up 200 consecutive cases operated upon by Dr. Frazier or himself and from these 117 replies had been received. Hernia occurred in 20 per cent of cases which had been drained, but in those not drained only one patient developed hernia. Nine patients suffered from adhesions, 6 of these having been drained and 3 not drained. Fourteen complained of indigestion, 8 of which were drainage cases. Seventeen patients complained of pain, but it was difficult to determine the cause. Constipation was rather common. The postoperative comfort of the patient depended upon prompt operation, the avoidance of cathartics before operation and the minimum of drainage.

Dr. JOHN A. KLUMP of Williamsport said that the best form of drainage in appendicitis was a soft rubber tube spirally split or fenestrated containing a strip of gauze loosely inserted. Experience had demonstrated that formerly entirely too much unnecessary drainage had been employed. The Fowler position following operation was of value.

Treatment of Undescended Testes.—Dr. JOHN H. GIBBON of Philadelphia read this paper saying that in the early months and years of life the mother or nurse should be instructed to gently draw down and push the testicle toward the bottom of the scrotum. If this failed by the third or fourth year his recommendation was that the Bevan operation should be performed. He had done this operation 22 times and had been surprised at the facility with which the organ could be carried into the scrotum. Eight of his patients were over 18 years of age.

Dr. R. G. LE CONTE of Philadelphia said that he was entirely in accord with the view expressed by Dr. Gibbon, but that the manipulations for relief of the condition in infancy should be carried out very gently or more harm than good might be done.

Free Transplantation of Fascia Lata in the Treatment of Inguinal Hernia.—Dr. FRANCIS T. STEWART of Philadelphia read this paper, saying that the free transplantation of fascia, contrary to preconceived notions, had proved to be almost uniformly successful, and for the very reasons that were brought to render fascia unsuitable for transplantation, *i. e.* its poor nourishment and its lowly situation in the scale of organized tissues. This method was especially called for when the hernia was large, recurrent, sliding or direct. The best place from which to obtain the fascia was from the region just below the outer portion of Poupart's ligament, after undermining the lower edge of the skin incision for exposing the inguinal canal. The transplant was immediately sutured with catgut to the under surface of the everted margins of the transversalis fascia. The edges of this fascia were then united over the transplant.

Dr. J. S. RODMAN of Philadelphia said that the recurrent cases were the most troublesome of inguinal hernias and it was here especially that the use of some material to strengthen the abdominal wall would seem to be called for. He believed that Dr. Stewart had chosen the best material of all to transplant. In operating for recurrence the most difficult problem was to restore the anatomy to something approximating the normal. This could usually be done with the Bassini technic, and, if transplantation was added to this, it would suffice to cure the majority of such cases.

The Public and the Profession.—Dr. HENRY B. FAVILL of Chicago read this address, saying that within the last few years the relation of the medical profession to the public had been undergoing radical change. Formerly the relation had been essentially individual. The physician had a definite service to perform in behalf of his patient and the small group related thereto. Important as that was, it was hedged about by restriction as to breadth of view, both for the physician and his clientele that were hampering to full development. Misconception as to the true value in medical service had led to such pettiness and superficiality as had given basis for hostile criticism. Medical science had risen almost wholly within the last half century. It was marvelous that its spirit and its method was as widely prevalent as it was in consideration of the fact that scientific teaching had been general only in the last 25 years. The profession was rapidly adapting itself to its more weighty function. It was dawning upon the public consciousness that the big thing in social affairs was the preservation of health. The place to focus attention was upon health, not sickness. With the advance in science, the possibilities of curing disease once established, were comparatively limited. It was imperative that the medical profession saw its opportunity and its obligation. The public had a right to expect leadership in this direction from physicians. The public, however, needed education as to what it meant, what could be done, and how. It must co-operate intelligently and strenuously. If the medical profession was to devote itself to the public weal with the energy and self-sacrifice that it had shown in its capacity as practitioners, it must be met by the public with recognition of its integrity of purpose and the paramount importance of the issue.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held October 7, 1915.

THE PRESIDENT, DR. WALTER B. JAMES, IN THE CHAIR.

Wesley M. Carpenter Lecture: The Kinetic Drive: Its Phenomena and Its Control.—Dr. GEORGE W. CRILE of Cleveland delivered this lecture, in which he analyzed the mechanism of modern speeding in man, due not only to war but to industrial and commercial driving in peace, and related it to the speeding which was due to other stimuli such as infections, autointoxication, physical injury, etc. Since the entire process of speeding was that of the transformation of potential into kinetic energy, the state of increased energy transformation might fittingly be called the kinetic drive Dr. Crile stated that man was a mechanism—an automaton—whose primary work was the transformation of energy. By means of a system of organs especially adapted to this end, energy was stored in these organs during sleep which during consciousness, in response to environmental contacts, was transformed

into muscular action, into heat, or into the representations of muscular action, such as emotion, thought, or reasoning processes. Another result of energy transformation was the formation of acid by-products. The driving force which caused the transformation of energy within the organism was supplied by certain parts of the brain, while the organs which vary and control, accelerate or retard the driving force of the brain were the adrenals; the pacemaker of the kinetic system was the thyroid. The final act of energy transformation was performed by the muscles. The primary adaptive process within the brain, by which the driving force was created and sustained, was oxidation. If the blood were acid, oxygen could not be carried by the hemoglobin. Energy transformation depended therefore upon the maintenance of the alkalinity of the blood. Since energy transformation was accompanied by the formation of acid by-products the process demanded a mechanism by which these acid products could be neutralized and eliminated, which was met by the liver, the kidneys, and the lungs. If this system of organs adapted for the transformation of energy acted as a unit then every excessive excitant such as insomnia, excessive muscular action, extreme emotion, infection, foreign proteins, pregnancy, etc., should cause identical changes in the histological structure and the function of each organ concerned in the transformation of energy or in the neutralization and elimination of the consequent acid by-products, while in addition, intense and short and long continued activation by any of these agents should cause also identical acute and chronic diseases. Each of the above named excitants caused increased respiration, increase in the frequency and force of the heart beat, thirst, excitability, perspiration, increased acidity of the urine, and identical manifestations of fatigue and exhaustion. If the adrenals determined the driving force of the brain and if each activation of the kinetic system caused an increased output of adrenalin, then adrenalin alone would produce the basic phenomena caused by any excitant of energy transformation, and would produce identical histological lesions, and it did. In addition adrenalin given over a long period of time caused myocarditis, glycosuria, albuminuria, fatigue, and many symptoms of cardiovascular and cardiorenal disease. Dr. Crile showed pictures of Belgian refugees which illustrated the gross effect of the combination of extreme emotion and exertion on the facies and bearing of individuals, and also photographs showing the effect of various kinetic stimuli upon the brain, the adrenals, and the liver.

Dr. Crile then showed that if adrenalin caused identical phenomena with emotion, exertion, infection, and if, vice versa, these caused an increased output of adrenalin, we might infer that it was through increased mobilization of adrenalin that increased energy transformation was accomplished. And again, one would find that in the state of adrenalin deficiency the manifestation of energy transformation would be diminished. This was true, for after double adrenalectomy there was an increasing and finally a total loss of muscular power and of heat production. If the nerve supply of the adrenals were divided and an adequate adrenal stimulus applied, the output of adrenalin was not increased. On the other hand, if the nerves were intact and a large dose of morphia were previously given, then the application of an adequate stimulus caused no increased output of adrenalin. The adrenals were easily exhausted, but the efficiency of adrenalin might be increased by thyroid secretion. This belief was supported by the researches of Osterhaut, who found that iodine caused an increased permeability of living vegetable tissue to the passage of electricity and the impulses generated by the combination of adrenalin and oxygen were probably identical with electricity. In other words, iodine increased the efficiency of adrenalin. In this interrelation of brain, thyroid, and adrenals we had probably the master key to the automatic action of the body. The increased output of thyreoiodin by facilitating the transmission of electric currents through semi-permeable membranes increased the passage of nerve impulses and set the pace for energy conversion. In consequence the adrenals were driven to increased activity, and the increased adrenalin in turn excited the brain to greater activity, as a result of which an effect was produced which was equivalent to increased work of the sympathetic nervous system. Here, again, Dr. Crile showed photomicrographs and blood-pressure charts illustrating the kinetic action of iodine and adrenalin.

Dr. Crile next considered the methods by which the kinetic drive might be controlled and said that they had found that morphine controlled the rate of energy transformation in response to any stimulus, whether infection, emotion, injury, or Graves' disease. Alonzo Clark on empiric grounds made the daring innovation of treating peritonitis with opium, and even to-day we must concede that next to surgical treatment the administration of opium was the most efficient treatment for peritonitis. Dr. Crile, however, said he combined the administration of opium with surgical treatment in those cases only in which the kinetic drive threatened to kill the victim. In such cases a quick anociated operation under nitrous oxide, Fowler's position, huge hot packs, saline infusions, sodium bicarbonate and glucose, plus the Alonzo Clark opium treatment, in from 24 to 48 hours had given startlingly good results. The amount of opium must be determined not by quantity but by its effect on the kinetic drive; the respirations should be reduced from twelve to fifteen per minute. In any acute infection it would be reasonable to combine the use of opium to block the destructive kinetic drive and of alkalies to neutralize the excessive acid by-products. Lantern slides again illustrated the manner in which morphine, nitrous oxide, and alkalies conserved the energy of the kinetic organs.

While it was safe to block the kinetic drive by morphine in cases of acute injury or of acute infection, it was unsafe to use opium to block the effects of intense emotion, because of the tendency to a repetition of the dose with the resultant danger of habit formation. The emotional drive was best met by training and education leading to a philosophy of life that insulated the individual against destructive psychic stimuli. Whereas in the acute drive simple and direct control was possible, in the individual chronically driven by the stimuli of want, ambition, anger, jealousy, or grief the danger was that one or another of the overdriven organs or tissues might be permanently injured. Since the emotional states were most amenable to control it became obvious why these conditions had often been controlled by means apparently without therapeutic value, such as faith in the physician, travel, diversion, prayer, healing springs, philosophy. Innumerable men under the strain of a chronic drive were pushed beyond the narrow limits of safety by the added drive of grief, worry, or shame, with the result that their organs had become affected by the excessive energy transformation, and with these the physician met his greatest difficulties. The most typical of the kinetic diseases was Graves' disease. The principal phenomena of this disease were identical with the leading phenomena of any other kinetic drive of a corresponding degree of intensity and might be duplicated by fear, anger, sexual excitation, physical exertion, acute work, or acute infection. In fever there was a period of excessive kinetic drive which exactly corresponded to the kinetic drive in emotion and which signified the preparation of the organism for self-defense by chemical activity just as emotion signified the preparation of the organism for self-defense by motor activity. There was a marked likeness of the phenomena of the kinetic drive in Graves' disease to those of chronic infections, particularly of tuberculosis. This likeness was so marked that it was not at all uncommon to find diagnosticians of wide experience mistaking the one condition for the other. The following symptoms were common to both Graves' disease and tuberculosis —tachycardia, increased respiration, flushed face, tremors, persistent slight fever, nervousness, rapid loss of weight, digestive disturbance, hyperplasia of the thyroid and of the lymph glands, and enlargement of the heart. In tuberculosis as in Graves' disease the entire kinetic system was overdriven. Thus the kinetic theory of Grave's disease, infections, and emotion supplied a possible biological interpretation of the induction of these states, of their mutual resemblance, and of the method of their control. All were modified by rest, controllable by morphine temporarily, all caused increased hydrogen ionic concentration in the blood and therefore taxed the organs of acid neutralization. The increased respiratory rate in each of these conditions was accounted for by the specific stimulative effect of the increased hydrogen-iodine concentration of the blood in the respiratory center. If the acidity was increased so rapidly that neutralization could not keep pace with it, then nephritis might develop as an effect of the acid by-product upon the kidneys. Hence in emotion, infections, and Graves' disease, albumin and casts were frequently found in the urine and in extreme cases acute acidosis might develop. The acidosis in each instance was expressed by thirst. It was a significant fact that

lymphocytosis was commen to both Graves' disease and to the infections, these being the only diseases in which this phenomenon occurred. It was possible that the protective rôle played by the thyroid in infections was not that usually assigned to it, but was through the action of the thyroid secretion upon the lymphatics simultaneously with its effect upon the other defensive mechanisms. The speaker discussed further the analogy between diseases of the thyroid and diseases which among other organs involved the adrenals, which he showed was borne out by many clinical points. He demonstrated that each of these conditions bore an intimate relation to foreign protein activation and "nervous strain." Diabetes, arteriosclerosis, neurasthenia, and Bright's disease were due to the kinetic drive just as was Graves' disease. These conditions were all improved by rest, diversion, and dietetic control. It seemed to follow that a chronic disease which was made worse by increasing the kinetic drive would be improved by lessening the drive and would be improved temporarily by blocking the drive with morphine. A like result it would seem could be secured by breaking the connection between the brain and the thyroid and the adrenals by the excision of a portion of the thyroid and of the adrenals; and if still further blocking of brain impulses were required, by dividing the cervical sympathetics. After extensive experimentation on animals Dr. Crile said he had performed such operations fifteen times on a series of hopeless epileptics, patients with Raynaud's disease and with cardiovascular disease, and finally on a case of advanced diabetes. Ten institutional epileptics had been so treated, and while none had been cured, all made good operative recoveries and the severity and intervals of the attacks had been favorably influenced. Glycosuria in certain cases of Graves' disease had been lessened by operation. It was well known that where there was adrenal deficiency sugar tolerance was raised and that when there was thyroid deficiency the sugar tolerance was raised, while on the contrary excessive amounts of adrenalin or of thyroid extract mobilized sugar; therefore, in intractable diabetes, might it not be possible that diminution of the total mass of adrenals and thyroid might sufficiently increase sugar tolerance to assist in or actually cure the disease. Dr. Crile said he had so treated one patient who made a good operative recovery and whose urine had remained sugar free for three months with the exception of one day. This case was presented as a problem and not as a recommendation of the adoption of these measures in diabetes or other kinetic disease. Dr. Crile exhibited photomicrographs showing the identical end-results produced in the brains of humans by some of these kinetic diseases and of the brain, adrenals, and liver of a soldier who died as a result of a combination of several kinetic stimuli, principally emotion, exertion, and insomnia.

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

WUNDHEILNUG MIT AETHERISCHEN OELEN. By Dr. DANIEL WAGNER. Published by Urban & Schwarzenberg, Berlin-Wien; 110 pages. Preis geb. M. 2.50.

ORTHOPÄDISCHE BEHANDLUNG KRIEGSVERWUNDETER. Von Prof. Dr. HANS SPITZY, und Dr. ALEXANDER HARTWICH. Published by Urban & Schwarzenberg; mit 144 textabbildungen; 214 pages. Preis geb. M. 7.

OPHTHALMOSCOPIC DIAGNOSIS FOR GENERAL PRACTITIONERS AND STUDENTS. By GEORGE W. JEAN, A.B., M.D. Published by E. B. Meyrowitz, Inc., London, New York, and Paris; sixty-eight illustrations; 123 pages.

MONOGRAPHS OF THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH. No. 5. September 27, 1915. Composed and printed by The Waverly Press, Baltimore, Md.; 130 pages.

SYPHILIS AS A MODERN PROBLEM. By WILLIAM ALLEN PUSEY, M.D. Published by American Medical Association, Chicago; 129 pages.

MODERN BIOLOGIC THERAPEUSIS. Published by Medical Department of the Lederle Antitoxin Laboratories. Illustrated; 322 pages. Price, $1.00 postpaid; cloth binding.

Therapeutic Hints.

Treatment of Hypothyroidism.—In treating hypothyroidism Scott makes it a rule to test carefully the blood pressure before and during treatment. He states that hypothyroidism is usually associated with hypertension, the blood pressure generally being about 160 mm. to 170 mm., and that the dosage of thyroid extract may be safely increased; but in the case of hypotension the thyroid extract is apt to take badly. For overcoming this disability he recommends the giving of suprarenal extract as well and the careful watching of the blood pressure. This should be kept as near 140 mm. as possible. To get this result he gives about 10 grains of suprarenal extract daily and about 5 grains of thyroid extract.—*The Practitioner.*

Carbolic Paste for Routine Surgical Work.—Fleet Surgeon Martin of the British Navy has used the following as a first dressing, without any previous washing, in every sort of injury, such as compound fractures, and in conditions of sepsis, such as abscesses:

Hydrated wool fat, 6 parts.
Candle wax (or white beeswax), 1 part.
Carbolic acid, pure, 20 per cent.

After the "sting" of the first few minutes it gives more relief from pain in the case of burns than picric acid solution; it also gives better results. Infected wounds clean up; and compound fractures which were expected to suppurate and other wounds in which sepsis might be expected healed in a very remarkable way when dressed with this paste.—*Journal of the Royal Naval Medical Service.*

Phenol in Epidemic Meningitis.—Bellotti treated two cases of cerebrospinal meningitis with the following mixture:

℞ Phenol, 0.01 gram.
Morphine sulphate, 0.005 gram.
Aquæ destil., 1.0 gram.
M. (Sterilize.)

This mixture is administered hypodermically whenever the fever rises or the pains increase, care being taken, however, to avoid phenol poisoning.—*Gazzetta degli Ospedali e delle Cliniche.*

Emetine Subcutaneously for Endamebiasis.—Lyons advises small repeated injections of emetine as preferable to large single doses. The amebicidal action of ipecac or emetine reaches the amebas in the tissues through the circulation. The irritating effects of emetine are negligible when a dose of one-third of a grain is injected. The daily aggregate dosage should not exceed one grain for an ordinary case of amebic dysentery.—*American Journal Medical Sciences.*

In Chronic Cystitis.—Fullerton finds permanganate of potash 1 in 5,000, nitrate of silver 1 in 5,000, or sal antisepticus ʒij to the pint, of great service as lotions for washing out the bladder. He says that boric acid solution is too weak, but is better than nothing.—*Medical Press.*

Inunctions in Bronchitis.—Rachford finds the following efficacious in bronchial affections, especially in acute bronchitis in children:

℞ Guaiacol, ʒss.
Olei gaultheriae, ʒj.
Lanolin, ʒj.

M. Sig.: Rub about one teaspoonful into the chest twice daily.

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Original Articles.

THE VALUE OF SCIENTIFIC DOUBT IN SURGICAL DIAGNOSIS.*

BY JOHN B. ROBERTS, M.D.,

PHILADELPHIA.

Massive Intrahepatic Hematoma from Rupture of Hepatic Vein.—I operated last winter upon a colored man of 51 years who had fallen and struck the epigastric region against a step. When seen by me a few hours after the accident he was suffering intense pain in the upper abdomen, and the muscles of the anterior abdominal wall were rigidly contracted. There was only a slightly increased pulse rate, with normal respirations. The temperature was somewhat subnormal. He had, however, the peculiar ashy hue of pain and shock, recognizable even in the negro countenance.

My diagnosis was rupture of stomach or intestine and I advised immediate operation because his evident suffering, although morphine and atropine had been given hypodermically, proved the existence of a serious lesion.

On opening the abdomen I found a little free blood in the peritoneal cavity, extravasated blood within the gastrohepatic omentum and the transverse mesocolon, and also under the peritoneum covering the attached side of the colon. No rupture of stomach or bowel was discovered. Liver, spleen, intestines, gall-bladder, and urinary bladder seemed free from injury. Some blood was discovered behind the peritoneum near the pancreas; but this and the other extravasations were not accompanied by evidence of free bleeding anywhere.

The abdominal wound was therefore closed, and my diagnosis of ruptured hollow viscus remained unconfirmed. The man died as the operation was finished, either from shock or from ether poisoning due to careless administration.

Autopsy at first showed nothing definite, except the findings seen at the operation, although the abdominal and thoracic contents were removed. After further search for the hemorrhage's source had been considered almost unnecessary, I split open the removed liver and found a blood clot of about six fluid ounces lying in a cavity within the right lobe of the liver at its posterior part, close to the entrance of the hepatic veins into the cava. (See Figs. 1, 2 and 3.) There were small subpleural extravasations and extravasations under the kidney capsules.

This intrahepatic rupture with hematoma, a rare lesion, was an unthought-of injury. Its preoperative diagnosis was impossible, but its possibility should have been suspected when I saw before death bloody infiltration in the gastrohepatic omentum. The largest of the three veins was torn about an inch from the cava by an opening about $\frac{1}{8}$-inch long.

Dr. John A. Kolmer found the liver to be markedly fatty with slight perilobular fibrosis, and no evidence of *Trepanoma pallidum*. The cavity containing the soft dark clot was irregularly lobulated; at the widest part it was about 3 inches in diameter.

Horse-Shoe Kidney Simulating Perforating Appendicitis.—In the same month I was asked to see a boy of 16 years with appendicitis. He had been seized with severe abdominal pain in the morning with vomiting. He had very little if any abdominal rigidity; but there was a very palpable mass in the right inguinal region a little lower than McBurney's point and some increase in leucocyte count. Temperature and pulse were not far from normal.

I would have delayed operation for further observation of the patient, had not the superficial and readily palpable mass convinced me that perforation of an inflamed appendix had occurred, and that the suppurating organ was plastered by adhesive lymph against the internal surface of the belly wall and that it was probably surrounded by an abscess.

After hasty sterilization of the skin, the abdomen was opened; and an unadherent normal looking appendix removed. It was lying immediately over the right lower pole of a horse-shoe kidney. The left segment of the double kidney was felt with my fingers in the abdomen. It was attached to the kidney visible under the appendix by a flat fibrous band about an inch in width. This connecting bridge lay across the spinal column at about the level of the lumbosacral intervertebral cartilage and joined the two renal organs at their lower ends.

The four-inch vertical wound in the rectus was closed; and no trouble ensued, except delay in union by reason of superficial suppuration. Microscopic examination showed, according to Dr. Kolmer's report, evidence of chronic interstitial appendicitis.

To find a horseshoe kidney so low in the abdominopelvic cavity is rather rare. For it to stimulate an appendicitis abscess is a combination of symptoms of very exceptional occurrence. The history of this patient proves that hasty diagnoses are not always reliable. Dr. M. S. Kakels has reported (MEDICAL RECORD, December 21, 1912) an instance of "Sacral Kidney Simulating Acute Appendicitis."

Reflection upon the unusual causes of diagnostic error in these two cases has induced me to make some statements on the value of a doubting mind in surgical practice, and to confess the unreliability of my snap diagnoses.

A certain surgical author has recently said "Diagnosis by intuition is a rapid method of reaching a wrong conclusion." Some experiences within the last few months have convinced me that this statement and that of another master, who said "None of us is infallible, not even the youngest," deserve to claim our respectful consideration.

*Read before the College of Physicians of Philadelphia, June 2, 1915.

Doubt may be present in a surgeon's mind because of insufficiency of personal knowledge, a careless application of the knowledge he possesses, a limitation of time, due to the urgency of symptoms, or an absence of general professional knowledge

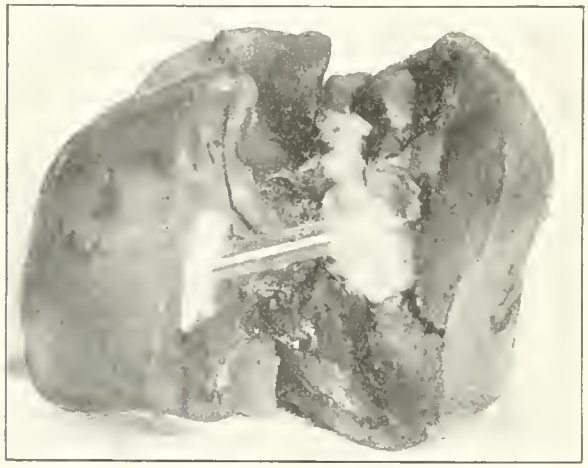

FIG. 1.—Traumatic rupture of fatty and somewhat cirrhotic liver, upper surface. Cavity, which was occupied by a massive intrahepatic hematoma, is filled wtih cotton, incised right lobe held apart by a glass tube.

of the physiology and anatomy of the human organism. I have on various occasions hesitated to operate from all of these causes, but am hoping that the second mentioned, carelessness, has been an infrequent influence.

The tendency nowadays seems to be to operate when in doubt without devoting much time to exercising one's faculties in diagnostic queries. A usual gynecological notice on bulletin boards seems to scoffers to be "abdominal section," often abbreviated to "section." In former days "section"

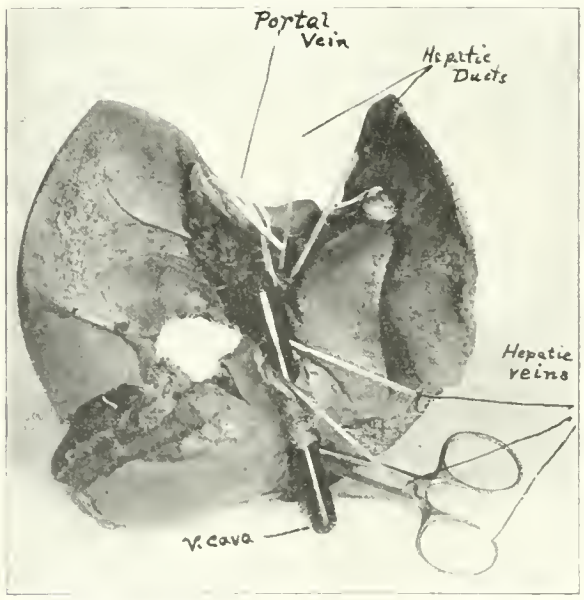

FIG. 2.—Lower surface of same liver in which a massive traumatic intrahepatic hematoma was found at the back of the right lobe; it was from rupture of the largest hepatic vein about an inch from its opening into the vena cava. Black rubber tube in vena cava; hemostatic forceps in injured hepatic vein; twisted wire in portal vein; match sticks in hepatic ducts and the two uninjured hepatic veins.

meant, I believe, "an autopsy." Now it is used, I suspect, to cover "reserved diagnosis," and not a multitude of sins of omission in clinical examination.

A medical visitor from Europe a few years ago wrote that in America patients were ever in such a hurry that they were unwilling to accept medical treatment for their ailments, but insisted on being subjected to surgical operations. All thoughtful lovers of the science of surgery must recognize this attitude of mind in many of their patients. It is a reflexion of the imaginary safety of aseptic technique under all circumstances in all conditions of men. In my earlier surgical life I smelled the odor of rotting pus every morning as soon as the door of the surgical ward was opened for my admission. Many ounces of pus did I day after day press out of cavities in infected tissues surrounding the necrotic bones of open fractures, while the injured men either gradually faded until amputation opened the way to slow months of convalescence, or quickly dropped into the grave from septic infarctions or repeated secondary hemorrhages.

No one therefore more than I realizes the ineffaceable debt owed to Lister; but that debt does not close my mind to the needless mutilations and unnecessary deaths due to the insane rush to operative therapeusis by the ignorant public, induced thereto because the saving grace of doubt seldom

FIG. 3.—An ordinary glass tumbler containing clot, removed from the interior of the liver, due to traumatic rupture of the most posterior hepatic vein. The clot measured about 6 fluid ounces.

enters into the minds of some dogmatists of surgical art.

John Hunter's definition of surgery was that it consisted in curing a disease rather than in the removal of it by mechanical means. An earlier writer put the same thought in Sanscrit thus: "Only the association of medicine with surgery forms the perfect physician. The physician who is deficient in the knowledge of one of these branches resembles a bird with but one wing" (Ayur veda, Art of Life).

Thomas Vicary, "sergeant Chyrurgion" to Henry the Eighth, explains in the "Profitable Treatise of Anatomy" of 1548 "what properties and conditions a man must have before he be a perfect Chirurgion." "The first (I sayde) he ought to be learned and that he knowe his principles, not onely in Chirurgerie but also in Phisicke, that he may the better defende his Surgery; Also he ought to be seene in natural Philosophie, and in Grammer, that he speak congruitie in Logike, that teacheth him to proue his proportions with good reason. In Rethorike, that teacheth him to speak seemely and eloquently; also in Theorike, that teacheth him to know thinges naturall, and not naturall, and thinges agaynst Nature. Also he must know the Anatomie, for al Authors write against those Surgions that

worke in mans body not knowing the Anatomie, for they be likened to a blind man that cutteth in a vine tree, for he taketh more or lesse than he ought to doo."

Many present day operators would find it difficult to "defende their Chirurgerie" upon the principles of "phisicke" and of "chirurgerie" by speaking in "logike, that teacheth them to proue their proportions with good reason." Some, indeed, in my opinion, when cutting patients do take away more than they "ought to doo."

The mind that admits no doubt is a closed door; useful in emergency at times, I admit, but dangerous to the public. Its dogmatism often quickly brings the wavering patient under its sway and may thus occasionally save a man from the risks of delay born of timidity. Who, however, can number the fatalities due to hasty diagnoses upon which unnecessary operations have been undertaken?

The relative safety of aseptic wounds has led to a wide distribution of operative surgery, but has taken a great toll in deaths by its encouragement of hasty diagnoses and an unhesitating resort to mutilating therapeusis.

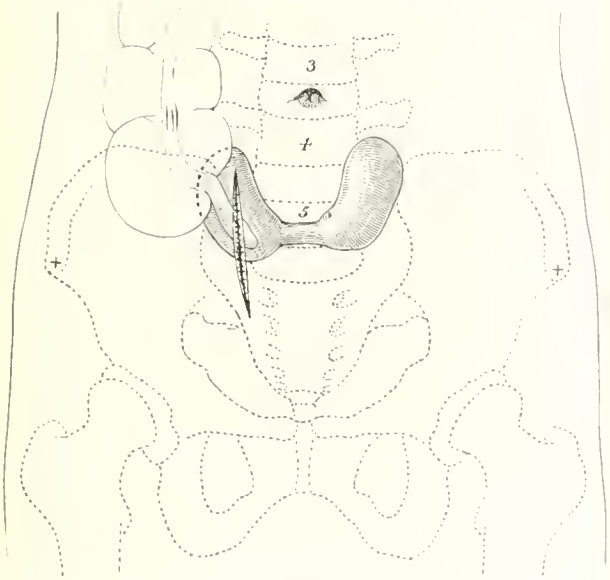

FIG. 4.—Congenital horseshoe sacral kidney simulating appendicitis.

I once heard an enthusiastic surgeon, when asked how much liquid paraffin he gave to test the presence of obstinate intestinal stasis, reply "as much as she will take." The indefiniteness of the response was equal to the illogical determination that removal of the entire colon was the only cure. The effect of a dose, based on the patient's willingness to swallow, was apparently the only proof of the medical incurability of her probable static constipation.

One might as well practice surgery on the theory that a pain in the abdomen requires ablation of the appendix, whenever the patient will permit an incision to be made in his abdominal wall.

Too much trepidation in the surgeon's mental equipment is not what I suggest, but a caretaking investigation, before the diagnosis is announced, based on a doubting thoughtful review of personal and family history, and of physical and psychic symptoms. Then a balancing of the operative risks with the dangers of a reasonable delay should influence the surgeon's resort to immediate operation.

Fractures.—The present day addiction to operative treatment of fractures is a case in point. A brilliant young surgeon, for instance, recently informed me of his position on this question in these words: "I operate on every case of fracture of the

FIG. 5.—Spiral fracture of right femur occurring on shipboard. M. D., boy of twelve years. Treated by Buck's traction method; *x*-ray taken soon after injury.

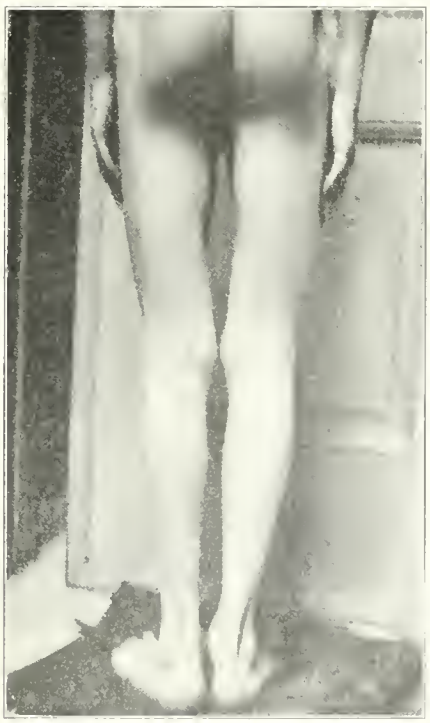

FIG. 6.—Spiral fracture of right femur. Boy, M. D., 12 years old, treated by Buck's traction method. There is scarcely any shortening, but perhaps a little outward turning. Photograph taken about 20 months after the injury.

femur, most cases of fracture of the tibia, etc.,

etc." There is no suggestion of possible doubt in that statement. Hence I dislike it. It is not scientific, it is simply dogmatic. The subcutaneous fractures, which require blood-shedding operative treatment, are those which cannot be reduced properly otherwise and those in which the reduction cannot be maintained except by direct fixation.

Fig. 7.—Spiral fracture of the shaft of the left femur, with a large triangular fragment detached. A. D., 16 years.

The wisdom of doubt about such general resort to operative intervention in fractures has been impressed upon me by experiences like the following: A boy of twelve years fell on shipboard and sustained a very oblique fracture of the left femoral shaft in its lower half. For a week he was treated in the ship at sea on a sofa berth by traction, then encased from umbilicus to ankle in plaster of Paris, and transported over a hundred miles by train to a hospital. There he was treated by Dr. John H. Gibbon by Buck's extension method. About twenty months after the accident, he was examined by me a few days ago and it was difficult to tell which leg had been injured. He had perfect function and so little shortening that it was difficult to determine whether it exceeded a quarter inch. The boy was active, straight in spine, and was the captain of the junior tennis team at school.

Fig. 8.—A. D., 16 years, after treatment by Buck's traction method. There is slight shortening of the left lower extremity, easily corrected by a pad under the heel inside the shoe. Photograph taken about 18 months after the injury.

About 18 months ago a tall young man, sixteen years old, standing on a coasting sled, was obliged to jump off. He received a spiral fracture of the shaft of the femur, with the separation of a triangular piece of bone in addition to the chief line of fracture. He was treated with Buck's traction by Dr. T. F. Branson and Dr. E. B. Hodge. The fracture was so long that the callus made his thigh bone feel like a massive column within the integument of his thigh. I examined him carefully recently, finding about a half inch shortening, a slight deviation laterally of the spine, easily corrected by elevation of the heel inside the shoe, and perfect function.

Fig. 9.—Inversion fracture of tibia and fibula at the ankle in a man, showing little deformity in the *x*-ray plate. Anterior view. The deformity was marked and overcome only with difficulty under ether.

Both of these patients, in my opinion, have been treated more scientifically and more reasonably than if their parents had been induced by an operative "addict" to permit fixation with metal plates. The type of fracture in both instances was that which is claimed to often need direct fixation to get good results. The anxiety, anesthesia risk, and other unnecessary possibilities of harm appertaining to open blood letting treatment was not justified in either of these cases. They are mentioned here because I had opportunity of seeing the cases during

and after treatment, and in fact, had some part in the management of them.

Advocates of the open treatment of fractures as superior to the non-operative routine base much of their argument on the reliability of radiography as

Fig. 10.—Inversion fracture of tibia and fibula at the ankle in a man, showing little deformity in the *x*-ray plate. Lateral view. The clinical deformity, inversion and retraction of foot with impaction, was marked and was overcome with some difficulty under ether.

indicative of offending displacement. Radiograms are of exceeding value in confirming the existence of fracture in doubtful injuries; but the degree of displacement may be in some degree factitious both affirmatively and negatively. The position of the tube, its distance from the limb and the distance of the examined bone from the photographic plate vary the shadow picture greatly.

The radiologist as well as the surgeon must be ever on his guard to avoid errors from false readings of the shadow values. Recently I have treated several fractures, the radiograms of which were reported to show good position, when clinical inspection showed to anatomical eyes that there was marked displacement. This was so notwithstanding that the *x*-ray plates were taken in two planes and read by an expert in skiagraphy. One case was a man with inversion fracture of the tibial and fibular malleoli with backward and inward displacement of the foot, requiring great force under ether to break up displacement and obtain reconstruction. The other was a greenstick fracture of radial and ulnar shafts that required complete fracture of both infractions to restore the *gross* contour of the forearm.

Other Operative Risks.—Some years ago I was consulted by a woman about twenty years old who said that she had been informed that she had had appendicitis and that now was the time for an interval removal of the offending organ. She wanted my opinion before submitting. After careful investigation I replied that an interval operation was justifiable if a competent surgeon was employed. I heard no more of the patient until some months later, when I learned that she had died, apparently of hemorrhage, a few hours after operation done in a hospital.

A few weeks ago I operated on a young man in desperate condition from tight intestinal constrictions secondary to an appendicitis operation with removal of the organ performed a half year previously. He fortunately recovered, though there was opaque serum in the peritoneal cavity and much congestion of the strangulated ileum.

I recently saw a man with bronchopneumonia which developed after an exploration of the abdominal cavity for possible intestinal wounds following a knife thrust into the belly wall. No visceral injury was found. Many sequelæ of abdominal operation such as hemorrhage, intestinal obstruction, and ether poisoning will probably be remembered by this audience.

I met some years ago in an elevator a vigorous looking man who called me by name and proved he was a man who would have had a leg amputated a couple of years before, had I not urged his surgeon to keep applying more skin grafts. The oldest patient I ever had with appendicitis died at about 85 years from pneumonia. I had attended him about six years before with a well marked appendicitis and advised non-operative treatment. The decision was evidently judicious.

Unnecessary Mutilation of Women.—A few weeks ago a woman with a small almond-sized growth in one breast came to me in great trepidation because after a bruise she had discovered the little nodule. She was about 38 years old and had consulted a surgeon who insisted that she must lose the entire

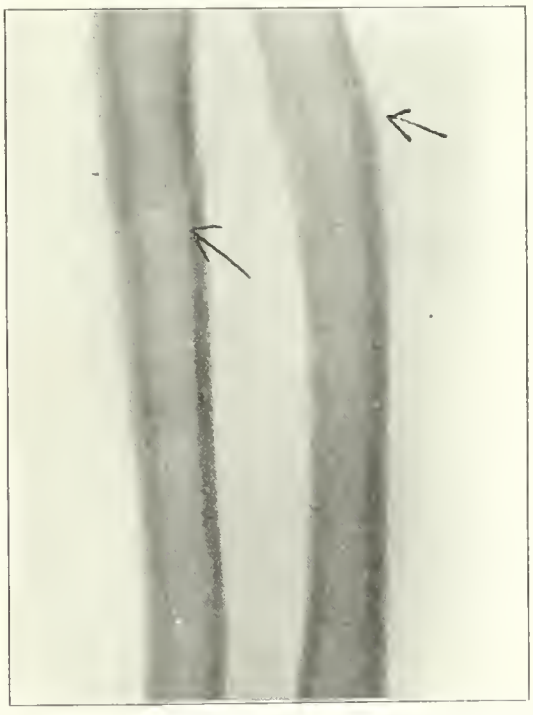

Fig. 11.—Fracture of both bones of the forearm (greenstick) in a boy, showing little deformity; though marked clinical deformity requiring refracture under ether was present.

breast by amputation. My opinion was given that the nodule should be removed by operation and subjected to microscopic study before such a disaster came upon her. I excised with a few sweeps of the knife the growth and a considerable block of sur-

rounding gland tissue. Dr. John A. Kolmer reported that the growth was a fibro-cystadenoma with no evidences of malignancy. I append his report in full:

"I beg to report that sections of the tumor of the mammary gland which you recently submitted for examination show the histological structure of a fibro-cystadenoma with no evidences of malignancy The fibroma predominates and is of a hard variety. I suspected chronic cystic mastitis, but there is not sufficient evidence of the chronic inflammation. There is in my opinion a numerical increase in the glands and many are cystic due I believe to a constriction of their ducts by the increased amount of fibrous tissue. As already stated careful examination of these glands and ducts does not disclose any evidence of malignancy."

About $2\frac{1}{2}$ years ago a school girl of 17 years found a small nodule in her breast. I acted in a similar manner. In this case the opinion of a skilled microscopist was that there was some evidence of potential malignancy in the histological structure of the sections made. His opinion was supported by two other microscopists. A third to whom I submitted the sections believed that the growth was one of those improperly considered malignant. After much thought, I concluded to excise the scar of the little incision and remove a good sized wedge of the breast. The patient has been seen since at intervals without any evidence of return and reported to me orally a few days ago that nothing had appeared to suggest trouble.

Surely in both these cases the results have shown that a doubting mind and a willingness to use pathology and clinical experience as coordinate assistants are better attributes of a surgeon than an operative dictum that potential trouble shall lead to immediate sacrifice of organs despite the risks physical and the agonies psychic of patient and family.

Enucleation of Healthy Tonsils a Wrong.—The bloody sacrifice of entire tonsils which has recently been offered to the écraseur, tonsil punch, and other pharyngeal instruments seems to me unworthy of scientific medicine. Who knows for certain the value or the worthlessness of these lymphoid organs in the little child's throat? I see frequently a healthy, fine looking mother of several children, who in early life was my patient with middle-ear inflammation and enlarged tonsils. I advised shaving off the redundant tonsillar tissue with a tonsillotome as was the custom of the time. The parents never consented and therefore no operation was done. The child grew to womanhood and married. She has had no trouble with ears or throat but is unusually healthy in every way.

A few years ago one of her children died in five days with violent infection shown at autopsy in brain and spinal cord, only a few weeks after removal of adenoids, which had caused ear trouble, and the total ablation of the healthiest tonsils one is likely to see. Might not the retention of the unoffending lymphoid tissue between the pillars of the fauces have acted as a sieve to restrain such a lethal invasion of the specific organism of anterior-poliomyelitis? Surgeons do not scoop out normal lymph nodes of groin, axilla, or neck when a patient has an infection of toe, hand, or lip, unless there is present evidence of secondary infection of major importance. I fear that the tonsil may have also a protective function even if it may be an atrium for invading microorganisms. Operators should remember that the vestibule door of a house keeps out sneak thieves, though it may occasionally admit an unwelcome guest.

The tonsils are not unnecessary organs, even if laryngologists do tell us they are; appendices are often valuable additions to books and may be to the human animal. The suprarenal body, the carotid gland, the hypophysis, the thymus, the thyroid were recently organs of unrecognized activities. Their value to the economy is now established.

"Potential" dangers should not always lead us to take operative risks. Sometimes the etherizer, the trained nurse, the pathologist's microscope, the chemist's vial, the surgeon himself, or the contingent circumstances of the patient, the time, the place of operation, or the "perversity of inanimate things" may be more dangerous than aberrant cells, the invading microorganism, or the neurotic crisis.

"Potential" is a word to scare patients, but not wise surgeons. Arsenic, strychnine, mercury, opium and alcohol are potential poisons, but shall we fear them and never use their power? Must we throw them out of our armamentarium? A sharp knife in the hands of a clever cutter is potentially more dangerous than a doubting mind in the skull of a thoughtful surgeon who believes that all problems cannot be solved by a keen edge alone.

Many fractures result in good function and good anatomical result without running the risk of ether poisoning, septic contamination, or amputation; some breast nodules are not the precursors of horrid death by malignant ulceration and metastasis; some appendices remain anatomically valuable, perhaps physiologically so; an ovary may often look sclerosed to the ignorant eye without needing removal. Nature does not require the kidney of a biped vertebrate to be rigidly glued to his back bone; all pains in the lower right quadrant of the abdomen are not due to the vermiform appendix; spinal puncture may be more deadly than a doubtful injury to the cerebrum.

"Potential" malignity has caused the sacrifice of a good many female breasts; "potential" perforative appendicitis has led to unnecessary abdominal sections; "potential" tonsillar atria of infection have deprived many children of tonsils that were doing no harm.

Greatly would some of us have increased our operative lists had we stitched to the lumbar muscle all the loose kidneys referred to us for operation. The number of so-called sclerosed ovaries removed twenty years ago during the bloody operative crusade against unrecognized neuroses will never be known. The loss of wages, limbs, and even lives from the present furor for fixing with metal supports fractures of the extremities is hard to estimate.

The scientific mind must be a doubting one, but it must not be too conservative to novelty and progress. My thesis is that a surgeon should be open to conviction, but not carried away by enthusiasm born of illogical hasty conclusions, based on superficial study, half understood physiological processes, and other unsafe premises.

It would be easy to relate case after case in which a doubting attitude of the consultant or the better knowledge of the family physician has saved a family from the anxiety inseparable from operative attack on person and pocket book; and perhaps preserved ovary, breast, limb, and even life.

Surgery must be regarded as a science, a part of all science, and not a mere art, if we who pose

as surgical specialists wish to rank with the wise men of the earth.

To some of my hearers this paper may seem like a conservative cry that denotes a static surgical mind not receptive to the advances of a progressive science. I earnestly hope my doubting mind on present day problems may not be closed yet awhile to scientific enthusiasm and serious study.

I, however, freely admit my dubious mental attitude to dogmatists in surgery, science, and religion. They tire me and fill me with doubt. The Creator seems wiser than most authors of the latest fads in operative therapeusis. The human animal needs, as a rule, tonsils, vermiform appendix, mammary glands, aye and his colon. Pathological deviations from normal in these and other organs may often be corrected by other methods than excision. A painful eye should not always be plucked out and cast from one. It is pleasanter and safer to wear correcting lenses. So also is it cheaper, pleasanter and safer to drink water and take exercise than to drink wine and ride in an automobile; and later have one's colon extirpated.

313 South Seventeenth Street.

BONE GRAFTING AND ARTHROPLASTY.*

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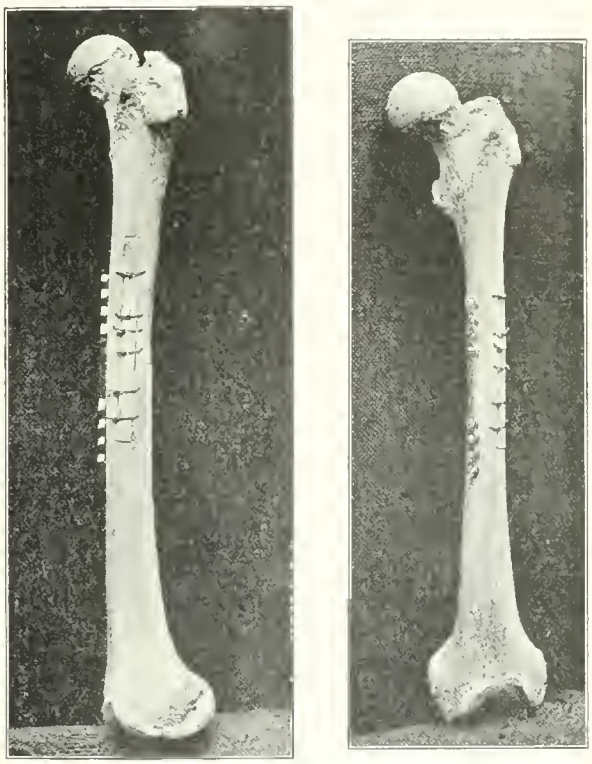
While Listerism which revolutionized surgery has existed for many years, it has only during the last decade been perfected to the point where it was considered safe to treat fractures by the open method, and for a lesser period of time has the surgeon considered it advisable or safe to invade the synovial or joint cavities except in extreme cases, where from the character of the conditions with failure there was nothing to lose and with success there was at least something to gain. This tardiness of the application of surgery to the bones and joints has been due to two principal causes: First, the general recognition of the liability of sepsis with its disastrous results in this particular line of surgery. This together with the terrible outcome seen in the infected compound fractures and accidentally opened joints was sufficient to deter the most courageous and daring surgeon from converting the simple into a compound fracture or from opening the joint for operative procedures. Second, that immediately following the birth of asepsis which made possible the development of abdominal, thoracic, and intracranial operations, the profession gave practically its undivided attention to the development of first abdominal and later thoracic and intracranial surgery, and only when the pathology of the curgical lesions of these parts had become comparatively well understood and their treatment made practical did the surgeons of the world take up the development of the field that had to do with the bones and joints, whose pathology and repair up to the present time are only beginning to be understood; although probably in no line of surgery has there ever been such progress made in so short a period as in the one under consideration.

We have seen the gradual evolution of the open treatment of fractures where the good results of a few of the pioneers encouraged others to take up this line of work, and with many, probably through inferior technique or judgment in handling their cases, the results were unsatisfactory. These failures led to strenuous objections by some, disagreement and doubt by others as to the advisability of the open treatment of fractures. So remained the status of this plan of treatment of fractures until the results of the successful were multiplied and the mistakes of the unsuccessful were pointed out. I believe we are indebted to Sir Arbuthnot Lane of London more than any other surgeon for a perfected technique, which, if followed out, will insure success in a large percentage of cases. Since the advent of his methods of operation, the open treatment of fractures has increased tremendously, and is still increasing. I have referred to the high point of development of asepsis as one of the principal causes of success in bone surgery. I want here to emphasize this particular point. There is no line of surgery where anything short of the most perfect possible asepsis is so liable to give such deplorable results. This is generally acknowledged by surgeons doing this line of work at the present time, but who have in the past been doing general surgery. The requirements for successful bone and joint surgery are: First, the most perfect possible asepsis; second, a well planned general surgical technique; third, a thorough understanding of the anatomical conditions, and fourth, a mechanical turn of mind.



Figs. 1 and 2.—A comparison of the metal plate with screws, etc., with the inlay bone graft method of treating fractures.

Mr. Lane's success has been phenomenal, especially as in his treatment of fractures, he has at all times used the metal plate, screws, wires, nails, etc., with all the possible objectionable influences produced by the use of these foreign substances. Although with his technique and perfect asepsis, he has in a large percentage of his cases been successful in bringing about union of fragments as well as well formed and useful parts, nevertheless I contend that the introduction into the body of these foreign elements, although possibly not producing

*Read before the New Jersey State Medical Society.

an infection, must to the average mind appear as contrary to nature. Again, this claim for the successful use of these same appliances in the treatment of fractures in the hands of the average bone surgeon during the last five years cannot be made,

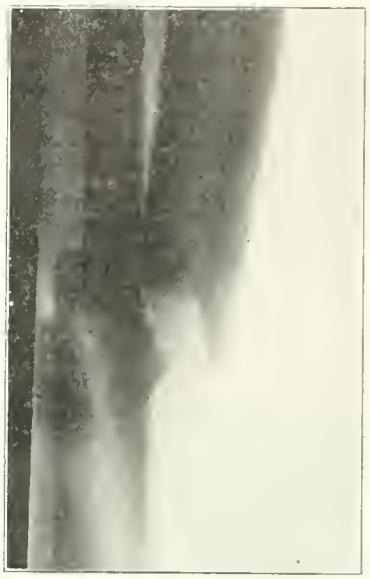


Fig. 3.—Case 1. Compound fracture of tibia and fibula; reduction under anæsthetic and application of plaster of Paris cast with no infection or rise of temperature, with complete failure of union at the end of six weeks, at which time I operated, using the inlay bone graft in the tibia, holding the graft in place with kangaroo tendon ligatures, which were passed through small drill holes, the lowest point of which entered the medullary canal at the junction of the bone graft with the fragments. With a freshening of the ends of the fragments of the fibula which were brought in apposition with some difficulty, no internal appliance was required to hold them in apposition

as in from thirty to fifty per cent. of such operations, either immediately following or at some later period, these plates and screws have been the cause

Fig. 4.—Case 1. Ten weeks after operation in which about the only evidence visible of a bone graft having been used is the light markings representing the drill holes. The patient resumed his ordinary occupation at the end of twelve weeks.

of a sufficient disturbance to necessitate their removal such disturbance being generally due to infection and occasionally to pain, the latter caused by a loosening of the screws and a displacement of the plates, producing pressure on the soft tissues. It is a well-known fact that a wire encircling a bone or used to hold fractured bones in apposition, if under tension will cause a disintegration of even the hardest bone tissue within a very few days sufficient to cause a loosening of the wire to an extent that will prevent its being of much use as a support of the bone fragments which it surrounds. This is also true where nails or screws are used in the treatment of fractures. Every surgeon who has had any experience in removing these nails or screws even within one week after they have been applied will appreciate the truth of this statement. This is one of the strongest pleas that could be given against the use of metal substances in the treatment of fractures. The mere fact that even the most flinty bone tissues will not tolerate the presence of such foreign materials even under moderate tension without disintegrating within so short a time is evidence that in their use we are working contrary to physiological principles.

While the progress made in bone surgery during

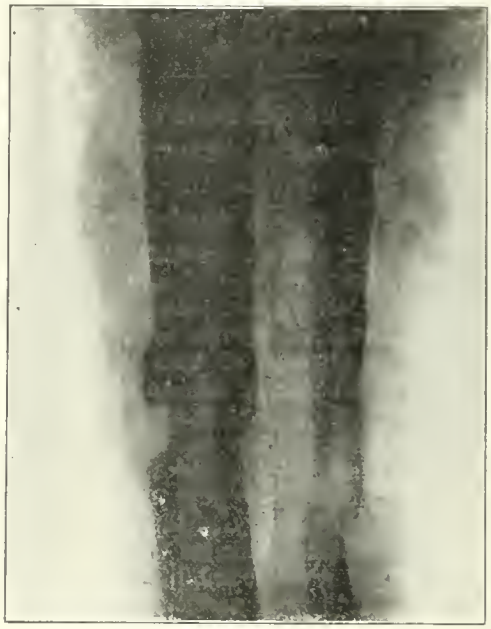


Fig. 5.—Case II. Compound fracture of tibia and fibula with use of the inlay bone graft in both bones, the bone graft used in case of fibula being very narrow, was held in place by several kangaroo tendon ligatures which were passed completely around the bone, drill holes not being thought advisable because of their weakening effect on so small a bone. Patient able to resume ordinary occupation at the end of fourteen weeks.

the last five or six years has on the whole been of great benefit to humanity, and without doubt has been instrumental in bringing about better results in the treatment of the various forms of fractures met with, at the same time I believe the pendulum has swung too far in the direction of operative treatment. This is not an unusual experience in surgery, as we have found in the past that any new surgical procedures which have seemed to promise great things have often been applied in certain cases without any very definite understanding or particular study as to positive indications for such operations.

In bone surgery, the open treatment simplifies matters very much. It does away with the study of anatomy and of the different types of fractures. The diagnosis is made by the radiologist and the surgeon has to think but little about the plan of treatment as it is always the same—simply the application of the plates, nails, or screws. In other words, he becomes only a mechanic. These offenses

against common sense, deplorable as they may be, especially for the patient, are nothing in comparison to the harm done in cases of accidents, and these are by no means rare. While the patient with a moderately deformed arm or shortened leg, yet with good functional results, will probably all his life blame the surgeon who treated the fracture, still this is of less importance and a small matter compared to a septic infection with possible disability or death following an open operation performed too often by those poorly prepared. I must enter a decided protest then against the adoption of the general treatment of fractures by the open method. I believe that, with the proper knowledge of anatomy and the use of common sense in the conservative treatment of fractures, good functional results can be obtained in at least ninety per cent. of the cases without the use of the open treatment, and in not over five per cent. of the cases so treated will we have non-union. If these state-

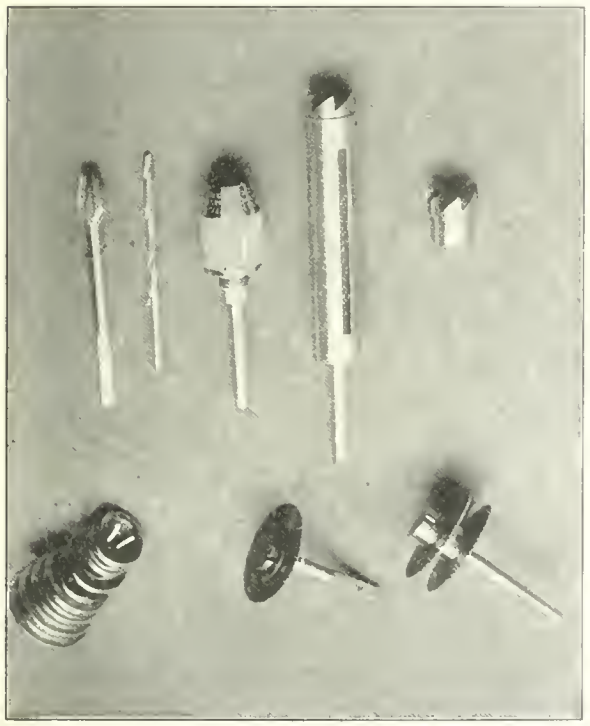


Fig. 6.—Some of the most important appliances devised by Albee used in connection with an electric motor in bone surgery.

ments are true, then the surgeon who is treating practically all forms of fractures by the open method with all the dangers accompanying this treatment, is certainly jeopardizing the health and life of his patients to an extent which is hardly excusable.

We are taught in our surgical treatises that a fracture is a solution of the continuity of the bone. This, in fact, is only a part of the injury produced. We have, rather, in a fracture an injury which is, in a large majority of instances, a complex traumatic condition with a severe and in many cases most serious injury to the soft tissues, and in some cases the injury to the soft parts is of more importance than that of the bone. The injury of the muscles, nerves, and blood-vessels, which amounts in reality to a lacerating and crushing, causes a lowering of the vitality and power of resistance to infection of the parts injured, as well as the formation of blood clots, this combination producing one of the most favorable culture-media that could be found; and this condition, even with the most rigid aseptic precautions and in the hands of the most capable surgeon, must often give bad results on account of the septic complications following opera-

Fig. 7.—Case No. III. Pott's disease of the spine causing complete disability. Operation by the Albee method splitting the spinous processes of seven vertebræ and inserting a graft from the crest of the tibia with complete relief of disability, patient resuming his regular occupation at the end of twelve weeks. This operation, I believe, gives a larger percentage of complete, permanent and satisfactory results than any other now being performed on the bony frame.

Fig. 8.—Case III. Showing result of osteoplastic operation on patient shown in Fig. 7

tion. I believe that no fracture, compound or otherwise, should be operated upon with the use of the plate, bone graft, or any other internal appliance now in use for holding the fragments in place before seven to ten days have elapsed from the time

of the injury, at the end of which period nature has had an opportunity to reorganize the tissues and fortify itself against the invasion of the poisonous germs which so often are present if from no other source than the skin, as in all operative procedures. The only exceptions that I would make to this rule are: First, fractures in or about the joints where the early readjustment of fragments is important to prevent as far as possible the formation of callus, which so often interferes with the future free action of the joint, and secondly, in cases where the soft parts, especially the blood-vessels and nerves, are in danger of being injured by the pressure of displaced fragments. In such fractures, we are justified in taking the added risk of infection caused by early operation.

The experiments which have been made on animals by the application of foreign substances in bone surgery are not a true test of the usefulness and practicability of this form of treatment of fractures, as in such cases we have not to deal with the lacerated and bruised tissues nor the hemorrhage with the production of blood clots which we have in an ordinary fracture, and necessarily the results in these cases, so far as septic conditions are concerned, ought to be very much better.

If at the end of seven to ten days from the time of the fracture of a bone, open treatment is found to be necessary because of the inability to reduce the fracture, or, if reduced, to hold the fragments in proper relation to each other to give good alignment and functional results, one should use the greatest amount of care in cutting down upon the parts to produce as little injury as possible to the soft tissues; and after reduction, if the fragments will remain in their normal position, one should avoid the use of any forms of internal appliance, as the presence of all such appliances, if of foreign material, will militate against the formation of callus and act to prevent or delay union, as well as to favor the production of septic conditions. In the treatment of recent fractures the use of the plate will give a larger percentage of good results than in the case of old ununited fractures, where the ends of the fragments extending back at least an inch have become sclerosed, and as a result the osteogenetic elements have been lessened in their activity, and the bone cells are degenerated as well as lessened in number. This unnatural condition of the ends of the fragments, together with the injurious effects of the foreign appliances used, acts most unfavorably on the formation of bone callus. If we employ the inlay bone graft, we have an entirely healthy bony tissue covered by periosteum which in itself is capable of producing the osteogenetic elements necessary for the healing process without any of the detrimental influences present when the plates or screws, etc., are applied. In making this graft we use the twin saws to remove a section not less than six to eight inches in length, the longer portion of the graft being taken from the proximal fragment, and then when separated from its bed, it is slid down into the groove formed by the removal of the smaller graft from the distal fragment, bridging over the point of apposition of the fragments which have been reduced. We have in the use of the bone graft several of the important requirements which are fixation, stimulation of osteogenesis on the part of the fragments, and an osteogenetic bridge connecting the active bone in each fragment back of the sclerosed areas. The bone graft is the only means of fulfilling these requirements which are all essential or necessary in order to secure union. The plate furnishes but one of these and that is fixation, and at the same time, it causes absorption and disintegration of the bone and favors sepsis, while the bone graft acts to prevent the invasion of the poisonous germs. The intramedullary bone dowl gives good results and has possibly the one advantage of having a greater holding power, still I believe the inlay graft as used by Albee is superior in that one has the periosteum, solid bone tissue, and medullary substance of the graft immediately in contact with the same elements in the fragments, which is not the case when the dowl is used; and again, in the case of ununited fracture, one is able to get well beyond the sclerosed bone in the fragments with the inlay graft which is most important, but is quite impossible with the intermedullary splint.

In the treatment of Pott's disease, which until the last two years has been most unsuccessful, we have at the present time, a method which seems to promise, if properly applied, positive and permanent relief in this most disabling and unfortunate condition. The old expression, "The man without backbone is of but little use in the world," can be fully appreciated by those suffering from tuberculosis of the spinal column or Pott's disease. Patients suffering from this disease give us a picture that is most deplorable, and while the suffering experienced by them is not so great as in some other diseased conditions, nevertheless, there is probably no disability produced by disease of the bony frame which causes such marked feelings of helplessness and discouragement. Until the time of the development of the operations bearing the names of their originators, Albee and Hibbs, there was but little encouragement offered in the treatments of this disease. While the Hibbs operation has in many cases, given good results, it hardly seems as practical and certain as the one performed by Dr. Albee. This latter consists in a splitting of the spinous processes of the diseased vertebræ as well as one or two of the spinous processes of the sound vertebræ above and below, and in the fracturing of the half of the split spinous processes, always on the same side, and inserting a bone graft taken from the crest of the tibia, pressing the graft well down into the gutter made as above described and holding it in place by suturing over it the ligamentous tissue immediately adjacent to the divided spinous processes. This operation gives anywhere from twelve to twenty points of apposition, according to the number of spinous processes split, between fresh and healthy bone surfaces, a most ideal condition for rapid and complete bony union, necessarily causing a perfect and permanent ankylosis of the vertebræ included in the operative field.

The immobilization of any part of the body affected by tuberculosis has been known to be one of the principal factors in bringing about a cure or at least a cessation in the progress of the disease for a great many years; still until the development of the above named operations, no means had been found by which such immobilization of the spinal column could be produced. To Hibbs and Albee is due great credit for the origination of these plans of immobilization which give practically one hundred per cent. of cures, transforming the disabled and discouraged individual into a useful and desirable member of society, making it possible for him to resume his ordinary occupations in life, and all of this without jeopardizing the patient's life or

health, as these operations are not particularly dangerous except in so far as in all bone surgery the element of sepsis is concerned. The favorable results are noticed and expressed very frequently by the patient within a week from the time of operation when he seems to feel a certain relief from the support produced by the insertion of the splint, and in the majority of such cases the patients are able to be about without any mechanical support within from eight to twelve weeks, with no return or symptoms of the disability experienced before the operation.

Arthroplasty.—While we have had reports of efforts having been made in the past to produce movable joints from those ankylosed, there seem to have been no marked successes in this line, or at least in very few cases, until within the last few years. Dr. John D. Murphy more than any other man has developed this particular operation to a point of perfection which has made it possible in a

Fig. 9.—Case IV. Showing the position of the limbs in relation to the body and each other. Front view. In the formation of the condyles of the femur and the fauces on the head of the tibia, a slight variation could readily produce limbs that would not stand the test of the plumb line.

Fig. 10.—Case IV. Same as Fig. 9, side view.

Fig. 11.—Case IV. Shows the flexion possible in left knee, also scar due to a slough of the skin and adipose tissue of the lower portion of the U-shaped flap, which so often occurs in this particular flap in this operation.

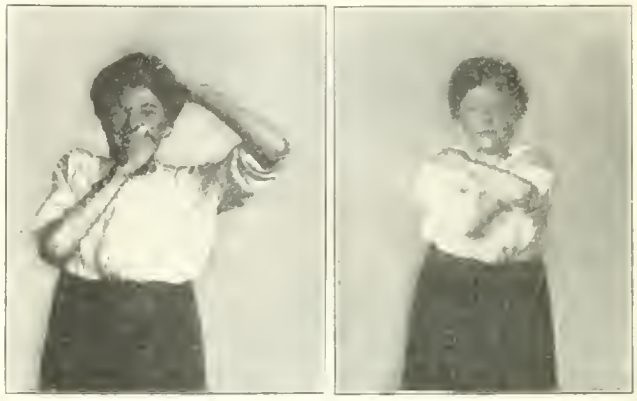
Fig. 12.—Case IV. Shows the flexion possible in right knee, in which the lateral curved incisions were used with absence of scar from sloughing. (See page 780.)

good percentage of cases operated upon to give movable, useful, weight-bearing joints. Of the ankylosed joints, we find three particular divisions —bony, cartilaginous, and fibrous. Certain restrictions in joint motions may be produced by diseased and contracted periarticular, ligamentous, and capsular conditions, and we also may have extra-articular interference of motion.

I show here to-day a patient who suffered a metastatic arthritis of both knee joints with a resulting complete double ankylosis, and on whom I operated during 1913. Figs. 9 to 12 show the different positions made possible for the patient to assume following arthroplastic operations for relief of complete bony ankylosis of both knee joints which had existed for three years, during the most of which time the patient had remained in bed because of an inability to walk and on account of her weight with the ordinary assistance to readily change her position. The joints were ankylosed in practically complete extension. On account of the injury produced by the forcible breaking of the ankylosis in the joints at two different times by an osteopath with the patient under an anesthetic, there was almost a complete absence of the semblance of joints. The femur and tibia, when chiseled apart at the time of operation, in both cases presented practically square surfaces, from which had to be formed parts resembling as nearly as possible the normal joint surfaces. Following the Murphy method, the ankylosed patellæ were turned turtle. The pedicled flap method was used in these operations. She now has movable, painless, weight-bearing joints. This patient weighs 250 pounds, and is able to attend to her usual occupation, going about the streets alone doing her own shopping, etc., with no complaint as to pain or unusual fatigue. With a patient weighing 250 pounds, one could have no better proof of the practicability of the arthroplastic operation than in this one before you.

The main principle in this operation consists of an interposition between the bones of some substance that will prevent bony union. Many different forms of foreign material have been used but without permanent success on account of the disintegration or absorption of that which has been interposed between the denuded bone ends. The best substance to interpose between the joint-forming bony surfaces which has been tried is the pedicled flap consisting of the fatty and capsular tissues from either one or both sides of the joint operated upon. Tissue from other portions of the body, especially the fascia lata, has been resected and interposed between the denuded bones, but has been found less efficacious, especially in the weight-bearing joints. The general causes for most of the failures have been insufficient or defective flaps, a failure in the proper removal of capsule and ligaments, the improper formation of the joint surfaces, infection, and pain or sensitiveness on motion after operation. It is hard to say which one of these elements is the most important. With a failure in any one of these principal points, one is almost certain to have, if not a returning ankylosis, at least a joint far from the normal and one that may give greater disability and pain than existed before the operation. One who has undertaken this operation on a completely ankylosed knee-joint and has found himself face to face with two large, flat, bony surfaces after chiseling apart the femur and tibia, there remaining no semblance of the original articular surfaces, certainly feels a great responsibility when he undertakes with chisel and mallet the formation of surfaces on the ends of these two bones which must be almost exactly the counterpart of the natural surfaces, to give legs that will stand the test of the plumb line and joints with anything like free and smooth motion.

To meet these requirements one must have a removal of the required amount of bone to allow of the interposition of the flaps, which, if not sufficient, will produce pressure and necessarily a sloughing of the interposed tissues, and if too much, will give



FIGS. 13 AND 14.—Case V. Showing the ability to flex the joints following an arthroplastic operation for an ankylosis of both elbows which had existed for a period of four years, the joints having been ankylosed in complete extension, making it impossible for the patient to feed herself, dress her hair or upper part of body. The pedicled flaps were used in these operations.

a loose and flail-like, useless joint; the ever-necessary intercondyloid ridge on the head of the tibia,

FIG. 15.—Showing my appliances for the reformation of joint surfaces in arthroplastic operations for ankylosed hip joints; these are, I believe, superior in that they are applicable to the various sizes of parts met with in these operations. These appliances are used with a motor.

with the proper formation of the intercondyloid notch on the end of the femur, both of which are important, and must be accurate to prevent lateral luxation; the proper formation of the flap or flaps and their interposition so as to cover every part

of the raw bony surfaces; and careful management of the ankylosed patella, which means the interposition of a flap between its raw surface and that of the femur, or the separating of the vastus internus and externus from the rectus muscle some distance above the joint, and the freeing to some extent of the ligamentum patellæ, making it possible to turn the patella upside down, bringing the smooth anterior surface in apposition with the denuded femur. All this, together with the ever-existing danger of sepsis, makes to my mind one of the most trying operations that we have. Murphy claims: first, that perfectly movable, normally functioning joints with sliding and rotary motions can be and have been produced; second, a new synovial membrane is formed with fluid which resembles synovial fluid; third, these joints support full weight and traction; fourth, they are painless, once the process of repair is complete. These four conditions I am able to prove in the case of one of my patients, whose history, with pictures of result, is given above.

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THE NEGLECT OF INJURIES TO THE NOSE FROM FOOTBALL.

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The weight of evidence in favor of the proper use of athletics by the young is overwhelming. Unfortunately, however, the securing of agreeable and exhilarating exercise is always attended with risk. Thus water and winter sports, horsemanship, hunting, mountaineering, and all athletic games offer well-known possibilities of accident.

It should certainly be the endeavor of all interested in practical athletics to secure the best and most thorough training with the least physical injury to those trained. Without question, injuries which threaten lifelong disability should be vigorously guarded against; or, having occurred, should be at once recognized, their importance appreciated, and the best possible measures taken for their relief.

I desire to call attention to one form of injury common under many circumstances, but especially apt to occur in football and, perhaps, boxing, namely, fractures of the nose. From the prominence of its position the nose is especially vulnerable. Owing to the peculiarity of its structure, blows of moderate force are not liable to result in serious harm. Greater violence may cause injuries which are extensive and complex, difficult to remedy if neglected and serious as to ultimate results. Following such injuries, not only may the external contour of the nose be deformed and the countenance thus disfigured, but displacements of the interior framework may result in permanent obstruction to nasal respiration with its attendant evils.

The processes of repair after nasal fracture are very rapid. Often a few days will suffice to bring about a union of the displaced fragments sufficiently firm to oppose their easy replacement; while complete union is often accomplished within a fortnight. Meanwhile inflammatory thickening of the adjacent soft parts adds another serious difficulty to the effective management of the case. Without question the grand opportunity for securing the best results is presented immediately after the accident, within a period of hours rather than of days, if possible, before edema and swelling have obscured the situation, and adhesion of the displaced fragments has begun to take place.

During the football season injuries to the nose are common. Such accidents are apt to be accepted as more or less inevitable and the cases dismissed as of trivial importance compared with joint injuries likely to interfere with the action of the limbs and, therefore, temporarily impair the value of the player. Comparatively few cases report to the specialist immediately after the accident has taken place. Several weeks will often have elapsed before the patient presents himself. Meanwhile the fractured fragments have reunited to such an extent that it is impossible to separate them without the exertion of force. To replace them would require an operation.

A by no means negligible proportion of life-long nasal deformities and their consequences of respiratory obstruction, reflex irritations and sinus lesions immediate and remote, have originated through the failure of those interested to realize the importance of nasal traumatisms and the great necessity for their early recognition and prompt treatment. Many patients have been subjected to permanent disability and suffering when with proper management at the right moment the nose might have been restored to a condition sufficiently normal to have admitted of the full performance of all of its natural functions.

Cases almost without number might be quoted in illustration of this proposition. The following, however, will sufficiently answer the purpose:

A. B., aged 17, a vigorous young athlete, pupil at a large preparatory school, received a blow upon the nose during a game of football. The blow was immediately followed by severe pain, considerable bleeding, and slight displacement of the external and lower part of the nasal prominence. The patient was examined by the gymnastic trainer of the school, and also by the local physician, and was advised by them that no serious injury had been sustained. Instead of improving, however, the condition grew steadily worse, and two weeks later the boy consulted me in New York. It was then found that the bridge of the nose had been fractured and the septum fractured and dislocated. The tissues over the bridge of the nose were still swollen. There was a slight depression in the middle line of the nose just below the lower margin of the bridge. On examining the anterior region of the nasal cavity, both sides were found completely occluded by large swellings which extended from both sides of the nasal septum and completely filled the spaces adjacent to them. These swellings were soft and elastic, and pressure upon them plainly indicated the presence of fluid within. In other words they represented an abscess of the nasal septum.

This was at once opened and a considerable quantity of pus evacuated. The posterior superior part of the septal cartilage had been extensively perforated, sufficiently so as to create a slight sinking of the normal line of the nose. The cavity of the abscess was thoroughly cleansed, and several strands of drainage material passed through from one side of the septum to the other. Treatment customary in such cases was instituted, from the acute conditions and was followed by speedy and uneventful recovery, although the septum was perforated and permanently weakened and a marked depression in the external contour of the nose remained.

Having for a long time been impressed with the

*Read before the Section in Laryngology of the New York Academy of Medicine, October 27, 1915.

lack of care often paid to such cases, I wrote to the principal of the school in which this patient was a pupil, calling his attention to the case in hand, and asking him to make suggestions upon the subject. A courteous and appreciative letter was received in reply, in which the writer stated that in this particular case the presence of the injury had been promptly recognized and the boy placed in the hands of the best physician available. He wished to know what better could be done. I replied stating that the treatment of fractures of the nose in general belonged to a department by itself, more or less outside of the realm of the ordinary practice of surgery. The average general surgeon may be found to have paid comparatively little attention to it. Even among rhinologists, on the other hand, there are some who are not proficient in this particular kind of work.

That traumatisms of the nose should be left to the judgment of the ordinary trainer or to the average local practitioner is a mistalke all too often illustrated in the experience of every man interested in the study of rhinology, and is obviously wrong. The consequences of these accidents are so far reaching and so disastrous to the future welfare of the victim that no ordinary pains taken to prevent them should be considered too great.

It would seem that if the school were situated sufficiently near a large city for cases of nasal injury to be sent to town, then, in the absence of skilled aid nearer home, some arrangement should be made with the best specialist available in this department by which the boys could be referred to him, their injuries treated, and proper advice given them at the earliest possible moment. Where this could not be done on account of the situation of the school, the best surgeon in the vicinity should be stimulated to make especial study of this class of injuries, giving himself the benefit of special courses of instruction under the guidance of the most successful teachers whose services he could command.

While both of these suggestions might entail some inconvenience to all concerned, the advantages to be derived from them would far outweigh any objection. In the case of universities, colleges and schools situated in, or within reach of, cities well equipped with well trained physicians no excuse would exist for the students not to receive the best of care at the hands of men interested in the subject and of accredited experience and skill. It should be made emphatically clear to all concerned —patients, parents, teachers, trainers, and physicians—that nasal injuries are important, that they require prompt and very skillful attention, and that they are not to be treated with unconcern and neglect.

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THE ELECTRO-MECHANICAL TREATMENT OF GENITOURINARY DISEASES.

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The differential consideration of the uses of electrical currents in medicine embraces three effects as derived from the electrical currents or modalities having different qualities or conditions. The variations include (1) *the electrolytic effect* as produced by the constant or galvanic current; (2) *thermic effects*, as produced most effectively by the high frequency currents; and (3) the *mechanical effects*, as produced most effectively by the static currents, but also by the sinusoidal and faradic induced currents, and the constant current interrupted. The *mechanical effects* of the static wave current and other static modalities are the effects that will be considered in this paper for the treatment of a class of genitourinary affections to which it is adapted.

There are two fundamental principles to be established as premises upon which the treatment of inflammation depends, whether of the genitourinary tract or elsewhere, as follows:

1. Wherever local injury or irritation of tissue occurs, either from accident, the presence of infection, or other disturbance of metabolism, swelling, with the establishment of local *stasis*, results as a consequence. Except in the cases of walled-in local infection the resolution by drainage of the tissues so infiltrated is essential to the promotion of prompt restoration of metabolism with removal of the pain due to pressure, and relief from an existing inflammatory process.

2. For the relief from, or resolution of local stasis forced drainage of infiltrated tissues with the removal of swelling or stasis by a mechanical *vis a tergo* is required, which will effectually express the accumulation from the lymph spaces, without causing irritation.

Upon the recognition of these two principles must stand or fall the establishment of the success of the methods I am about to describe.

In the past and even to the present time the relation of stasis to inflammation does not seem to have been fully recognized from this point of view. The first proposition does not seem to have been seriously considered nor the second adopted. Whether this is because no adequate means of relieving stasis had been found or because the importance of its removal was not recognized, is not for me to say. The methods employed for the treatment of local inflammation, it would seem, have been disposed to recognize the inflammatory process as a whole, as a part of the working of the *vis medicatrix naturæ*.

It may be readily understood how error could have been established in early times. Progress, however, has gradually developed methods of treatment which look to the softening of induration, even where pus processes are present. Manual massage, strapping, to prevent and possibly to reduce swelling, bandaging, and the application of heat and other methods of inducing hyperemia—all means of variously effecting a resumption of circulation—have become recognized methods. That none of these, however, has proved entirely adequate is evident from the ruling attitude toward the results of treatment.

Massage, while relieving swelling in subacute or chronic inflammation, is not permissible over sensitive areas, because a small degree of external mechanical pressure and manipulation, though it may to a degree reduce the swelling present, is contraindicated, and because the irritation produced tends to act as an added cause for a return of the swelling. Only when employed with the greatest gentleness and skill, working from the margin toward the more prominent parts of a swelling, can massage be effective in acute inflammation. As applied to the prostate gland the effect of the manipulation is first to empty the contents of the gland through the natural channels, but not to the same

extent to relieve the infiltration from the lymph spaces; and except with great care and skill, little progress is made.

The application of heat by various electrical methods or by radiant light or irrigation with hot-water flushing is disposed to widen the channels of the arterial circulation and possibly of the lymphatic circulation as well, thereby favoring the drainage of the engorged tissues, but is not adequate for the relief or reestablishment of circulation, when any degree of hardness or tension exists; because the tension or hardness present is too great to permit the opening of the lymph channels by efforts to establish hyperemia.

The only natural means for overcoming local areas of induration or stasis is by the recurrent pressure of the heart's impulse against the indurated wall, which is entirely inadequate, or by the final breaking through of the accumulating pus in a walled-in cavity, which last is followed by a relief of pressure and drainage of the pus cavity.

In the instance of the heart's action against an accumulated induration, the tendency is rather to increase than to diminish the swelling until collateral channels are established.

Strapping or the use of bandages applied early to prevent, or in order to turn the circulation off through other channels than to the site of inflammation, tends to prevent an enlargement of the field of stasis. When stasis is once established it is gradually followed by the development of hyperplasia which becoming organized remains as a persistent source of pressure. This is the unfortunate sequela when inflammatory processes are left to nature.

The presence of fibrin in and about the structures of joints in synovitis, and about the sheath of nerves when local neuritis has been unrelieved, or elsewhere, as in the conditions under consideration, results in the establishment of chronic inflammation. The various disturbances of metabolism, relative to the extent of accumulation around the joints, or neuritic pains from pressure of a thickened nerve sheath, or edema from occlusion of veins, as in variocele or in prostatic hypertrophy, are the effects of failure to resolve the infiltrating exudations in the early stages of an inflammatory process. That the exudations may be promptly forced onward through the lymph channels in the acute stage, without causing irritation even in the most sensitive and painful conditions, as in a sprained ankle, acute epididymitis, or a tender prostate gland is easily demonstrated by administration of the static currents.

No one recognizes more acutely than I do that the profession has been led erroneously into the notion that the static electrical current is a therapeutic myth, *which it is not.* This sentiment exists only in the minds of those not familiar with the effects of the methods employed. However, it can be shown that acute conditions which have presented an obstacle to successful treatment by other methods, yield to one or another of the static methods.

The modus operandi of the most valuable current employed in therapeutics—the static wave current—in effecting resolution of infiltration and exudation may be explained as largely due to the fact that it is a one-pole method of administration, whereby the patient, seated upon an insulated platform, is successively charged and discharged when the other side of the machine is connected to the earth. The alternate charge is followed by a discharge at the spark-gap and passage of the current to the earth. The patient receiving the charge passively as a condenser—as a Leyden jar—receives enough charge of the current to overcome the resistance of the spark-gap between the two terminal balls of the machine, when the current escapes as it passes from the surface of the body to the place of discharge, it passes from within outward inducing cell contraction of the mass of tissue over which an electrode is placed. By regulating the size of the electrode and the length of the spark-gap it is possible to control the local effect—regulating it to the condition under treatment.

If the part is extremely sensitive and the metal electrode placed against the surface is small the spark-gap should be relatively small and *vice versa.* In this way it is possible by the successive contraction of the tissue to empty from infiltrated areas the foreign content, thereby producing mechanical drainage of the involved tissue. This is a cardinal principle in the treatment of local inflammatory conditions and is applicable to every part of the human body from a closed tear duct in epiphera, to the relief of a synovitis of the knee or hip joint. Likewise it is capable of draining every accessible gland in the human body, including the great glands. The liver, in hypertrophic cirrhosis and the large malarial spleen are effectively drained and reduced by this method. It will be readily seen that under this condition of things it is possible to disengorge the prostate gland, the seminal vesicles, or the inflammatory exudations present with epididymitis.

Prostatitis may be effectually treated by this method in either acute or chronic cases. My observations have convinced me that hyperplasia rarely occurs in chronic prostatitis. In upward of three hundred cases that I have had under observation, myomata have been found in not more than ten per cent. In the chronic infiltrated gland in the aged it is surprising to what extent by persistent treatment it is possible to bring the gland back, in most cases, to normal dimensions, thereby effecting great relief from the low grade inflammatory process which is interfering with the function of the gland as well as causing pressure upon the urethra interfering with the normal free passage of fluids from the bladder.

The method employed for the relief of prostatic infiltration makes use of a suitable electrode which is placed in position in the rectum and held closely in contact with the enlarged gland. This is usually accomplished with the patient lying upon his side upon a suitable folding chair. An insulated handle is attached to the electrode which is held in position by a suitable device or by the hand of the patient. The more acute the condition the more marked the relief at the first application and the degree of permanent relief which follows the first few administrations. The persistence of the reduction is always a surprise to those not familiar with the method. The usual plan is to administer the current daily for the first five days, making each seance for twenty minutes and regulating the length of the spark-gap to the condition. When the gland is very sensitive the spark-gap employed must be relatively short, regulating it by the amount of pain produced with the successive contractions, the depth of the contractions being always relative to the length of the spark-gap. The

spark-gap need never be made longer than four inches in any case and the sensation of throbbing or pulsation will be relative to the firmness or tension of the gland, and will be synchronous with the discharge at the spark-gap. As the gland becomes gradually normal the pulsations become less and less perceptible to the patient.

The relief afforded by these administrations is evidenced first by a sense of lightness or diminished weight in the perineum, and by the diminished frequency of micturition both in the day and at night.

The presence of prostatitis may always be confirmed by a digital examination and will be suggested by various suspicious phenomena, such as frequent micturition at night, a diminishing energy of the sexual functions, a complicating sciatica, or the presence of various nervous or mental phenomena—various obsessions or inability to concentrate the mind—sexual neurasthenia. Mental disturbances have been found present in fully twenty-five per cent. of the cases that have come under my observation and have often led to the diagnosis. There probably is no more common cause of neurasthenia in the male than this condition and it is so important that the attention of the nerologist should be awakened at once to the possibility of such a cause and the case promptly referred to the urologist.

In the treatment of uncomplicated cases, it is remarkable how promptly the nervous phenomena are relieved. This should lead therefore to the digital examination in all cases of neurasthenia in the male, and if an enlarged or sensitive prostate is found the indicated treatment should be promptly administered. A condition which may cause an added complication of dysuria is the presence of a projecting enlargement of the verumontanum which is often not entirely relieved by the static currents. This condition is encountered in a small percentage of cases and is not relieved by the static current but requires special attention of a surgical nature.

The intelligent employment of the method described should effectively cure all uncomplicated cases of prostatic inflammation, and offers a possibility equal if not greater than any other measure in vogue of curing prostatitis in the early or acute stage. It forestalls the necessity of a surgical procedure in many cases as well as leaving the patient in a normal physical and mental condition. We realize that this statement will seem sweeping to those who have been familiar with other methods, but the statement is based upon results obtained in the management of upward of three hundred cases, more than two hundred and fifty of whom have remained cured for varying periods of time up to twelve years, and is verified by all who intelligently employ the method. This method was discovered by the writer and first published by him in 1903 and has been employed by a large number of clinicians with the same success as that obtained by the writer since its discovery.

Epididymitis was first treated, by the method to be described, by the writer in 1904 when a servant who had been suffering from an attack of acute epididymitis with an extensive enlargement and great tenderness was promptly relieved. For two days he had been kept in bed with an ice bag applied to the parts. Obtaining no relief it occurred to me that the application of the same method as to infiltration elsewhere might be effective in the treatment of epididymitis. I therefore applied the static wave current, beginning with an electrode applied to the upper end of the gland, and softening the areas progressively from above down. In three-quarters of an hour the swollen gland was reduced fully one-third in size and the tension and tenderness were relieved. Following two more applications the parts were reduced to normal and no further trouble occurred. This method has been uniformly successful in the hands of everyone who has employed it, usually completing the cure in three or four days. We employ a cup-shaped metal electrode, connected with the machine by a metal cord, and held in position by the patient with a towel. The treatment is continued for fifteen or twenty minutes, once daily, until the infiltration is resolved. It rarely requires more than two or three administrations to effect a complete cure.

In specific vesiculitis the method to be described probably comes as near, or possibly nearer than any other method to rendering the parts free from infection. This is well demonstrated by the successful treatment of chronic gonorrheal arthritis in which the persistence of the arthritis is undoubtedly due to a toxic poisoning from the infected vesicles as a source. Following Dr. Fuller's description of the successful treatment of gonorrheal arthritis by curetting the vesicles, the method to be described was suggested and instituted by the writer and has been regularly successful in the hands of all who have employed it intelligently. This was recently demonstrated by me in the genitourinary clinic at Johns Hopkins Hospital.

It is customary in these cases to use first a glass vacuum electrode. It is immaterial whether it is made a localizing insulated electrode or a straight uninsulated rectal electrode, if as much current is employed as can be withstood with the heat produced. The application is directed to the vesicles for ten or fifteen minutes, preferably from a coil or transformer, and then followed by the use of a metal electrode, with the static wave current, the same as used for the treatment of prostatitis. The electrode is carried well up against the vesicles, and the application is continued for 15 minutes daily until the vesicles are cleansed of infection.

In 1902 it was discovered by Dr. Herman Grad that the vesicles though containing a waxy content could be emptied by this method, and when Fuller established the fact that the arthritis was of toxic origin from infected vesicles the writer immediately put this method into use, and, as stated, it has always proved successful in uncomplicated cases of gonorrheal arthritis.

The fact that it relieved gonorrheal arthritis immediately suggested the employment of the method in the same manner for the treatment of vesiculitis with the presence of shreds in the urine; and I know of no other method in vogue to-day which offers so much for freeing the genital tract from gonococci as the employment of the static current, expelling as it does the content through the natural channels, and at the same time seeming to destroy the virility of the germs present.

If I have made clear the rationale of the methods described I will have proved that the process is a rational one, and while the relative degree of success in the percentage of cases that come under observation may be questioned, it remains for the genitourinary specialist to confirm or disprove the writer's claims as set forth.

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REMARKS ON METHODS FOR THE PREVENTION OF INSANITY.*

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THE writer intends these remarks as a résumé rather than as an offering of anything with which you are not entirely familiar. He merely feels that discussion in medical societies of the subject at hand will be of aid to all of us who are so painfully but hopefully groping in the dark for a solution of the insanity problem, and awaiting the light which may lead us on our way with confidence and with something of precision.

The hard and fast, and generally accepted, dividing line which has always existed between sanity and insanity is rapidly disappearing; and we are coming to appreciate that instead of there being a chasm which separates the two states they are in reality almost intimately fused; that, after all, there is not the essential difference between the two conditions which it has been customary to believe there was.

One who is connected with a hospital for the insane is more especially in a position to observe the changing viewpoint of the laity in this regard, coming, as he does, into daily contact with the relatives and friends of the patients who have been committed as insane. It may seem trite to refer to this fact or to the subject of these remarks before the members of this society, but in any event, the matter would seem worthy of emphasis. For if anything can be done to break down the well-known prejudice existing against the disease of insanity surely the end justifies the means, and it is a hopeful sign that such prejudice is being rapidly dissipated. Not a little of the credit for this is due to the attitude of the general practitioners of to-day, who apparently are taking more of an interest in the subject of insanity and in the welfare of the insane than those of past generations. And men in other professions are following the lead of physicians and are showing an interest in a subject long ignored. That there has been and that there still is a stigma attached to insanity everyone must frankly admit.

As an example of the broader view which is coming to be held, however, reference may be made to the attitude many judges of courts are taking in their disposal of cases which are brought before them—of people who are suffering from the excessive use of alcohol. Much more frequently than formerly the sufferers from alcoholic poisoning are being sent to hospitals for the insane as the recognition is becoming more prevalent that alcoholism is a disease rather than a crime. I mention this as bearing on the increasing tendency to adopt means for the prevention or for the early recognition of insanity, and as demonstrating a more intimate appreciation of abnormal mental states.

The ways and means of solving the problem are for the most part only in the process of crystallization; but that they are being launched here and there is comforting and refreshing. And it is primarily the prevention of insanity toward which we should bend our efforts. Asylum physicians more acutely than others realize the futility of hoping for a cure in many of the cases which are committed to their care. More perhaps is expected of these members of the profession than is really fair. For be it known, many cases even on admission to the hospitals for the insane are already really in a state of chronicity, judging from a careful scrutiny of the anamneses of the patients. The asylum physician, one might say, is in much the same predicament that confronted the practitioner of some years ago, when the inflamed appendix was overlooked and his conscientious endeavors were directed to the relief of the ensuing general peritonitis.

It would seem to the writer that just as the fact that the early symptoms of appendicitis are now so quickly recognized and that this results in the prevention of physical catastrophes and very often death, just so, in the future perhaps, will there be fewer relics of once undeteriorated brains because of the acumen of physicians in recognizing the earliest symptoms of an impending psychosis and in instituting protective measures in time to check its initiation.

For it would appear there are few cases of sudden insanity. The histories of patients committed to insane hospitals in many cases show prodromes of momentous import which have been overlooked or ignored until the final crash comes and as a *dernier ressort* or as a necessity the unfortunate ones are haled into court and committed to hospital care. Thus the increasing attention which is being paid to the subject not only by physicians generally but by the laity as well, bids fair to accomplish much in the practical prevention of a large number of cases of alienation.

As causative factors alcohol and syphilis of course stand out boldly and present their numerous cohorts. And so if we were smug and narrow we might complacently shrug our shoulders and dismiss the matter with a word: "Eliminate alcohol and syphilis and we would have no alcoholic or syphilitic psychoses." But we know perfectly well (while we do not quite understand why) that all syphilitics do not develop paresis; nor do all people who over-indulge in alcohol show subsequent deviations from an accepted mental norm.

Now the writer holds no brief for the ecstasies of a syphilitic infection nor for the dreamy abnormalities of the alcoholic; he wishes rather to plead for the innocent sufferers of the dementia precox, involution, and senile groups, many of whom (women for instance) have never looked upon the wine that is red and whom the gracile spirochete has never dared to approach.

It would appear that it is for all of us physicians to look upon insanity not as a thing apart; not as though a division wall were strongly erected between the two states of sanity and insanity; but with the earnest expectancy, watchful though sorrowful, that certain individuals under our observation are, if not properly guided, foreordained to step out from the realm of accepted sanity into the abyss of recognized *insanity*. May not the cogent personality, active and potential, which every doctor possesses prevent, metaphorically speaking, the acute appendicitis from becoming a general peritonitis?

It seems certain that the psychological clinics which are being instituted in various parts of the country will in time exert a powerful preventive influence upon the development of insanity. Our own Connecticut Mental Hygiene Society is doing commendable work in the line of prevention and its

*Read at a meeting of the Central Medical Society.

efforts have already succeeded in stimulating an interest which is national in its scope. We are coming to grasp with greater sureness the necessity and importance of studying the trends of the brain, not in maturity when perhaps it is too late, but in childhood and adolescence before the abnormal proclivities of cerebral activities have become accustomed to follow the beaten paths which lead to mental obliquity.

The Binet-Simon test, for example, which has lately come so prominently to the fore, has opened our eyes somewhat and has ruffled our calm contentment. One swallow does not make a spring, but a moving straw indicates the direction of the wind; and we read in the report of the Boston Psychopathic Outpatient Department that as a result of the examination of children between 10 and 20 years of age taken to the clinic, in 71 per cent. of the cases adolescence had a distinct bearing upon the reasons for their being presented, and that 39 per cent. were after careful survey, thought to be normal physically; 75 per cent. were found to be defective or retarded.

So it is obvious that one of the possibilities of prevention rests with us in the more intimate study of the mental trends of our children. The delicate adjustment of the splint to prevent the otherwise possible resultant deformity should apply mentally as well as physically.

Fitzgerald of California recalling that communities generally are blessed with hospitals nowadays, maintains that each hospital should concern itself with the mental health of its own particular neighborhood, showing an adoption of the unit organization idea, and makes the suggestion that since in cases of infectious diseases immediate means are taken against their extension, similar methods should be instituted, when an individual case of insanity crops out, as a protection to the others of the family from the dread condition. He also recommends public lectures on methods of prevention, the explanation to families of the factors involved in any particular case of insanity arising, and emphasizes the obligation of physicians to place due but not hysterical accentuation upon the dangers of alcohol, syphilis, and heredity as etiological factors.

The so-called social service element as part of our armamentarium is to be considered. This perhaps will always meet with the cool reception that a seeming violation of the old adage "one's home is one's castle" invites; but that its possibilities are great, if tact is used, cannot be denied, and its main benefits may come, not alone in the prevention of initial attacks, but also in its help to the convalescing or recovered patient as a means of warding off a relapse or preventing a fresh invasion.

As to eugenics, who shall decide? Who shall have the insufferable effrontery to eliminate ruthlessly the human emotional elements which are so potent and so common in the natural selection of mating? Education and common sense must be the bulwarks of protection in this respect and eugenics may find its endeavors limited to awakening the public to the dangers of ill-mating and with the knowledge thus gleaned, allowing the latter to guide itself accordingly. And shall we sterilize the male and be audacious enough to take away from any one his possible ability to procreate the species? The solution of this problem is still subjudice and is most certainly beyond the writer's ken.

Is it not environment which oftentimes presents itself as the potent etiological factor in the causation of insanity? And cannot physicians with the aid of their keen insight into conditions of a pathological nature, do much to neutralize many irritating and exasperating influences under which the possible future inmate of a hospital for the insane may happen to be placed?

With all the crowning and intrinsic beauties of the home and with all its sacredness, is it not true that this oftentimes, unfortunately, carries with it some of the basic elements of the etiology of alienation? I refer to the worries, the fears, the irritations which we know exist all about us; the financial distress here, the religious doubt there; and again, for example, the phantasms of jealousy; the morbid obsessions—all of which form sleeping neurotic coals ready on the instant to be fanned into the flame of a psychosis.

Dr. Osler in an address before the Henry Phipps Psychiatric Clinic suggests that such headings as the following may shortly be found on our diagnostic slips: "Mr. J. A.—A tendency to irritability of temper." "Mrs. R.—Too much given to introspection." "Miss B.—Over-anxious about her soul." "Master G.—Worried by a neurasthenic mother."

Again, if we accept the teaching of Freud and other psychanalysts, that not only psychoses but almost everything else in the world has a sexual basis, shall we not perforce be obliged to attack the question of sex and sexual relations with greater interest and avidity and moreover, freedom, than we have heretofore shown?

It may be that Harvey Cushing in his brilliant investigations of the ductless glands is arriving at the truth concerning the real causes of some insanities. He is already making inquiries as to the relation between the abnormal secretory action of these glands and certain mental obliquities. But since he admits that individuals vary greatly in the exhibition of the secretory response of these glands to emotional strain, is he not at one with the distinguished physician above quoted who while speaking to the students of Yale University some time ago on the subject of mental health, warned them of the futility and inadvisability of worrying about events which had already happened, or of anticipating those to come. He summed up his ideas in the following concise and wise though perhaps somewhat iconoclastic aphorism: "Forget yesterday; forget to-morrow; think of to-day!"

QUININE AFTER RECTAL OPERATIONS.

WITH NEW TECHNIQUE.

By EDMOND BONNOT, A.M., M.S., M.D.,

ST. LOUIS.

DURING the past eighteen months I have used quinine after all laparotomies,[1-2] but it is only since recently that I have used quinine after all operations where ether was administered, and after all cases in which local anesthetics were used where the operation was of any consequence. It is only during the last five months that I have used it following rectal operations. Since then I have used it in sixteen cases, ten hemorrhoidectomies, four operations for rectal fistulæ, and two cases of fissure in ano. This has proven even more satisfactory to the patient than in other operations.

In hemorrhoidectomies, after thoroughly dilating the sphincter muscles, I use the clamp cautery

method, previously separating the skin with scissors, so as to include only the mucous membrane in the clamp, and use the ordinary soldering iron to a dull red heat for cautery. In fissure and fistula I use the ordinary methods of cutting, curetting, and cautery, as the case may require. After the operation is completed I insert a soft rubber tube 6 in. long and ¼ in. internal diameter into the rectum, with a safety pin to the outer end to prevent slipping in. After the patient is returned to bed he is given 10 grains of quinine muriate dissolved in 2 ounces of water at 100° Fahr. through the tube, which is clamped for one hour to prevent the fluid from escaping. This is repeated once after six hours and the tube is then withdrawn. The next day the patient is given 1½ ounce of castor oil.

The result is that the patient has no pain or tenesmus in the least, not even when the bowels move. The gas escapes freely, there is a free bowel action the second day, and every day following. If after three or four days there is some soreness or swelling the patient is given a salve to apply to anus as follows:

℞ Extract of Opium, ʒi.
Extract of Belladonna, ʒss.
Cocaine muriate, gr. x.
Ichthyol, ʒi.
Petrolatum, q.s., ad, ℥i.
Sig.: Apply when desired.

The patient never requires morphine. Of the sixteen cases none had any more than a slight soreness in the rectum. The patients are able to leave the hospital in from four to six days. The quinine has a distinct local anesthetic effect that lasts until the condition is healed. The thirst, nausea, and vomiting are very favorably influenced as in other operations. By reason of the ichthyol in the salve and the quinine, which are antiseptics, healing takes place more rapidly.

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3329 Park Avenue.

PICRIC ACID AND BENZIDIN STAIN; A TRANSITIONAL CELL IN GENERAL PARALYSIS.

By B. Lemchen, M.D.,
Dunning, Ill.
Chicago State Hospital.

On September 11 I described in the Medical Record a new stain for cerebrospinal fluid. Now I have modified the stain, because the new one brings the cells out clearer. The way I make this stain is as follows:

I dissolve 1 per cent. benzidin in glacial acetic acid. I add an equal amount of saturated solution of picric acid in water, and filter. The reason I filter is because some of the picric acid is precipitated. This I call Solution No. 1. Solution No. 2 is hydrogen peroxide, and the rest is the same as the original benzidin test which I reported on September 11; that is, when I am ready to stain the cells I place some of solution No. 1 with an equal amount of solution No. 2 in a small test tube, mixing them together. Then I take a white cell pipet, draw the staining fluid to the .5 mark, the spinal fluid to the 11. mark, mixing them well together; then I place on the counting chamber and count the cells. The cells, with a few exceptions, which I will explain later, take the same stain as with the original benzidin test, except that some of the cells which are not stained with the benzidin are stained yellow with the picric acid and so are plainer. In other words, most of the red cells that are not dissolved stain blue, while some of them stain a brownish yellow to a dark brown. The polymorphous leucocytes are stained yellow, with the exception of the granules in the nucleus which are stained dark blue. The lymphocytes stain yellow with blue granules and a blue ring; the plasma cells are stained yellow with the blue rings surrounding.

I have found a cell which is constantly present in general paralysis of the insane; it is a cell a little larger than the red blood cell; the protoplasm is stained a light blue; the nucleus, which is always on the periphery, is stained a dark blue, almost green. This cell apparently has the same origin as the red blood cell, because it takes the same stain, and I consider it to be a transitional cell of the plasma cell for the reason that both its protoplasm and its nucleus are more or less homogeneous, there are no granules that I can see, and the nucleus is excentric.

In a careful study of all the cells it seems to me that the red cells apparently have different origin, the reason being that not all of the cells take the blue stain. It has been thought for quite a while, but has never been proven, that the red cells have their origin in the hemolymph glands as well as in the bone marrow, and also in the spleen; this has been denied by others, but I think this statement is correct. There is another thing to be deduced from this: Since we find transitional cells which must have their origin at the same place as the red blood cells, therefore, the plasma cells may have their origin in the blood-forming organs, and as such the function of the red blood cells is not only to carry oxygen to the different tissues of the body but in certain conditions they may also produce cells that are defensive in character. This might account for some of the good results that we are getting in general paralysis from tonics, including iron and arsenic, and hygienic treatment; and it is known that these measures stimulate the blood-producing organs to better activity.

In conclusion I would like to state, after my investigation, that the acid picric benzidin stain is a reliable one for cells in the cerebrospinal fluid, and the red blood cells apparently have more than one origin. The plasma cells in all probability have their origin in the blood-producing organs. There is a cell that has the appearance of the plasma cell and takes the same stain as the ordinary red blood cell, which I have constantly found in general paralysis of the insane; this appears to me to be a transitional cell, and for the sake of a better classification I will call it the transitional cell of Lemchen.

Immunity Against Tuberculosis Through Drinking Milk.—Moss in experiments on cows concludes that a relative degree of immunity against tuberculosis may be conferred upon calves by feeding the milk of vaccinated cows. "Further experiments are necessary to determine if human beings may be similarly influenced."—*Johns Hopkins Hospital Bulletin.*

MEDICAL RECORD.

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ACHALASIA OF THE CARDIA.

THE coinage of a new word in medical nomenclature is fully justified when the new term connotes a condition that is not exactly described by any existing word, and that would otherwise require a cumbrous phrase for the conveyance of its meaning. "Achalasia" is literally "absence of relaxation" and when applied to the cardiac orifice of the stomach signifies a condition that has for a long time been denominated by the term cardiospasm, or the so-called idiopathic dilatation of the esophagus. Arthur F. Hertz (*Quarterly Journal of Medicine*, July, 1915) points out that the dilatation of the esophagus without organic constriction, which was first described by Hannay in 1833, was attributed by Mikulicz in 1882 to a spasm of the cardia, and within recent years this condition has been designated by the term "cardiospasm." But Hertz believes that this conception is incorrect, advancing abundant evidence to prove that the dilatation and hypertrophy of the esophagus are due to the absence of the normal relaxation of the cardia. For the coinage of the word "achalasia" Hertz acknowledges indebtedness to Sir Cooper Perry.

In none of the cases of so-called cardiospasm in which the symptoms had existed for many years before death has there been observed an hypertrophy of the cardiac sphincter analogous to the greatly thickened pylorus in the hypertrophic pyloric stenosis of infants. This fact tends to support the view advanced independently by Rolleston and Hertz that dilatation of the esophagus is the result of a failure in the coordinating mechanism by which the cardiac sphincter is relaxed during swallowing. *X*-ray observations and experiments on animals show that the cardia relaxes when each peristaltic wave, passing down the esophagus in the act of swallowing, reaches its lowermost end. A failure in this relaxation results in the stagnation of food in the esophagus, which dilates as more and more collects in it. The resulting increased peristalsis accounts for the marked hypertrophy of the dilated esophagus. Hertz has found that in spite of the fact that strong peristaltic waves are unable to overcome the obstruction, the weight of an India-rubber tube filled with mercury is sufficient to cause it to drop without the slightest difficulty through the cardia into the stomach. The tube can also be withdrawn with greatest ease. Neither of these phenomena would be possible if the obstruction were due to spasm. Achalasia of the cardia may, however, be complicated with cardiospasm, in which instance there is some resistance to the passage of the weighted tube.

In the majority of cases of achalasia of the cardia there is discoverable no obvious cause. In a few instances the failure of relaxation is the result of reflex inhibition from an ulcer or carcinoma of the stomach; from inflammation or ulceration of the lower end of the esophagus; from extreme dilatation of the right auricle; or from a degenerative lesion of the vagus nerve. The condition may begin at any age and generally develops gradually, the attacks at first occurring at intervals of a few days, weeks, or months, until finally the condition is permanent. The attacks often begin in the morning, when the patient experiences difficulty in swallowing saliva. Upon ingesting food the patient feels as if this "sticks" and often recognizes that the obstruction is beneath the lower end of the sternum, but sometimes the sensation is felt in the upper part or middle of the chest. Sometimes actual pain is felt. Salivation is present in almost every case. As a rule the patient is relieved by vomiting almost all he has eaten within a few minutes after finishing a meal. Generally this is done quite easily, but occasionally the vomiting reflex is initiated by the patient tickling his throat. Liquids are swallowed more easily than solids. A small portion of the food passes through the cardia in a steady stream, but as soon as the weight of the column falls below a certain point or the individual lies down the pressure becomes insufficient and the flow ceases. The esophagoscope shows that the cardiac orifice is completely closed. The general health remains good in contrast to what occurs in malignant obstruction of the esophagus. After a certain amount of loss of weight a stage of equilibrium is reached.

In the diagnosis of achalasia of the cardia, which is confirmed most easily with the aid of the *x*-rays after a meal of porridge mixed with milk and barium sulphate, one must exclude the possibility of cancer and of non-malignant stricture of the esophagus. Achalasia is distinguished by the intermittent character of the early attacks, the absence of constitutional symptoms, and the comparatively early age of onset; and, when diagnosis is not made early in the disease, by the long duration of the illness. The only conclusive evidence is said to be the great ease with which a weighted tube passes through the cardia in achalasia in contrast to the complete obstruction offered by a growth.

The treatment consists in the use of a mercury-weighted tube of 20 to 24 gauge, which is allowed to drop through the cardia and one inch beyond it. It is left in position for a few minutes at first, but later it can be withdrawn directly after it has entered the stomach. The tube is passed immediately before meals, at first before every meal, then once a day, and later at less frequent intervals. This treatment is said to be simple and effective.

Hertz believes that the condition called water-brash, the "vomissement pituiteux" of the French, and certain allied phenomena can be most satisfactorily explained as due to a special form of achalasia of the cardia.

THE REHABILITATION OF DRUG THERAPY.

In the progress of medicine quite as much as in the progress of social or political reforms we have become accustomed to an overswinging of the pendulum on the part of those who advocate something new. In fact it is generally accepted that there must be this overswinging of the pendulum to attract attention to the innovation. It is not so very long ago that everything was swinging over in favor of therapeutic nihilism, in so far as drug therapy is concerned.

The success of diphtheria antitoxin prepared the imagination for belief in a new system of serotherapy for the infectious diseases, and while it did seem for a time that everything was swinging that way, it must not be forgotten that there were workers at the old problem, started by Lister, of trying to find a chemical compound that would destroy infective germs and yet not injure the tissues. In 1902 Laveran and Mesnil first demonstrated the trypanocidal action of arsenic in experiments on animals. In 1905 Thomas published his work on atoxyl; Uhlenmuth soon extended the field of specific arsenic therapy to spirochetal infections; and then Bertheim and Ehrlich opened the way for greater exactness in specific therapy by determining the chemical constituents of atoxyl. Salvarsan soon followed, and later, neosalvarsan—but the old problem is still before us, as shown by Brown (*Johns Hopkins Hospital Bulletin*, October, 1915), who reports on the lesions caused in arsenotherapy, and the difficulties met in prosecuting research along this line at the Rockefeller Institute. It seems that at times unexpected results are brought about, either by peculiar selective effects of the arsenic or by the production of potent organic poisons. We have not as yet a chemical compound that we can inject into the circulation, which will not do more or less damage to the vascular system. We have made great progress in arsenotherapy since the days when Livingstone was in "darkest Africa" and used arsenic in the treatment of "fly-bite," but we are not yet at the end of our work in chemotherapy; and, on the other hand, in chemotherapy no less than in serum therapy, there are not grounds for thinking that all progress in the future therapy of infectious diseases is going to be in its direction.

A line of work just reported by Moore on the chemoserotherapy of experimental pneumococcal infection suggests a possible way for further progress without any overswinging of the pendulum. Moore by injecting a hydroquinine derivative and antipneumococcus serum into mice infected with pneumococcus found that the efficacy of the serum was increased at least fifty times; that the effect was many times greater than a simple summation of the effects of the drug and the serum. (*Journal of Experimental Medicine*, October 1, 1915.) This word, drug, is rarely used in the ultrascientific literature these days, but nevertheless much of the research has to do with drugs. This fashion has so influenced us that we are really not apt to think, for instance, of the Ehrlich-Hata preparation as a drug. It is in researches such as these that we can see that therapeutic nihilism is going to belong to the past.

In the field of specific therapy, quinine long ago fully justified drug-therapy; thyroid has fully justified organotherapy; diphtheria antitoxin has fully justified serumtherapy; all of these—to use an old-fashioned word—remedies, are biological products. If we may judge of the future by these past achievements, we should expect continued progress along any line in therapy which does not forget that the life processes of a plant or an animal excel in the production of delicate chemical compounds for specific purposes. The secret is to find the products or to influence their natural production, so that they may be turned to our purpose.

THE DETERMINATION OF PLASMA AND BLOOD VOLUME.

With the introduction of the numerous methods for the quantitative determination of various substances in the blood there has come the need for some reliable method for the determination of the amount of blood. It is true that this has been done to a certain extent upon animals in the laboratory, but the results are not translatable to man to any exact degree. The methods hitherto used upon man have been only approximations and for the most part unsatisfactory. Recently there has been introduced by Keith, Rowntree, and Geraghty (*Archives of Internal Medicine*, 1915, xvi, 547) a method based on the introduction into the circulation of a non-toxic, slowly absorbable dye which remains in the plasma long enough for thorough mixing. The concentration of the dye in the plasma is then determined colorimetrically by comparison with a standard mixture of dye and serum. The relation between the plasma and the whole blood is determined by means of the hematocrit. The dye selected is known as vital red and is disodium disulphonaphthol azotetramethyl triphenyl methane. It proved non-toxic in doses of 3 mg. per kilo, which was the amount used. In dogs, traces appear in the urine and in the lymphatic duct at the end of ten minutes and in man it is to be found in the urine for three or four days following its injection.

In carrying out the estimation, the calculated amount is injected into an arm vein, and three minutes later blood is withdrawn from a vein in the other arm for the estimation. Comparison is then made with a solution of the dye in serum which has been removed from the patient before the injection of the dye. Controls were made by repeated estimations on the same patient, by the use of different doses of the dye and by estimation of the blood volume before and after venesection and infusion, and all tended to show the accuracy of the method. In applying the method to normal men the authors found the plasma volume to vary from 1/17 to 1 23 the body weight, the average being 1 19.4. The whole blood on a gravimetric basis varied from 1 13 to 1/10.5 of the body weight with an average of 1 11.5. These variations are very much less than those obtained by the use of methods hitherto available. The average, however,

is not far from the figures usually accepted as normal. In a somewhat limited investigation of pathological conditions they determined an increase in the blood volume in pregnancy, some cases of anemia, and in one case of polycythemia. A small volume was found in obesity and in many cases of marked hypertension. The method is a comparatively simple one and is apparently accurate. It should prove of great value as an adjunct to the present methods of blood analysis, which give merely percentage figures and therefore possess only a relative value.

A German "Soft Drink."

Most "soft drinks" are regarded as crude jumbles, unscientific in conception, with a tendency to cause gastric disturbance, without delicacy or flavor, and inferior to slightly alcoholized beverages, in that the latter have stomachic properties, are more palatable and standardizable, and do not pall upon the consumer. The fact that cider, despite its alcohol content, can be used temperately by thousands who could not drink other alcoholized beverages without habit forming, suggests that it possesses something besides alcohol to render it acceptable to the drinker. Of course, there have been cider drunkards and communities which have abused cider, but they are in the minority. In a note to the *Münchener medizinishe Wochenschrift* for August 17, Professor Ziemann gives the recipe for what he calls an artificial alcohol-free cider which he says is both sweet and sour and aerated and has a delicate flavor. This is as follows: Fifty grams of ash leaves are mixed with four liters of water, brought to a boil and allowed to draw for 2 hours in a closed vessel. The infusion is now placed in a cask and the following are added: A hundred grams of tartaric acid dissolved in one liter of warm water; one liter of cold infusion (2 hours) of chicory (100 grams); 80 grams fresh baker's yeast dissolved in ¾ liter of cold water by stirring; five kilos crystallized sugar dissolved in warm water. Water is now added to make 100 kilos. The cask, placed in the cellar, is allowed to remain untouched, for from 12 to 18 days, according to the temperature, the bung being loosely inserted. The pseudocider is now ready for bottling. Corks had best be wired and blank space left in the bottles. We fear the assumption of Professor Ziemann that this is a "soft drink"—that is to say, free from alcohol—would not be accepted in any prohibition State or by any first year student of chemistry.

The Problem of Immunity.

In succession ten or more theories of immunity have come and gone, each having been found fallacious. The inadequacy of Ehrlich's widely accepted side-chain theory has recently been pointed out by Coca (*Journal of Infectious Diseases*, September, 1915) in the case of natural immunity. He states that Ehrlich's theory is applicable in the case of the scorpion being immune to its own venom, or of the hedgehog to the viper's venom, for in these cases the blood contains some antitoxin property, but that in the case of the remarkable natural immunity of the fowl to tetanus toxin, the theory is inadequate because the blood of the fowl, although the fowl is immune, is not antitoxic. Inasmuch as this natural immunity may be overcome by temperature, Coca suggests that it may after all depend on the physical condition of the protective tissue or sensitive cells. In other words, it is a problem in physical chemistry.

News of the Week.

New York City Death Rate.—During the week ending October 23 there were in New York City 1,296 deaths with a rate of 11.64 as compared with 1,216 deaths and a rate of 11.36 for the corresponding week of 1914.

Chicago Death Rate.—During the week ending October 23 the total number of deaths reported in Chicago was 533, which was 50 less than during the preceding week of this year and 4 less than during the same week of last year. The annual death rate for the week was 11.4 per 1,000 of population, as compared with 12.4 for the preceding week, and 11.7 for the corresponding week of 1914.

Committee of American Physicians for the Aid of the Belgian Profession.—Dr. F. F. Simpson, M.D., treasurer, 7048 Jenkins Arcade Building, Pittsburgh, Pa., reports the following contributions received during the week ending October 30, 1915:

Dr. J. Shelton Horsley, Richmond, Va. (second contribution)		$5.00
Previously reported receipts		7,866.84
Total receipts		$7,871.84
Previously reported disbursements.		
1,625 standard boxes of food at $2.20	$3,575.00	
1,274 standard boxes of food at $2.30	2,930.20	
353 standard boxes of food at $2.28	804.84	
Total disbursements		7,310.04
Balance		$561.80

War Contributions to Red Cross.—At the annual meeting of the New York County Chapter of the American Red Cross, held at the Waldorf-Astoria on October 28, it was announced that the war contributions to the American Red Cross Society had amounted to $1,600,000, since the relief work was started in September, 1914. All the supplies sent to Europe have been handled and shipped from New York. Dr. Richard P. Strong of Harvard University, who was at the head of the American Sanitary Commission which was sent to free Serbia from typhus, told the story of the cleaning up of that country. Not only was typhus fought, but it was found necessary to vaccinate the people against cholera also. The sanitary work was internationalized, the French, Russians, and British taking charge of seven of the fourteen districts into which Serbia was divided, while the Americans had charge of the remaining seven.

Americans Care for Russians.—A recent report from Rome states that a contingent of the American Red Cross from Serbia passed through Italy on October 29, on the way to Germany to aid in the care of Russian prisoners in that country.

Temperance in England.—The anti-treating order in England is said to be proving very useful. The Coroner of Southwark at an inquest recently stated that the order had done more to stop drunkenness than anything else in his experience that the Government had done.

Cavell Memorial.—The proposed memorial to Miss Edith Cavell, the English nurse in Belgium who was executed as a spy by the Germans recently, may take the form of a branch of the London Hospital to be called by her name. The

suggestion has been taken up by the London press and the execution of the plan seems almost certain.

Women Physicians in London.—The status of the woman physician in England has changed greatly since the beginning of the war. Positions on hospital staffs which have heretofore been held exclusively by men, are now offered to women, and the demand is considerably in excess of the supply. Before the war, for instance, an infirmary physician in the Whitechapel district, always a man, received $500 a year and emoluments, while now the infirmary is advertising for a woman physician and offering a salary of $1,000 a year and emoluments. It is reported that the Woman's Medical School of England has trained 600 women physicians and that 220 students are registered there.

British Army Sanitation.—Sir J. Crichton Browne, presiding at a conference of the Sanitary Inspectors' Association in London recently, stated that in the present war, with a larger army than England had ever before had in the field, the mortality from disease had been lower than in times of peace. Although nearly 500,000 men have been reported killed, wounded, or missing so far, the number would have risen to a million if the rate of sickness had been the same as it was in South Africa. But for the enormous strides made in sanitation, especially in the last ten years, he said, the British Army in France and on the Mediterranean would be in a perilous plight.

Traveling Hospital.—Dr. Alexis Carrel, who has been for some time in charge of a hospital at Compiegne, will, it is announced from Paris, devote part of his time to operating in a traveling hospital which will be composed of five automobile trucks. Two of these will carry a portable operating room, another a sterilizing plant, a fourth an electrical generating plant, and the fifth an *x*-ray room. The traveling hospital will shortly be sent to the front, where it will be thoroughly tried out, retreating only during bombardments. Dr. Carrel will still retain supervision of the Compiegne Hospital.

Hospital Staffs Safe.—The Serbian Legation in London stated on October 28 that the staffs of the British hospitals in Serbia were all safe. The doctors and nurses who had been at Uskub were reported to have reached Monastir in safety.

Race Degeneracy.—Out of 600 applicants for the United States Navy examined recently in Boston, but thirty were accepted, the remainder being rejected as physically below the normal or mentally or morally unfitted. From this, Rear Admiral Albert Ross, U. S. N., deduces that we must make our rapidly degenerating citizenry into men before we can make sailors or soldiers.

Premium on Children.—In Saskatchewan, Canada, there has recently been adopted a law providing that every time a mother gives birth to a child the Province shall pay her $25. The medical attendant is also paid a fee of $15 by the Government The doctrines of Malthus evidently strike no terror into the hearts of the lawmakers of Saskatchewan.

To Enforce Sterilization.—The Wisconsin sterilization law, passed by the Legislature of 1913, will, it is reported, be put into actual operation some time in November, when twenty-four inmates of the home for feeble-minded in Chippewa Falls will be submitted to surgical treatment for this purpose.

Scarlet Fever Epidemic.—Infected milk from a dairy in West Town, N. Y., is said to have been responsible for an epidemic of scarlet fever in several towns in Bergen County, N. J. Nearly forty cases, with one death, were reported in October.

War on Nostrums.—The Board of Health of New York City, at a meeting held last week, passed an amendment strengthening the ordinance which will become effective on January 1, 1916, requiring that any patent medicine sold in New York City must have its formula registered with the Department of Health. As originally enacted, the vital paragraph of the section read: "The names of the ingredients of every such medicine shall be registered in the Department of Health in such manner as the regulations of the Board of Health may prescribe." But as it was felt that this was not entirely clear the Board amended it to read: "The names of all ingredients to which the therapeutic effects claimed are attributed and the names of all other ingredients except such as are physiologically inactive shall be registered in the Department of Health in such manner as the regulations of the Board of Health may prescribe." The information obtained through such registration will be held in strict confidence by the Department. The Board announces its intention to enforce the ordinance and is prepared to fight those manufacturers of patent medicines who show an unwillingness to comply with its terms.

Dr. Goldwater Leaves the Health Department.—The resignation of Dr. S. S. Goldwater as Commissioner of Health of New York City, after being in the hands of Mayor Mitchel since last July, finally, on Dr. Goldwater's insistence, became effective on November 1, the Mayor meeting the situation by appointing Dr. Haven Emerson, Sanitary Superintendent, to fill the place temporarily. Dr. Goldwater will return to his work as superintendent of Mt. Sinai Hospital, a post from which he was given leave of absence in order that he might enter the service of the city. Chief among his activities as Commissioner have been his endeavor to regulate the transit difficulties, the enforcement of rules regarding the muzzling of dogs on the city streets, the abolition of disinfection following cases of certain infectious diseases, the wholesale physical examination of occupational workers, and the sanitary clean-up of Coney Island. Dr. Emerson is known to have been in complete accord with Dr. Goldwater's policies, and it is not unlikely and is greatly to be desired that his appointment may be made permanent. As sanitary superintendent he has been especially active in the campaign against the drug evils.

Fresh Air Cars.—For the benefit of those who believe in fresh air, it is proposed to operate on the elevated railway in Chicago, during the winter, windowless and unheated cars. One such coach will be attached to each train and will be marked "Fresh Air Car."

Willard Parker Hospital.—A new building to house the medical staff and to serve as a Nurses' Home is now under construction at the Willard Parker Hospital, New York. Quarters will be provided for thirty-five doctors and 115 nurses. The building will include a swimming pool and a gymnasium, and special rooms for sewing, etc., will be fitted up for the nurses.

Police Psychology Squad.—The police of New York City are to be given instruction in psychology, the course beginning on October 30, with a lecture

at Police Headquarters on "Mental and Moral Defectives," by Dr. Louis E. Bisch, who with Professor Thorndyke of the Department of Psychology of Columbia University, is giving his services. By these lectures the Police Commissioner optimistically believes "a mental standard of recognition will be inculcated, so that officers on duty may be immediately aware of a mental or moral defective when confronted by one." Dr. Bisch and Professor Thorndyke will also act as consultants to the department, to the end that those who require special attention may be examined and if necessary committed to a hospital or sanatorium instead of to a penal institution.

Favor National Board of Medical Examiners.—At the forty-first annual convention of the Mississippi Valley Medical Association, held recently in Lexington, Ky., the following resolution, offered by Dr. H. H. Grant, was unanimously adopted: "That the association endorse the National Board of Medical Examiners, organized as outlined in the address of the president of the American Medical Association at its last meeting, and suggest the appointment by the president of the Mississippi Valley Medical Association of a committee of one from each State represented in the membership of the association to urge its adoption by the examining boards of their respective States, such committee to cooperate with any other committee working with a similar purpose."

Dr. John P. Compton of Branson, Mo., who is ninety years of age, claims to be the oldest practising physician in Missouri. He visits his patients daily and makes occasional trips into the country.

Surgeon George W. McCoy has been appointed director of the Hygiene Laboratory of the Public Health Service at Washington, D. C., succeeding Dr. John F. Anderson, who recently resigned to accept private employment. Dr. McCoy is at present in charge of the leprosy work in the hospital at Molokai, Hawaii, and is considered an authority on leprosy, bubonic plague and dengue.

Dr. George Chaffee of Bay Ridge, Brooklyn, the founder of the New York and New England Association of Railway Surgeons, was presented with a large silver loving cup at the twenty-fifth annual meeting of the organization, held recently in New York, at which over 200 members were present. Twenty-five years ago Dr. Chaffee called a meeting of railroad physicians and the society was organized with thirty-one charter members, of whom only ten are now alive.

Dr. John A. Pringle, assistant superintendent of the City Hospital, St. Louis, Mo., has been appointed temporarily to fill the post of superintendent left vacant by the resignation of the former incumbent.

Sir Charles Tupper, former Prime Minister of Canada, who died in England on October 30, at the age of 94 years, was a graduate in medicine from the University of Edinburgh, although he had long ago given up his profession for politics. He began life as a cobbler and, it is said, was as successful at making shoes as he was later as a physician and as a statesman.

Medical Society Elections.—The Mississippi Valley Medical Association, at its annual meeting held in Lexington, Ky., elected the following officers: *President*, William J. Stone, Toledo, Ohio; *First Vice-President*, Channing W. Barrett, Chicago, Ill.; *Second Vice-President*, Carl L. Wheeler, Lexington, Ky.; *Secretary*, Henry Enos Tuyle, Louisville, reelected; *Treasurer*, S. C. Stanton, Chicago, reelected. Indianapolis was chosen as the meeting place for next year.

Northern Berkshire Medical Association.—At the annual meeting held in North Adams, Mass., on October 19, officers were elected, as follows: *President*, Dr. Martin M. Brown; *Vice-President*, Dr. A. K. Boom of Adams; *Secretary*, Dr. R. D. Canedy; *Treasurer*, Dr. C. W. Wright; *Board of Censors*, Drs. F. H. Howard, G. H. Thompson, and J. H. Riley of this city, and Drs. Crowley and Pascoe of Adams; *Entertainment Committee*, Drs. O. J. Brown, G. H. Thompson, and M. M. Brown.

The Detroit Academy of Medicine, at the annual meeting held October 12, 1915, elected the following officers: *President*, Dr. Charles D. Aaron; *Vice-President*, Dr. Guy Connor; *Secretary and Treasurer*, Dr. Alpheus F. Jennings.

The Milwaukee Physicians' Association, at the annual meeting held October 14, 1915, elected the following officers: *President*, Dr. F. C. Malone; *Vice-President*, Dr. C. W. Graham; *Secretary*, Dr. S. M. Nullinger.

The Vermont State Medical Society, at its 102d annual meeting held at Burlington on October 14 and 15, 1915, elected the following officers: *President*, Dr. E. H. Ross, of St. Johnsbury; *Vice-President*, Dr. C. W. Bartlett, Bennington; *Secretary*, Dr. J. M. Hamilton, Rutland; *Treasurer*, Dr. C. F. Dalton, Burlington; *Auditor*, Dr. W. F. Hazelton, Bellows Falls; *Delegate to the American Medical Association*, Dr. Alan Davidson, St. Albans.

The South Texas District Medical Association, at its semi-annual meeting held at Nacogdoches on October 7 and 8, elected the following officers: *President*, Dr. E. A. Malsch of Victoria; *Vice-President*, Dr. C. C. Green of Houston; *Secretary and Treasurer*, Dr. M. F. Thomson of Beaumont.

The Minnesota State Medical Association, at its meeting in Rochester on September 30 and October 1, elected the following officers: *President*, Dr. J. Warren Little, Minneapolis; *Vice-Presidents*, Drs. J. J. Donovan, Litchfield, A. C. Rogers, Faribault, C. O. Wright, Luverne; *Secretary*, Dr. Thomas McDavitt, St. Paul; *Treasurer*, Dr. Earl Hare, Minneapolis; *Counsellors*, Fourth District, Dr. R. J. Hill, Minneapolis; Seventh District, Dr. F. A. Dodge, Le Sueur.

Obituary Notes.—Dr. Horace Greeley Norton of Trenton, N. J., secretary of the State Board of Medical Examiners of New Jersey, a graduate of the University of Pennsylvania, Department of Medicine, Philadelphia, in 1880, visiting physician to St. Francis' Hospital, Trenton, associate editor of *The Medicus*, and a member of the Medical Society of New Jersey, of which he was a former president, the Mercer County Medical Society, and the New Jersey Microscopical Society, died in St. Francis' Hospital on October 27, aged 57 years.

Dr. Joseph Jerome Noll of New York, a graduate of the College of Physicians and Surgeons, New York, in 1885, and a member of the New York State and County Medical Societies, died suddenly in his office, from heart disease, on October 17, aged 51 years.

Dr. Victor G. Becska of Passaic, N. J., a graduate of the Detroit College of Medicine, Detroit, Mich., in 1907, a member of the Medical Society of New Jersey, and the Passaic County Medical So-

ciety, and a former member of the Board of Health of Passaic, died at his home on October 25, aged 34 years.

Dr. AMZI JONES, formerly of New York, a graduate of Vanderbilt University, Medical Department, Nashville, Tenn., in 1900, and a member of the Society of the Alumni of Bellevue Hospital, and the Alumni Association of the Lying-In Hospital, died at Saranac Lake, N. Y., after a long illness, on October 23, aged 42 years.

Dr. TIMOTHY T. REGAN of Brooklyn, N. Y., a graduate of the College of Physicians and Surgeons, New York, in 1884, died at his home on October 28, aged 54 years.

Dr. WILLIAM H. SCOTT of Brooklyn, N. Y., a graduate of the Berkshire Medical College, Pittsfield, Mass., in 1862, died at his home on October 27, aged 83 years.

Dr. PETER S. LEISENRING of San Diego, Cal., a graduate of the Pennsylvania Medical College, Gettysburg, in 1852, formerly of Omaha, Neb., and city physician, and a member of the Medical Society of the State of California, and the San Diego County Medical Society, died at his home on October 17, aged 86 years.

Dr. DAVID H. VAN NUYS of Anderson, Ind., a graduate of the Jefferson Medical College, Philadelphia, in 1864, died at his home just forty-eight hours after the death of his wife, on October 15, aged 79 years.

Dr. JOHN W. WILLIAMS of Clay City, Ky., a graduate of the University of Louisville, Medical Department, in 1887, and a member of the Kentucky State Medical Association and the Powell County Medical Society, died at his home, from cancer of the stomach, after a long illness, on October 13, aged 62 years.

Obituary.

JOHN HENRY HUDDLESTON, M.D.

NEW YORK.

Dr. JOHN HENRY HUDDLESTON, for many years secretary of the New York Academy of Medicine, died at his home, from pneumonia, after a short illness, on October 30, aged 51 years. Dr. Huddleston was born in Boston in 1864, and was educated at the Boston Latin School and at Harvard University, graduating from the Medical Department of the latter in 1891. He soon afterward came to this city, and shortly became prominent in civic affairs as well as medical. In 1903 he served as secretary to the American delegation to the fourteenth International Medical Congress at Madrid, and at about the same time was appointed a trustee of the State Hospital for the Treatment of Incipient Tuberculosis at Raybrook. He was also a director of the Metropolitan Life Insurance Company, and chairman of its welfare Committee. Dr. Huddleston was a visiting physician to the Gouverneur and Willard Parker Hospitals, and to the Riverside Sanatorium, consulting physician to the United Hospital, Port Chester, N. Y., and a member of the American Medical Association, the New York State and County Medical Societies, the American Public Health Association, the American Climatological Association, the National Association for the Study and Prevention of Tuberculosis, the Association of Military Surgeons of the United States, the Hospital Graduates' Club, the Society of Internal Medicine, the New York Pathological Society, and the Academy of Medicine. He was surgeon to the 7th Regiment, N. G. N. Y., from 1895 to 1907 and was retired with the rank of captain.

Dr. Huddleston was blessed with qualities which made him liked by all with whom he came in relation, and beloved by those admitted to his friendship. In medical practice he was the type of the perfect family physician. Of commanding physical presence, of firm will, but of most kindly and cheerful disposition, his mere entrance into the sick room inspired confidence and hope, and this went far to supplement his medical skill where cure was possible, and in bringing tranquility and comfort to those beyond human aid. In public life, both medical and civil, he was a model citizen, giving himself to every good cause without expectation of reward or thought of recognition. His scientific attainments were of a high order, though his many duties and extensive practice gave him little leisure for writing or public speaking. Dr. Huddleston's associates in every branch of his multifarious activities will feel an acute sense of personal loss in the untimely death of this unusual man.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

HOSPITAL STAFFS AND THE WAR—RELATIONS OF TONSILS AND CERVICAL GLANDS—LORD MAYOR'S APPEAL FOR HOSPITAL FUNDS—STAR AND GARTER FOR RED CROSS—SWINE FEVER—OBITUARY.

LONDON, October 15, 1915.

THE war has taken so many surgeons from their usual work that a number of public institutions have been put to serious inconvenience. The residents at hospitals and infirmaries are specially qualified to meet the temporary demand and not a few have left those appointments for the army service. In one hospital a resident staff of twenty-nine was reduced to four. In another twenty-seven rapidly fell to eight. The hospitals with schools attached were in a better position as senior students could be employed rather more extensively than was customary before the pressure was felt. We have had an exhibition of apparatus for the treatment of fractures and other injuries. Officers of the R. A. M. C. who have served abroad have returned and demonstrated the uses of the many appliances and some interesting addresses have been given on the latest work as to wound infection and similar subjects.

The relation between the tonsils and the cervical glands is commonly looked upon as being too close to need remark, and indeed some seem to regard disease of the one as diagnostic of a corresponding condition in the other. Yet when a demand for direct evidence is made the response is not so ready as might have been expected and too often attention is directed only to hypertrophy when atrophy is of equal or even greater import. In 1909 Carmichael reported to the Royal Society of Medicine that out of 50 cases of chronic cervical adenitis the tubercle bacillus was present in the tonsils of 7. The atrophic sclerosed tonsils present wide open crypts for the entry of organisms. Mr. Gardiner, M.S., has been considering what evidence, if any, there is of the infectivity of the tonsils from the cervical glands where there is no obvious source of infection. In 30 cases organisms of some kind were found in 24; in the other 6 none, but it is possible

some were present in 4 of these as the guinea-pigs died too soon for the post mortem to have absolute negative value. The organisms were: *M. catarrhalis* in 7 cases, staphylococcus in 5, pneumococcus 7, streptococcus 7, *Bac. coli com.* 2, *B. tuberculi* 4, Friedländer's bacillus, 1. That in many cases glandular enlargement disappears after removal of tonsils is a familiar experience which seems to show their infectivity; but in some cases the enlargement remains after the operation. Partial removal is very unsatisfactory for the organisms almost always have penetrated to the deepest part of the gland, in fact the incomplete operation not seldom does harm. In 80 per cent. of Mr. Gardiner's cases without obvious source of infection the tonsils were involved, the small fibrotic variety being more dangerous than the larger. Tubercle bacilli are present in smaller proportion than commonly believed, but other organisms are often met with, suggesting that not a few cases passing as tuberculous are really septic.

The Lord Mayor issued his annual appeal for the Hospital Saturday Fund which has now been at work nearly half a century and has contributed £672,571 to the London medical charities. Last year it distributed 52,334 benefits: these include treatment at hospitals, at sanatoria and convalescent homes; provision of surgical appliances, first aid requisites and dental treatment. The total sum received in 1914 was £40,676. In all sections of its work the fund inculcates the principle of self-help. Its income so far this year is in excess of that for the same period in last year. If the fund has lost many supporters through the war, it has gained others at home who are engaged in munition and war work. The Hospital Saturday was October 9.

The Star and Garter Hotel is being converted into a permanent home for disabled and paralyzed soldiers and sailors, under the Red Cross Society. Rather, I should say, it is being rebuilt, as careful investigation indicated that a complete new building on the existing site would provide more beds at no greater cost per bed than the adaptation of the old premises. The Estate Agents' Institute is raising the necessary funds, holding sales in London and the Provinces of articles contributed for the purpose. The Queen has given an Indian silver casket for the first sale (November 10).

The investigations into the efficiency of serum injections in swine-fever which were being carried on before the outbreak of war have been continued. The results obtained corroborate those accumulated in other countries, seeming to show that with proper precautions immunity can be established by serum treatment. The Board of Agriculture therefore offer this treatment of pigs, free of cost, in the early stages of an outbreak. At the same time they impress on owners that to secure the best results from the treatment they should notify at the earliest date the existence, or even their suspicion of the existence, of swine-fever on their premises.

Captain A. E. Bullock, R.A.M.C., who was killed in action on the 27th ult., was one of the founders of St. Paul's School Mission and a distinguished sportsman as specially seen during his curriculum at St. Mary's Hospital. On the outbreak of war he received a commission and was appointed medical officer in the Middlesex (4th battalion) last year. He was mentioned in despatches in 1915, present at Round Hill 60, Ypres and Hooge. After a year's service he was promoted captain.

Progress of Medical Science.

The Boston Medical and Surgical Journal.

October 21, 1915.

1. Address. The Relation of the Medical Profession to Preventive Medicine. Haven Emerson.
2. The Syphilis We See but Do Not Recognize, and the Importance of Familiar Studies. Henry Farnum Stoll.
3. Some of the Anatomic-Pathologic Problems in Tuberculosis. Francis M. Pottenger.
4. Acute Otitis Media in Infancy and Early Childhood: Avoidable Mistakes in Diagnosis, Prevention, Treatment. William R. P. Emerson.
5. Can the Speech Present a Sign of Congenital Syphilis? First Note, Three Cases. Walter B. Swift.

2. The Syphilis We See but Do Not Recognize, and the Importance of Familiar Studies. — Henry Farnum Stoll gives the histories of thirteen cases that were not correctly diagnosed and concludes that the late symptoms of lues are often vague, but their indefiniteness should put us on our guard. "Chronic rheumatism" and "chronic headache" mean "chronic syphilis" in many cases. The physician who does not avail himself of all the newer tests before making these diagnoses assumes a grave responsibility. By carefully studying other members of the family some evidence of syphilis may be detected when nothing can be discovered in the patient himself. Of supreme importance is the realization that syphilis is a familial disease. It is a problem for the family doctor, not for the genitourinary specialist or the dermatologist. Finally we must not lose all sense of perspective and become blind worshippers at the shrine of Wassermann. Admitting that it is the most valuable laboratory test yet discovered, it is not infallible. Positive in nearly all early cases of syphilis it is often negative in the late cases, especially in adults with prenatal infection. Even when positive it does not prove absolutely that the lesion in question is due to syphilis. The Wassermann and luetin tests should supplement, not supplant, the complete history and careful examination.

3. Some of the Anatomic-Pathologic Problems in Tuberculosis.—Francis M. Pottenger read this paper before the American Climatological and Clinical Association. (See MEDICAL RECORD, October 2, page 588.)

4. Acute Otitis Media in Infancy and Early Childhood; Avoidable Mistakes in Diagnosis, Prevention, Treatment.—William R. P. Emerson believes that acute otitis media is the most frequently overlooked affection of infancy and childhood. It is not only not correctly diagnosed by the profession as a whole but it is also sometimes overlooked by the pediatrician, and in infancy its significance is often underrated by the aurist himself. Five cases were reported to illustrate the more common errors of diagnosis. In none of them was the symptom of earache present. In two the symptoms were all abdominal, in one meningeal, and in two general, associated with fever. In all of these cases the diagnosis was made by routine examination of the ear drums, not by localized pain or tenderness. Four of the five cases had a double otitis. Statistics given in 1912 by Dr. C. R. C. Borden, based upon a careful study of the clinical records of over 2,000 cases of scarlet fever, measles, and diphtheria at the Boston City Hospital and the pathological records of 252 autopsies performed by Drs. Councilman, Mallory, and Pearce, show that otitis media was clinically diagnosed in less than 15 per cent. of these cases, but in the 252 fatal cases otitis media was found present in 92 per cent. He concludes that in every case of contagious disease and every case of affection of the respiratory tract in children measures should be inaugurated at once to keep the nasopharynx clear and to maintain drainage through the Eustachian tube. In such cases the eardrum should be inspected at every visit of the physician to the patient. An electric ear instrument gives a clear picture of the drum with a

minimum disturbance of the child. In cases of otitis media when the symptoms and the local condition do not improve under treatment the drum should be incised by the aurist, if he is available; otherwise by the attending physician, without waiting for bulging or pus. Every child, after an attack of acute otitis media, should have his epipharynx examined and treated by a specialist trained to recognize the close relation of the nasopharynx to the ear.

5. Can the Speech Present a Sign of Congenital Syphilis? First Note; Three Cases.—Walter B. Swift reports these three cases for three reasons: First, he takes the clinical material in order that he may carry the investigation on to the final stages; secondly, because he wishes to inspire others to undertake the observations themselves; and, thirdly, that he may possibly be able by this form of presentation to divert a few cases to his own clinic for observation. From these three cases he concludes that there is a voice sign in congenital syphilis which manifests itself in a harsh, rasping, monotonous, low-pitched voice that is at most only slightly, and usually not at all, amenable to any sort of treatment. He believes that congenital syphilis can cause a faulty or incomplete development of vocal cords that results in vocal monotony and harshness in both conversation and weeping. As the term "spirochætosis" has been of late offered to cover all the lesions of syphilis he proposes as a name for this sign "scaphoid vocal cords and spirochætotic harshness."

New York Medical Journal.

October 23, 1915.

1. Tuberculosis of the Patella. Arthur J. Davidson.
2. Some Unusual Gastrointestinal Cases. Anthony Bassler.
3. Extragenital Chancres. Henry Kennedy Gaskill.
4. Opposite Sex Twins in One Body. William Lee Howard.
5. Endamebic Dysentery. Nathan Barlow.
6. Epididymis-Vas Anastomosis for Sterility. William F. Bernart.
7. The Phenoltetrachlorphthalein Test of Liver Function. Max Kahn and James R. Johnston.
8. Injuries to Bone at Tendon and Ligament Insertions Without Local Tenderness. H. P. Leuf.
9. A New Profession—The Social Welfare Worker. Murray Burnes Gordon.
10. Rectal and Anal Fistula. Julius Frankel.

1. Tuberculosis of the Patella.—Arthur J. Davidson says that on searching the literature on tuberculosis of the knee joint we are impressed by the comparatively small number of cases that are credited to primary disease of the patella and by the limited number of references to this specific subject. When we consider the frequency of primary tuberculosis of the various parts of the knee joint, it is surprising that the patella, in its close association with the knee joint, should be such an uncommon site for the primary tuberculous invasion. As a fitting conclusion to the presentation of this subject, the importance of early diagnosis in joint affections is emphasized and the prompt and efficient institution of remedial measures is urged. The opening of a knee joint is often regarded with fear and apprehension by surgeons who never hesitate to open the abdomen for similar purposes. There often seems to be a tendency to stand by and await developments when a joint is infected, thus allowing valuable time to elapse and the pathological process to advance. In many instances of infectious arthritis, the sooner the joint is opened and efficiently washed, the more favorable the prognosis. The earlier the treatment is instituted, the less likelihood is there to ankylosis. The diagnosis is often difficult, many times impossible. Under such conditions an exploratory arthrotomy is thoroughly justified. Great care and discernment are required in determining the advisability of recourse to operative procedure, for it must not be inferred that every patient with infection of a joint must necessarily be operated upon. The so-called expectant plan of procedure is essentially wrong and may be, generally, accepted as a confession of ignorance disastrous to the best interests of the patient.

3. Extragenital Chancres.—Henry Kennedy Gaskill says it is manifestly impossible to determine with any degree of accuracy the comparative frequency of extragenital chancres. The only place in which this could be approximately estimated would be in the army and navy; here careful statistics of all venereal diseases are made and the utmost care is taken to prevent their contraction. Unless there is a well-maintained correlation between the several departments that treat syphilis the value of statistics is entirely lost. As a rule in the histories of cases recorded as having been treated no reference is made to the situation of the chancres. The writer thinks we are prone to minimize the danger to which doctors and dentists are subjected, particularly the latter. With the modern ideas of antisepsis, the dentists of to-day are sterilizing each instrument after every patient, but this does not mitigate the risk of personal inoculation. For their own sakes, dentists should be trained to recognize the appearance of the mucous patch while in college. At present, to a very large extent, they obtain their information only from books, and colored plates, not from living patients.

7. The Phenoltetrachlorphthalein Test of Liver Function.—Max Kahn and James R. Johnston compare this test with certain other tests for the degree of functional activity of the liver. In one group of cases they performed the levulose test; in another the test for urobilinogen; and in a third group of cases they determined the urea, ammonia, and the aminonitrogen fractions of the urine. The determination of the nitrogen partition gave satisfactory results in several cases; *i.e.* in certain cases of known liver disease there was a decrease in the urea nitrogen and an increase in the ammonia nitrogen. The phenoltetrachlorphthalein test for liver functional activity is difficult of performance, and does not give any information that should be of clinical value.

8. Injuries to Bone at Tendon and Ligament Insertions without Local Tenderness.—A. H. P. Leuf considers this subject from a medicolegal standpoint and states that the important things to remember are, that no injury to ligament or tendon insertions to bone is too slight to receive serious consideration; that conditions fraught with the most distressing after effects may result from seemingly trifling injuries; that they may light up again and grow important after being seemingly well; that these exacerbations are largely due to the original strain or injury being much severer than is generally realized at the beginning; that augmentation of pathological conditions may be very slow because of negative circulation and low vitality of the parts, on which account they are also slow in getting well; that they are not affected by the usual medication if due to an injury; that the milder and chronic forms are not likely to evidence tenderness; that rest is the prime requisite in treatment during the acute stage; that electricity is the remedy par excellence after subsidence of the acute symptoms; that restoration of function must be preceded by easy stages of massage and light exercises very cautiously and judiciously practised; that relapses may readily occur; that congestion and inflammation may extend to adjacent parts, especially of the spinal nerves and cord when the spine is affected; that the simplest injuries may thus end in permanent invalidism; that it is never wise to assume complete recovery until it is proved by a clear demonstration of restoration of normal function, as shown by the resumption of full activity of the parts, and

its continuance for a number of weeks without noticeable bad effects.

10. Rectal and Anal Fistula.—Julius Frankel states that these lesions occur far more frequently than those of any other bowel disease, and that they are more frequent than all the diseases of all other abdominal organs combined. These fistulæ are most prevalent among the middle-aged and in individuals of robust type. They occur more frequently in men than in women, although dystocia is an additional factor in their etiology in women. One should never operate for a fistula when abscess is present, but incise the abscess and hint at a possible subsequent operation. At operation, locate the opening or openings and inject some coloring matter; then insert a grooved director and cut through all the overlying tissue, connect all tracts or branches with the main channel, never cut the sphincter in more than one place, dissect (but do not curette) all granulation and cicatrical tissue, and attend to the after-treatment of the patient yourself or appoint a good assistant. Never rely upon a nurse or orderly if you wish to avoid recurrence.

Journal of the American Medical Association.

October 23, 1915.

1. The Efficiency of Various Antityphoid Vaccines. Wilbur A. Sawyer.
2. The Choice and Technique of the Anesthetic. Arthur Dean Bevan.
3. Projectile Wounds of the Head. Experiences During Recent Service in Austria, with Particular Reference to Wounds of the Eye. Lloyd Mills.
4. Cholecystectomy and Cholecystic Toxemia. W. Wayne Babcock.
5. The Refractometric Determination of Albumin, Globulin, and Non-Protein in Normal Human Blood Serum. Charles L. Tranter and Albert H. Rowe.
6. Importance of Thorough Examination in Urologic Cases. A. J. Crowell.
7. The Mechanism of Urination. Arthur B. Cecil.
8. Diagnoses and Certificates of Death, with Especial Reference to Cancer. Joseph C. Lewis.
9. Supernumerary Kidney. Herman Louis Kretschmer.
10. Acute Ascending Hemorrhagic Myelitis. Benjamin T. Burley.
11. Knee Joint Disability Caused by Hypertrophy of the Alar Ligaments. Roland O. Meisenbach.
12. Reontgenographic Bone Changes in a Case of Poliomyelitis. G. B. Hassin and R. O. Brown.

1. Antityphoid Vaccine.—Wilbur A. Sawyer presents the results of a study of antityphoid vaccination in civil life. He finds many statistics to prove the value of vaccination against typhoid fever in the army in this and other countries, but finds that it is meeting with a severe test among the civil population because the vaccine is most used where the exposure is greatest, and because only a small proportion of the people are vaccinated. Inquiry has shown that in California the true failures were 5,000 vaccinations reported, and the deaths from typhoid fever were 0.49 per thousand. The total number of vaccinations reported was 8,124. The percentage indicates a slight advantage for the Gay-Claypole sensitized vaccine over the unsensitized vaccines, but the superiority was not conclusively demonstrated as the different sets of statistics were not exactly comparable. There is little difference between the vaccines sensitized and unsensitized in common use in California with regard to the severity of reaction after inoculation. The extent of the exposure seems to be one of the most important of the factors which determine whether or not a vaccinated person will develop typhoid fever. If widespread and severe exposures are prevented by better supervision over public water, milk, and food supplies, vaccination can be depended on to greatly diminish the residual typhoid fever, especially if a large enough proportion of the people are vaccinated to reduce contact infection to a minimum.

2. Anesthesia. — Arthur Dean Bevan gives the results of an extensive study of the different methods of anesthesia based on observations in his own clinic, on pieces of laboratory work carried on by him and his assistants, on observations made in the clinics of others both in this country and abroad, and on a study of the literature. The final results of his analysis of the anesthetic problem are as follows: (1) Drop ether should be today chosen as the standard general anesthetic when a prolonged anesthesia is desired with relaxation and unconsciousness. (2) Intrapharyngeal ether should be chosen in mouth and jaw cases when it is desirable to remove the anesthetist and the anesthetic apparatus out of the operative field. (3) Gas should be chosen in short anesthesias in which unconsciousness is desired, and in special cases, such as kidney insufficiency. (4) Local infiltration anesthesia should be chosen when the surgeon has the full coopèration of the patient and when the field of operation can be completely infiltrated and anesthetized by a safe amount of novocaine and epinephrin. These four simple and safe methods can be made to cover all surgical cases and places anesthesia on a very simple unpretentious basis. Here as in most fields of surgery we learn that simplicity is near to truth.

3. Projectile Wounds of the Head. — Lloyd Mills states that he has drawn the material for this paper from the Vienna General Hospital where he had charge of two wards devoted to the care of the wounded and especially of eye and head injuries. He also states that he has gained much interesting matter from the army surgeons relative to the rapidly fatal wounds seen on the firing line. Because of the position of the men in the trenches wounds of the head are probably the most frequent of all injuries, their frequency being masked in the hospital lists of wounded by the fact that fully 95 per cent. of all short-range wounds of the head are immediately fatal because of the literal ruin which the modern sharp nosed bullet makes of the cranium and its contents. Facial wounds of every description are very common and may be serious if the eyes are involved or mastication is impaired. Reconstruction of skulls shattered by the modern pointed bullet shows that the undeformed bullet passes completely through the skull and emerges before the collapse of the cranium occurs. When the missle is deformed the effect on the head is the same as on the rest of the body, tremendous laceration and loss of tissue. The most frequent type of bullet wound as well as the most disfiguring wound of the orbital region was that in which the antero-external wall of the orbit was cleanly shot away, the bulb always being ruptured. In many cases in which bullets struck or perforated the orbital cone, without touching the globe, the globe was shattered by indirect violence. One of the most interesting and important facts in connection with the mechanism of the production of the bullet wounds is that the injury to the bulb is seldom, if ever, in a direct line with the line of incidence of the blow, but is usually nearby at right angles to this line. Probably scrapnel and other shell explosions are the most frequent cause of unilateral blindness and lead most frequently to enucleation. The common rule in cases of perforating wounds produced by shell fragments is prompt enucleation where there has been material damage and when fragments of any size are lodged in the globe and are not easily accessible. About one-sixth of their eye cases were those in which the strain of hard campaigning on insufficient food and exposure to weather and filth conditions had produced the same ocular diseases which might be expected under similar strain or exposure in civil life. The author feels confident that one sequel of the war will be the extension of trachoma. A very prominent group of cases are those of bilateral blindness. Every clinic is

furnishing its quota of these pitiful cases, nearly all young, strong men, so overwhelmed by their misfortune that they often accept any means of suicide as an escape. The frequency of this terrible injury should, alone, lead to the abandonment of the spitzer bullet, or to its modification.

4. **Gall-Bladder Infections.**—W. Wayne Babcock divides gall-bladder infections into four types, according to the mode of invasion, and states that the diagnosis of cholecystitis, even after opening the abdomen, is not always easy. In making the diagnosis he depends on signs of alteration in the color, size, or consistence of the walls of the bladder; adhesions or other evidence of pericholecystitis; enlargement of the tributary lymph-nodes, though these may also occur from pancreatic or duodenal disease; alterations in the bile contained within the gall bladder, and alterations in the mucosa. Inflammations of the gall bladder are, in the opinion of the author, bacterial infections of childhood or early adult life, progressing for years, during which time secondary metastatic, toxic, or reflex symptoms only are observed; later they have a second stage in which there are attacks of colic due as a rule to the presence of gallstone, and usually a third stage, generally after twenty or thirty years, of serious complications, such as obstruction, pancreatitis, perforation, abscess, or gangrene. Surgery works for the most part far behind the pathology of the disease and there is wide need for earlier intervention so that the patient who starts at the age of twelve or fifteen years with cholecystitis and dyspepsia may not at thirty-five have gallstone colic and at sixty-five succumb to cholecystitic gangrene or pancreatitis. External biliary drainage is as a rule undesirable, except in late or complicated cases. Early cholecystectomy is the operation of choice. Technical dangers make uniform success after cholecystectomy uncertain in the hands of the average surgeon. Notwithstanding this, the mortality of cholecystectomy in the first stages of cholecystitis is much less than cholecystotomy in the last stages of the disease.

5. **Blood Serum.**—Charles L. Tranter and Albert H. Rowe describe their work in the refractometric determination of albumin, globulin, and non-protein in normal human blood serum. The Robertson method has advantages over that of Emil Reiss. In normal individuals the authors find that: 1. The total proteins range between 6.7 and 8.7 per cent., which corresponds to the figures of Reiss. 2. The total albumins lie between 4.95 and 7.7 per cent., with an average value of 6.20 per cent., or between 67 and 89 per cent. of the total proteins, with an average value of 78 per cent. 3. The globulins lie between 1 and 2.54 per cent., with an average value of 1.74 per cent., or between 11 and 33 per cent. of the total proteins, with an average value of 22 per cent. 4. The non-proteins lie between 0.98 and 1.19 per cent., with an average of 1.09 per cent., and have a refractivity varying from 0.00158 and 0.00190, with an average of 0.00175. No definite differences can be noticed in the results due to the age of the subjects. The percentage of globulin was consistently higher in the women examined than in the men.

10. **Hemorrhagic Myelitis.**—Benjamin T. Burley reports a case of acute ascending hemorrhagic myelitis, which seems to occupy a unique place allied to, but not identical with, either myelitis or hemtomyelia. The author reports two other cases which show the clinical resemblance of hemorrhagic myelitis to acute ascending paralysis, either of the poliomyelitic or Landry's type. Though this resemblance is striking, a closer analysis of symptoms and pathological findings points to the existence of three distinct types of acute ascending paralysis. The further confirmation of these types await laboratory differentiation which seems near completion.

The Lancet.

October 9, 1915

1. Science and War. Sir William Osler.
2. War and the Medical Education of Women. Florence E. Wiley.
3. Upon Spasmodic Symptoms in Rheumatism. F. J. Poynton
4. Amputation by Plane Circular Section. G. A. Wright.
5. The Radical Treatment of Septic Compound Fractures. Vernon Pennell.
6. Intestinal Drainage in Septic Peritonitis. Arthur J. Nyulasy.
7. The Significance of Pulsus Alternans and Some Other Forms of Uneven Pulse. A. E. Carver.
8. A Case of Complete Branchial Fistula in an Adult. C. Hamilton Whiteford.

1. **Science and War.**—Sir William Osler, in an address delivered at the University of Leeds on October 1, 1915, declares that the race is in one of its periodic attacks of acute mania. So respectable and self-respecting had we become that the bout is a great shock, but the lust of war is still in our veins and we cannot help it. The explanation of this distressing fact is that we are still in the childhood of civilization. In time our civilization is but a thin fringe, like the layer of living polyps on the coral reef, capping the dead generations on which it rests. We must get the race in its true perspective in which a thousand years are but as yesterday, and in which we are contemporaries of the Babylonians and Egyptians, and altogether within Plato's year. Dr. Osler reviews the events of the past century which fostered the hope that humanity had lifted itself to a level on which might be realized the brotherhood of man, outlines the results of scientific progress, and shows more particularly how scientific methods have been utilized by man for the destruction of his kind, and how, on the other hand, science has been employed as a beneficent force in the care of the wounded. He then asks the question "Is science for or against humanity?" and answers as follows: "War is more terrible, more devastating, more brutal butchery, and the organization of the forces of nature has enabled man to wage it on a titanic scale. More men will be engaged and more men will be killed and wounded in a couple of years than in the wars of the previous century. To humanity in the gross she seems a monster, but on the other side is a great credit balance—the enormous number spared the misery of sickness, the unspeakable tortures saved by anesthesia, the more prompt care of the wounded, the better surgical technique, the lessened time in convalescence, the whole organization of nursing; the wounded soldier would throw his sword in the scale for science—and he is right." Dr. Osler believes that one of the sequels of the war will be, for this generation at least, the death of international science, and that the final deliverance from strife will not be in our day, but holds out the hope that, as the history of our ancestors in all times and countries has been one of incessant and successful adjustments, one may take a "Pisgah-sight" of a day when "nation shall not lift up a sword against nation, neither shall they learn war any more."

2. **War and the Medical Education of Women.**—Florence E. Wiley, in an address delivered at the opening of the London Royal Free Hospital School for Women on October 1, 1915, says that it is becoming obvious to everyone that there is a very vital connection between the war and women's work. The summons to women to fill up the ranks has come to all kinds of professions and trades, but in none is the demand more urgent than in the medical profession. War has taxed the resources of the profession to the utmost by directly absorbing the services of many thousands of doctors,

but in more indirect ways the war is creating a future need which threatens to be very serious indeed. It means for years to come a decreasing number of men in the medical profession. Some are fearing that the calling of women to new pursuits involving physical and intellectual powers to an extent unknown before may not be compatible with the fulfilling of the country's great need of a sane and stalwart race. This fear is groundless; the new order of things will be a help and not a hindrance to race development. As to medical work after the war, there will be need for more medical people in the public services if a thorough system of preventive medicine is to come into being. There will be a wide field in the study and care of pregnancy, the art of obstetrics, the preservation of child life, and the prevention of such diseases as hinder conception, kill the unborn, maim childhood, and produce chronic invalidism in women. If such work had been successfully prosecuted forty or fifty years ago it would have given England today more than a million of men of military age and an equal number of young women to spend their strength in the service of their country; these have perished, for every year at least 100,000 infants are lost during the first year of life and 150,000 more perish from ante-natal causes. These subjects involve a type of research which has been comparatively little recognized in medical circles but which is every day becoming more essential to the success of preventive medicine.

4. **Amputation by Plane Circular Section.** — G. A. Wright is of the opinion that this method of removing a limb is being employed more frequently than is sanctioned by authority. The state of the stumps in the cases admitted to the hospital since May, 1915, has driven them to consider whether it is desirable that this procedure should be continued. The stumps show a large area, sometimes several square inches of granulating surface with bone exposed and protruding more or less beyond the level of the soft parts. There is great delay in healing, and the process is either incomplete or, at best, a large thin cicatrix results. In considering these cases it has been found that the practice has not been limited to cases of gas gangrene, but has been employed in cases of secondary hemorrhage, in septic arthritis, in patients whose limbs have been shattered, and in gangrene of the ordinary type following ligature of a main artery. Either a flap operation or an oblique section provides quite as free drainage as does a plane circular section, or the flaps may be fixed open for a time and brought together when it is safe to do so.

5. **Septic Compound Fractures.** — Vernon Pennell states that the unsatisfactory condition of so many old compound fractures that have come under his observation since the commencement of the war have encouraged him to embark on a rather more radical treatment of these cases. He is now strongly of the opinion that some means of internal splinting should be carried out in all compound fractures where (a) an incision is needed for ample drainage and efficient cleansing and (b) where the skiagraph shows malposition with conservative treatment. The method he adopts is to make a large incision over the site of the fracture; define the ends of the bone; remove any small detached portions of bone and shrapnel; and, after placing the two or more main fragments in position, either fix them with a Lane's plate and suture them with silk worm gut; or, where there is much loss of bone, transpose a graft from the tibia or fibula. If the wound is septic no attempt is made to bury the plate or fixing apparatus. So far results have been most gratifying. There has been a saving of time, almost complete absence of pain, and rapid formation of callus, even in spite of suppuration. The writer finds that: 1. Foreign bodies, even when septic, can be rendered sterile and are tolerated by the tissues. 2. Position is almost as good as that of a simple fracture treated by plating. 3. Dressing is facilitated by a "fixed" fracture even though the fixation be but partial. 4. Function is better than by other methods.

6. **Intestinal Drainage in Septic Peritonitis.**—Arthur J. Nyulasy believes that in septic peritonits the deterioration and death of the patient is unquestionably due—in many cases largely and in others almost entirely—to intestinal toxemia resulting from the acute stasis. The rational treatment of this toxemia is the removal of unabsorbed intestinal toxin and the prevention of its further production. Both of these ends may be secured by intestinal drainage, provided that the peritoneal cavity is not charged with excessive poison and that the focal factor is eliminated. He reports six cases of post-operative septic peritonitis treated in this way, all of which recovered. He is convinced that these results could not have been achieved by any other known method.

6. **Complete Branchial Fistula in an Adult.**—C. Hamilton Whiteford reports this case which occurred in a sergeant, 32 years of age, who was admitted to the hospital three and one-half months after having sustained a compound fracture of the inner end of the right clavicle. At about an inch above the right sterno-clavicular joint, at the inner edge of the sterno-mastoid, was a minute opening in the skin, from which exuded a clear glairy fluid. A fine lead probe passed into the sinus could be inserted upwards and backwards for five inches, and its end could be felt behind the tonsil. Methylene blue solution injected into the sinus caused immediate blue coloration of the saliva. Through a skin incision 4½ inches in length the tube was dissected intact up to its pharyngeal attachment. The removed tube was lined by mucosa and when lying flat measured one-half an inch in width. Microscopic section showed a thick outer layer of longitudinal muscle fibers, a thin middle coat of connective tissue, and a lining of mucosa. The patient made an uneventful recovery.

British Medical Journal.

October 9, 1915.

1. The Value of Hypochlorous Acid in the Treatment of Cases of Gas Gangrene. John Fraser.
2. A Hospital Ship in the Mediterranean. Hubert Chitty.
3. Acute Renal Disease Among the Troops in France. R. G. Abercrombie.
4. The Importation of Bacillary Dysentery. E. A. Carver.
5. A Case of Molluscum Fibrosum (von Recklinghausen's Disease). A. Wilson Gill
6. Acute Actinomycosis of the Parotid Gland. E. D. Telford.

1. **The Value of Hypochlorous Acid in the Treatment of Cases of Gas Gangrene.**—John Fraser states that he has never seen a gas infection follow a wound of the scalp or face, and on only one occasion has he seen it follow a wound of the trunk. It is seen more frequently in the lower extremity than in the upper, and in the lower limb the seat of election of the infection is certainly below the knee. The infection occurs most frequently in a punctured wound, and more especially in a wound which has been associated with extensive extravasation of blood into the tissues. In the treatment of these cases the writer has been making an application of 0.5 per cent. solution of hypochlorous acid, known as eusol, occasionally intermitted by the application of a powder known as eupad (bleaching powder and boric acid), and the use of baths of hypertonic salt solution. The eusol treatment was begun immediately upon the recognition of the condition. The local wound was opened up freely, all free blood clot removed, and wound thoroughly irrigated with eusol. Grossly in-

fected muscle or skin was cut away. Gauze soaked in eusol was packed lightly as far into the wound as possibly. If the wound was of considerable depth, a medium-sized drainage tube with large lateral openings was inserted, and around the tube gauze wrung out of eusol was packed. Eusol dressings were applied over the wound and over a large area of the surrounding skin. In two cases in which a slight irritation appeared around the edge of the dressing, it was speedily alleviated by the application of a thick layer of zinc ointment. Dressings were changed at first every four hours and later every eight hours. The writer's experience shows that granulation tissue is improved and the separation of the slough stimulatd by the application of eupad to the wound on the fourth day and continued through the fourth, fifth, and sixth days. On the seventh and subsequent days, until granulation is complete, the part was immersed for four hours each day in hypertonic salt solution. The eusol at no time produced pain or irritation; the same could not be said of the eupad. The general condition of the patients improved synchronously with the improvement in the local condition. The author reports nine cases of intense severity treated successfully in this way.

3. **Acute Renal Disease among the Troops in France.**—R. G. Abercrombie gives an account of 95 cases of renal disease that have come under his personal care among British troops serving in France. The disease exhibits the features of an acute nephritis. The majority of the cases occurred in previously healthy young or middle-aged men, in whom no evidence of pre-existing renal disease could be found. In a small minority of cases the previous history or the presence of cardiovascular changes led one to suppose that the condition was superimposed upon previously damaged kidneys. The onset of the disease was sudden. The symptoms presented were edema, albuminous urine containing granular casts, febrile reaction, and uremic symptoms. The blood pressure was usually high. None of the patients died. After a stay in the hospital of from one to three weeks, 92 of the patients were transferred to England free from edema; in a few the albumin had disappeared, in others it was reduced to a trace, but the majority were still passing a fair amount. Three cases assumed a chronic aspect. The treatment was similar to that usually given in acute nephritis. After reviewing all possible circumstances with reference to the causation of the condition, the writer is inclined to the belief that the disease is an infection by a definite organism, the nature of which is at present undiscovered.

4. **The Importation of Bacillary Dysentery.**—A. E. Carver expresses the belief that as cases of dysentery are being sent from the front these are likely to be followed by similar epidemics among the civil population. He recalls that such a sequence occurred in North London in 1902 and that Dr. Cautley has described an outbreak among women and children which occurred at a London barracks in June, 1900. Previous experiences should make clear the necessity for the adoption of stringent methods of precaution and prevention, because when the disease once gains a foothold it proves to be of a virulent type, the rate of fatality, among children especially, being extremely high.

6. **Acute Actinomycosis of the Parotid Gland.**—E. D. Telford reports two cases of infection by the ray fungus in which the swelling and induration, which is usually of gradual development without acute local or general reaction, assumed a much more acute form than is ordinarily the case. The features of this acute form of actinomycosis appear to be that the infection enters by the parotid duct, and within a few days gives rise to an acute parotitis. The disease then bursts through the limits of the gland, whereupon a very acute cellulitis develops which may extend far over the scalp and well down the neck, and which is accompanied by great constitutional disturbance and marked evidence of septic absorption. Any acute cellulitis of the face of obscure origin should excite suspicion of actinomycotic infection. The discharge from such lesions, or, better, a small piece of tissue, should be examined, and a single negative result should by no means be accepted as final. Early and energetic treatment is imperative if the patient is to be prevented from drifting into the ordinary chronic form of the disease.

Berliner klinische Wochenschrift.

September 13, 1915.

Brain Lipoid as a Hemostatic.—Hirschfelder of Minneapolis contributes this article. He refers to the discovery of Howell that the so-called fibrin ferment is not really an enzyme, but a lipoid, which is probably none other than the "kephalin" described many years ago by Thudichum. As is well known, the fibrin ferment prepared from blood platelets has hemostatic properties and is at present extensively employed for this purpose. Hess has used extracts of brain as styptics. It should be possible to prepare hemostatics from brain substance on a large scale for use in the present war. The author has made lipoid extracts by placing the brains of one or two oxen in threefold the amount of alcohol, shaking and decanting. The residue is now gently strained through muslin and treated with threefold the amount of ether, shaken violently and filtered through cotton and paper. The dried filtrate is yellow, consists of Thudichum's kephalines and possesses strong hemostatic properties, through its power of accelerating coagulation. Even traces of lipoid show this power *in vitro*. So marked is this property that the author attempted to control parenchymatous hemorrhage without the ligation of vessels. A drawback was soon apparent in the sudden formation of large clots, and despite the power of the lipoid it was found that all arterial trunks should be ligated, one by one. To prevent the sudden and voluminous clotting, the lipoid should be spread on gauze. The author announces in closing that Horwitz of San Francisco has independently reached the same results with pure kephalin.

Aleukia Hemorrhagica.—Frank writes at length on this subject, in association with aplastic anemia and thrombopenia. Aplastic anemia again is associated with a general wasting of bone-marrow (panmyelophthisis). Clinically these pathological states are expressed as a chronic idiopathic Werlhoff's disease, which may be comprehended as running four different courses. The first is intermittent thrombopenia with normal blood count in the intervals. During the crisis the blood plates are diminished. The author has seen two cases of this type. The second course pursued is that of continuous thrombopenia. The bloodplates are very sparingly present. The tendency to hemorrhages is constant. In general the blood picture is that of chloranemia. In the third type continuous thrombopenia is associated with aplastic anemia, and in the fourth and last type the condition is aplastic anemia from the outset. The author would substitute the term aleukia hemorrhagica for aplastic anemia, because the latter is not a primary condition due to hemolytic toxins derived from the red cells. The anemia is largely post-hemorrhagic and the toxicosis does not attack the red cells but the leucocytes and marrow. The condition has no connection with ordinary secondary

anemias nor with the Biermer type. Aleukia means really an absence, complete or nearly so, of the blood platelets. That a toxicosis is at fault is clear from the fact that aleukia hemorrhagica is seen as a result of arsenic poisoning, typhoid fever, benzol poisoning, Roentgen rays, and thorium X.

Münchener medizinische Wochenschrift.

September 14, 1915.

Therapeutic Use of Colloidal Silver.—Voigt seeks to find a criterion which will remove this substance from the "post hoc" class, for in practice thus far it has been impossible to state whether or not it really cures septic conditions. It cannot long remain in the circulating blood and is deposited in the liver, spleen, and bone marrow in which it maintains a certain relationship to the blood as it passes through them. For a considerable interval, however, it persists in the blood in a very low but apparently constant concentration, and may be able to exact an ionic or catalytic action. It is evident that little, if anything, is to be gained by injecting it in high concentrations. A ½ per cent solution should suffice, with total disregard of isotonicity. If the particles are of a sufficient size capillary embolism can result. There is no doubt that at times it acts brilliantly in septic and pyemic conditions. It is essential that it be given early, although the author saw one remarkable cure of pyemia when the drug was given as a last resort. There is no doubt of its value in the selected case although the author does not lay down any postulates for selection. The ointment has a field in local infections.

Arsenical Keratosis Following Salvarsan Injections.—Philip calls attention to the fact that but few cases of salvarsan by- or after-effects are to be attributed to the arsenical component of the latter, and in such cases there is a "relative overdose" of arsenic or an arsenic idiosyncrasy. A not uncommon result of ordinary arsenical medication is a tylosis of the palms and soles, usually consequent upon long-continued exhibition of the drug, but perhaps exceptionally conditioned by imperfect elimination. The author's patient was a small, delicate woman, recently confined who had received too large doses of salvarsan for her weight, and was moreover a victim of latent tuberculosis. The scanty urine of the patient also pointed to a defect of elimination. She had received two doses of neosalvarsan, which aggregated nearly one gram.

Detonation Labyrinthoses.—Hoffmann is in charge of an ear station at Lille and has had opportunity for the study of 50 cases of detonation injuries of the ear. In all instances of labyrinth disease there was demonstrable some disturbance of sensibility in the external ear, which should have been absent in disturbances of conduction in otherwise normal patients. These censory derangements were certainly not of hysterical origin, nor do they come under the head of traumatic psychoneurosis, for the patient's frame of mind was cheerful at the moment of injury. The cochlear nerve was doubtless the seat of the traumatism, especially as the vestibular nerve showed few signs of involvement. The victims were at once put to bed and given 25 drops of tincture of valerian three times daily. Bromides would have been unnecessarily strong for such cases. These patients should practice lip reading, and should also read much. The attendants should speak in low tones. If there has been rupture and infection of the middle ear—and in these cases this affection usually pursues a severe course—there should be no meddlesome intervention. Only a sterile pledget of cotton should be placed in the external ear.

Deutsche medizinische Wochenschrift.

September 16, 1915.

Hodgkin's Disease with Pemphigus and Granulomatous Nodules in the Skin.—Hoffmann relates a case of typical Hodgkin's disease to which were superadded pemphigus and a granulomatous infiltration of the skin. The enlarged lymph nodes of the disease proper and the skin tumors responded promptly to the *x*-ray, but the pemphigus continued to progress during this period and was pronounced to be of separate origin. After a month of latency an exacerbation of the glandular tumors followed, but was not pronounced. Tuberculosis was thoroughly excluded. The skin tumors were recognized as an essential part of the disease while the pemphigus was deemed to be of mechanical origin, aggravated by the rays.

Therapeutic Typhoid Vaccination.—Reiter sums up his experience as follows: In carefully and individually regulated doses typhoid vaccine injected repeatedly does not aggravate the disease picture, and in the majority of cases exerts a favorable influence on the course of the disease, which it abbreviates, with reduction of mortality. There is usually a reduction of temperature in the cases which show improvement. If the temperature is not brought down by the treatment the prognosis is unfavorable. The action of the vaccine on the disease cannot be termed decisive, and moreover no influence whatever is exerted on complications—they are neither prevented nor benefited to any marked degree. The results in the main are sufficiently good to add the vaccine treatment to the other dependable measures hitherto in vogue. Complications form no contraindication. Repeated small injections are to be preferred to a single one of large dose. There is no corresponding advantage in giving large quantities.

Uremia.—Machwitz and Rosenberg reach conclusions which agree closely with those of other recent writers. We see the essential form, the azotemia in the acute glomerulonephritides, and in both secondary and idiopathic contracting kidneys. The diagnosis is best made by direct blood tests for indican and retained nitrogen. The principal feature in treatment is a low protein diet. So-called eclamptic uremia, characterized chiefly by the preponderance of uremic convulsions is seen most commonly in the nephritides of the young. The prognosis is in general good and the chief therapeutic resource is lumbal puncture. The third form is the pseudouremia of atherosclerosis affecting the vessels of the kidneys, and is not a true uremia because due to cerebral atherosclerosis. There is no retention of nitrogen in the blood and no indicanemia. The therapy must be that of arteriosclerosis, such as dietetic restriction of fluids.

Functions of the Spleen.—Hirschfeld sums these up as follows: In man the organ makes blood elements—lymphocytes and large mononuclears. The entrance of these into the circulation has not yet been observed. In anemias, leukemias, and infectious diseases, the spleen can form erythrocytes and granulocytes. The organ under normal conditions destroys erythrocytes and the hemoglobin becomes the bilirubin of the liver. The spleen regulates iron metabolism as well as hemoglobin metabolism. It is the "regional lymph node" of the blood, and generally speaking destroys all particulate bodies which have fulfilled their uses as well as foreign particles which have reached the blood, including bacteria. It also is the source of bacteriolysins, etc. For these reasons it always enlarges during infections. The spleen also exerts a regulating action on the formation of erythrocytes on the bone marrow. It has certain relations to digestion not yet understood.

Insurance Medicine.

Periodical Examinations of Apparently Healthy Subjects.—Florschütz gives a concise account of the activities of the Life Extension Institute of New York. This movement has been practically ignored in the German special periodicals, despite its manifold interest for physicians, racial hygienists, socialists, etc. The author bases his digest, at least in part, on an address delivered by Dr. Fisk of the Institute before the Kentucky State Medical Society in September, 1914. The citations close with the table of morbidity compiled from results of first examinations of numerous insurance risks and employees of banks and corporate bodies. Florschütz now states that the various percentages for diseases and defects do not necessarily hold good for greater material. For example one would not expect to find a high percentage of tuberculosis in such selected material. On the other hand the figures on high blood pressure and traces of albumin in the urine cannot be straightway regarded as unfavorable prognostics. But the proportion of actual arteriosclerosis in relatively young subjects (over 13 per cent. in clerks) is most serious, and if nothing else had been disclosed by the work of the Institute this discovery alone would have justified the effort. This pathological state does not in any way differ from arteriosclerosis after 50, and by terming the latter partly physiological great harm results, expressed in a heavy toll of deaths from cardiovascular disease in those still middle aged. Florschütz appears just a little suspicious of these figures; at least he would not pronounce a youngish man an arteriosclerotic until he had been repeatedly examined and by more than one examiner.

The campaign against tuberculosis has been an aid to this life extension movement, in that it has helped to popularize such methods; but bad as tuberculosis is, arteriosclerosis is worse; for as we know nothing of its actual causes we are thus far powerless to prevent it. The work of the Institute may throw light on it and the numerous affections associated with it.

Physicians in general, who will be called in to treat these ailments, must educate themselves to the new point of view of prophylaxis or at least change their old point of view in these matters which has been one of *laisser aller*. If the general practitioner does not take his responsibility seriously, the movement would not repay the output of time, pains, and money. When the family physician of a man pronounced by the Institute to be ailing in some respects, is made aware of the fact his natural inclination might be to belittle the find. He would do better, however, to go over the ground himself. The condition discovered may be transitory or so slight as to yield promptly to treatment. It would be going much too far to see in this almost universal morbidity of selected men evidence of physical decay. The physician must always be an optimist. Man as a whole is not spoiled and the efforts of the Institute should tend to give him a higher physical and moral status and work hand in hand with eugenistic movements.

In its essence the Life Extension movement is not new. Life Insurance companies have off and on made provisions to treat their insured, as well as instruct their risks in hygiene, especially in connection with tuberculosis. Any examination of an applicant by the Medical Board of an Insurance Company is an examination of an apparently healthy subject, and when he has been postponed and treated for an ailment he can be reexamined. Life insurance, of course, is not interested in racial biology, nor in breeding supermen, but its selfish interests militate against the common accusation that efforts to conserve the race save the weaklings. She is not looking for a gift from the Danae. —*Blätter für Vertrauensärzte der Lebensversicherung*, May-August, 1915.

Traumatic Neuroses Calling for Compensation.—These conditions form a group of disorders which are a frequent source of litigation with reference to compensation. Sir Thomas Oliver brings out this point in a paper on the "Rôle of Traumatism in Disease Calling for Compensation," read before the Assurance Medical Society of London, May 5, 1915. A patient has been in a railway accident or a motor-car collision and his nerves have been shaken up and perhaps he has been rendered unconscious. His nervous symptoms resemble those which used to be described under the term of "railway spine," a condition for which, apparently there exists no anatomical foundation. The patient is in a state of broken-down health, unfitted for work, complains of ill-defined pains and loss of power in the limbs. He seeks for monetary redress from those whom he regards as culpable. One of the most rapid cures for the ill-health which has followed a railway injury is settlement of the claim. Non-payment keeps the victim in a state of uncertainty and worry caused by repeated medical examinations and the malady does not improve, but drags on, the individual becoming less and less inclined to undertake work.

Shock to the nervous system produces disordered sensation which is the outcome of either altered function or of changed structure. Is disease the expression only of altered structure or is it not rather that structural changes are the consequence of aberrant function? Death frequently occurs without any structural change being found at autopsy to explain it, as in cases of lead poisoning where the patient dies before time has been given for structural changes to have taken place.

This also brings up the question of compensation where illness and incapacity to work are caused by the association of gout and plumbism. Plumbism is a scheduled disease, and if it has caused gout why should the patient with gout due to lead not be compensated? Here heredity and mode of living have to be taken into account as such conditions influence the production of gout. On the other hand if a patient is to be compensated for loss of work caused by lead colic, a condition usually of short duration, why should not the man who is suffering from gout consequent upon lead poisoning, a more enduring illness than lead colic, receive some monetary consideration? Gout as a sign of plumbism is not on the same level as "wristdrop."

Since the Workingmen's Compensation Act came into operation the length of time required for the healing of a fractured limb is much greater than it was twenty-five years ago, showing the unwillingness on the part of the injured to return early to work. Insurance companies occasionally do harm by not paying injured men promptly and by not paying a lump sum down. This is a financial question which must be settled by experience. The rate at which traumatic neuroses are increasing among female workers in all trades is a noticeable feature of modern industrial life, and for this the Workmen's Compensation Act is partly responsible.

Book Reviews.

Outlines of Internal Medicine for the Use of Nurses. By Clifford Bailey Farr, A.M., M.D., Instructor in Medicine, University of Pennsylvania; Assistant Visiting Physician, Philadelphia General Hospital; Pathologist to the Presbyterian Hospital, etc. Illustrated with 71 engravings and 5 plates. Price, $2.00. Philadelphia and New York: Lea and Febiger, 1915.

It is now recognized by the medical profession that a competent nurse requires to be trained in a systematic manner in medicine. That is to say it is necessary, for the proper carrying out of her duties, that her knowledge of medicine so far as it goes, should be thorough. The work by Dr. Farr presents the outlines of internal medicine in detail. He has confined his consideration to essential points and has dwelt upon and made clear such facts as will be most useful to his readers. While the book takes a comprehensive grasp of the entire subject the most important features as far as the nurses' standpoint is concerned are duly emphasized and the result is that he has been successful in compiling a valuable text. The work is well illustrated.

A Practical Treatise on Diseases of the Skin. For the Use of Students and Practitioners. By Oliver S. Ormsby, M.D.; Professor and Head of the Department of Skin and Venereal Diseases, Rush Medical College (in Affiliation With the University of Chicago); Dermatologist to the Presbyterian, Children's Memorial, Saint Anthony's and West Suburban Hospitals, the Home for Destitute Crippled Children, and the Orphan Asylum of the City of Chicago; Member of the American Dermatological Association and of the Congress of American Physicians and Surgeons. Illustrated with 303 Engravings and 39 Plates in Colors and Monochrome. Price, $6.00. Philadelphia and New York: Lea & Febiger, 1915.

This is a comprehensive treatise on a subject which has undergone considerable development within recent years, particularly in the differentiation of new types of cutaneous disease and the more accurate delineation of the older types. The work is an eminently practical exposition of the common as well as of the rare forms of skin disease; the etiology, pathology, and diagnosis are fully discussed; and the treatment is presented in sufficient detail to satisfy the needs of the general practitioner and of the specialist. The literature is freely drawn upon and this together with the author's own extensive clinical experience makes the volume one of unusual completeness and accuracy. The illustrations are numerous and of a high order of artistic merit. The thirty-nine full page plates comprise in themselves a small atlas of skin diseases.

The Clinics of John B. Murphy, M.D. Volume IV, Number II (April, 1915). With 47 illustrations. Published bi-monthly. Price per year: paper, $8.00; cloth, $12.00. Philadelphia and London: W. B. Saunders Company, 1915.

The initial chapter of this number on surgical diagnosis is concerned with acute osteomyelitis. The points in diagnosis and the necessity for prompt and adequate treatment, as well as the proper method of handling these cases when seen at a later stage, are brought out in clear-cut fashion. A valuable chapter is contributed by Dr. William L. Rodman, of Philadelphia, and deals with carcinoma of the breast. The first part of the talk is taken up with a consideration of precancerous conditions in the breast, particularly chronic cystic mastitis, or, as he prefers to call it, abnormal involution, as suggested by Warren, of Boston. An analysis of 200 cases of breast operations in his private practice is then given, followed by a description of his operative technique, with illustrations, and a short statement, with analytical table, of ultimate results.

Student's Textbook of Hygiene. By W. James Wilson, M.M., D.Cs., D.P.H. Bacteriologist to the Counties of Down and Antrim; Lecturer on Hygiene and Public Health, Queen's University, Belfast. Price, $2.50. New York: Rebman Company, 1915.

This textbook deals only with the fundamental principles of the science of hygiene. The subject matter is presented in a very clear and interesting manner and should prove of great value to students, teachers, sanitary inspectors, health visitors and all interested in public health work. The author is especially to be congratulated on the clear and lucid way in which he has presented the subject of "Infection and Immunity." Other chapters deal with animal parasites, heredity and eugenics, air, soil, water, food, buildings, heating, lighting, ventilation, disposal of excrementitious material, personal hygiene, school hygiene, communicable diseases, tropical diseases, sanitary law, disinfection, the prevention of infectious diseases, and vital statistics. The details of analysis of foods, water, air, etc., are omitted since these can be properly learned only in a laboratory. Twenty-six figures help to elucidate the text. For one wishing a summary of the subjects treated drawn from reliable sources this book will prove very valuable.

Progressive Medicine. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., Professor of Therapeutics, Materia Medica and Diagnosis in the Jefferson Medical College, Philadelphia; assisted by Leighton F. Appleman, M.D., Instructor in Therapeutics, Jefferson Medical College, Philadelphia. Price, $6.00 per annum. Philadelphia and New York: Lea & Febiger, June, 1915.

This number of "Progressive Medicine" contains articles on Hernia, by W. B. Coley; Surgery of the Abdomen, exclusive of Hernia, by J. G. A. Gerster; Gynecology, by J. G. Clark; Diseases of the Blood, Diathetic and Metabolic Diseases; Diseases of the Thyroid Gland, Spleen, Nutrition, and the Lymphatic System, by A. Stengel; and Ophthalmology, by E. Jackson. We would remind our readers that it is the June number which contains Dr. Clark's valuable summary of the literature of cancer for the preceding year.

Surgery of the Blood Vessels. By J. Shelton Horsley, M.D., F.A.C.S., Surgeon-in-charge of St. Elizabeth's Hospital, Richmond, Va.; a Founder and Fellow of the American College of Surgeons; Ex-President of the Richmond Academy of Medicine and Surgery; Member of Southern Surgical and Gynecological Association, etc. Octavo of 308 pages, with 89 illustrations. Price, $4.00. St. Louis: C. V. Mosby Company, 1915.

This is a monograph of much more than ordinary importance and interest. The value of Horsley's original work directed to the perfection of technique in the surgery of the blood vessels, especially of end-to-end suture of artery and vein, is too well known to require more than passing mention here. In this monograph, chapters are devoted to the structure and histological repair of blood vessels, the history of blood-vessel surgery, the indications for and technique of blood-vessel suturing, transfusion, hemorrhage, thrombosis and embolism, aneurysms, and several other subjects more or less germane to the title. The crowning feature of the book lies in the setting forth of the author's own ideas and the descriptions of his own work. As would be expected and desired, we find an extended exposition, with adequate illustrations of his present technique; but we also find concise descriptions of, or references to, nearly all the principal methods of blood-vessel anastomosis and transfusion originated by other surgeons and laboratory workers. In view of the general excellence and completeness of Horsley's survey of this field, it seems unfortunate that the presentation of his manuscript for publication could not have been delayed a few weeks; for then the description and discussion of the Lewisohn-Weil citrate method of indirect transfusion, which bids fair to supersede most if not all former methods, undoubtedly would have been included. Horsley's preface is dated January, 1915. Lewisohn's preliminary note on the citrate method of transfusion appeared in the Medical Record, January 23, 1915, and Weil's in the *Journal of the American Medical Association*, January 30; while in a still later communication (*Surgery, Gynecology and Obstetrics*, July, 1915) Lewisohn calls attention to its many apparent advantages over the older methods and details a sufficient number of case reports to impress one with its safety as well as its greater ease and simplicity of application.

Not only those who may be called upon to do blood-vessel surgery and transfusion but also the general practitioner, who should be cognizant of the indications for their use, their value, and their limitations, will find both pleasure and profit in a careful study of this monograph.

Society Reports.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

Sixty-fifth Annual Meeting held at Philadelphia, September 20-25, 1915.

SECTION ON MEDICINE.

First Day—Tuesday, September 21.

Clinical Findings of Foreign Body in Air Passages of Children.—Dr. HENRY T. PRICE of Pittsburgh believed that the accident of foreign bodies being drawn into the respiratory tract was not sufficiently considered and that too much stress was placed upon Nature's ability to remove such offending substance. Reference was made to the possibility of relief given by the endoscopist and to the following points in diagnosis given by Dr. Jackson: (1) History; (2) indirect examination of the larynx; examination of the throat and nasopharynx; (3) radiography; (4) physical examination by an internest; (5) endoscopy. Physical findings he classed as: (1) Immediate effect of operation; (2) secondary effect; (3) remote effect, when the development of gross pathological lesions had eliminated all thought of foreign bodies. History was the most important element in diagnosis; radiography, invaluable. If the presence of the foreign body were overlooked a mistaken diagnosis might readily be made of laryngitis, diphtheritic croup, pertussis, asthma, laryngismus stridulus, or edema of the larynx. So-called tuberculosis, bronchiectasis, abscess, empyema and pneumothorax were mentioned as remote effects of foreign body in the lung. So definite were these conditions, apparently, that the possibility of their being secondary to a foreign body was not usually considered.

Dr. CHEVALIER JACKSON of Pittsburgh emphasized the importance of the physical signs of foreign body in the air passages. A radiograph should be taken in every case. There were many cases in which the history of a foreign body accident had been ridiculed or ignored by the practitioner first seeing the patient. It was possible that a foreign body might be in the lung without causing symptoms for a number of weeks before the insidious onset of vague symptoms occurred. While many cases of supposed or actual bronchiectasis, "tuberculosis," pulmonary abscess had been due to foreign body this seemed to be the last possibility suggested to the mind of the practitoner. The mortality of removal of the body by bronchoscopy through the mouth was so slight that when the diagnostic methods stated by Dr. Price left the matter in doubt, a diagnostic bronchoscopy should be done.

Dr. GEORGE C. JOHNSTON of Pittsburgh referred to a case which had come into the hands of Dr. Jackson of a young man in whom tuberculosis had been diagnosed and who had been ill since a child. Upon removal from the lung by Dr. Jackson of a form of paper clip long, long since passed out of use, the patient recovered.

Dr. PRICE, in closing, emphasized the importance of operation without anesthesia.

Pyelitis in Infancy and Childhood.—Dr. FRED E. ROSS of Erie defined this condition as an acute infection of the urinary tract which might become chronic and almost always protracted. Its apparent infrequency he attributed to its non-recognition. The infecting organism was most often the colon bacillus. While the route of infection was not known in all cases, the direct route from the ascending colon to the right kidney by way of a chain of lymphatics was suggested. Diagnosis rested upon microscopical examination of the centrifugalized sediment of urine or upon a series of such examinations. While most cases were uninfluenced by treatment he used either alkaline diuretics to render the urine alkaline, or preferably large doses of hexamethylenamine. A study of twelve cases was given. The youngest patient was three months of age; the oldest seven years. Four patients had chills with cyanosis and fever. Albumen was found in the urine in 50 per cent. of the cases. The method used for collecting the urine was the use of a wide-mouthed tablet bottle and adhesive plaster.

Dr. GEORGE E. HOLTZAPPLE of York said that the condition should be borne in mind in children with irregular, obscure fever, general debility with pallor, loss of appetite and gastrointestinal disturbances. Pain in pyelitis might simulate appendicitis and he had seen such a case brought for operation. He regarded it as of paramount importance to discover the pyuria and determine the nature of the infection. The pediatrist should be alert lest a possible case of the condition might be overlooked.

Dr. J. P. CROZER GRIFFITH believed that in every case of an infant with irregular temperature in which the cause was not absolutely clear the urine should be examined. He had had four or five such cases under his care at one time.

The Treatment of Tuberculous Peritonitis; Medical vs. Surgical.—Dr. THEODORE J. ELTERICH of Pittsburgh said that although Koenig had proposed laparotomy for tuberculous peritonitis this operation had not been shown to have a specific influence in increasing resistance to the tubercle bacillus. He mentioned the greater danger in tapping for tuberculous peritonitis than in the same operation for ascites of the pleural cavity. Medical treatment consisted in hygienic, dietetic, local and internal therapeutic measures. Green soap was used locally thickly spread upon the abdomen, allowed to remain for fifteen minutes and washed off, applications being made every other day. Thiocol was given in doses of four to seven grains three times daily and the treatment continued until the ascites had disappeared. Later cod liver oil and iron were given. Whenever possible the patient was sent to seashore, mountains, or country.

Morbidity and Mortality from Certain Communicable Diseases of Childhood as Influenced by Public Health Control.—Dr. B. FRANKLIN ROYER of Harrisburg said that the only true index of the communicable diseases of childhood was the death rate. From a total of 24,471 cases of typhoid fever in 1906 the number of cases had declined to 7,547 in 1914. Measures influencing the incidence of typhoid fever he said had an even greater effect upon the mortality of diarrhea and enteritis. Deaths from measles and diphtheria had shown a general decline under public health measures, and those from whooping cough had been cut in half. Scarlet fever had not shown the same tendency to decline and the best results might not be hoped for in this disease until more was known of its etiology and communicability.

Intramuscular Injections of Antitoxin.—Dr. SAMUEL S. WOODY of Philadelphia said it had been definitely proven that the intramuscular injection of diphtheria antitoxin had many of the advantages of the intravenous method and many points of superiority over the subcutaneous injection. Advantages over the subcutaneous were more rapid absorption; quicker therapeutic action; the smaller dose needed for the same effect; less pain; less liability to subsequent abscess. The author's technique was: Injection in middle of outer aspect of thigh. The skin received two coats of 5 per cent. tincture of iodine and the needle was plunged well into the muscle. The skin was then sponged with alcohol and a sterile gauze pad or collodion dressing was applied. The antitoxin was of a concentration of 1,100 to 2,000 units per cubic centimeter and the majority of cases received but one initial dose. In a series of 600 cases the initial dose varied from 3,300 to 100,000 units and rarely had a second dose been necessary. Excluding bronchopneumonia and brain abscess there was a mortality in the 600 cases of three per cent. due to the action of the toxin.

Dr. THEODORE LEBOUTILIER of Philadelphia confirmed the statement of more rapid absorption and prompt results obtained by the intramuscular injection than the subcutaneous. A reduction of the dose to one-half gave better results also by the intramuscular method. He believed the intravenous injection would be the coming method of administration of antitoxin. It was absolutely painless and a further reduction of the amount of antitoxin was also possible.

The Practical Value of the Schick Toxin Reaction in Diphtheria.—Dr. JOHN A. KOLMER of Philadelphia described the mechanism of the Schick toxin reaction and gave the result of his investigation upon true and pseudoreaction. The practical value of toxin reaction in the diagnosis of diphtheria was shown. The detection of the susceptibility to diphtheria was mentioned as a guide in the administration of antitoxin for prophylactic and therapeutic purposes. A demonstration of the Schick method was given.

The Results of the Examination of Cultures from Suspected Cases of Diphtheria and Other Pharyngeal and Nasal Conditions.—Dr. GEORGE REILY MOFFITT of

Harrisburg gave his results in 3,732 examinations of blood serum cultures from throat and nose infections and of smear preparations of swabs from 100 of the cases made in the last six years in his work in the health boards of Harrisburg and Steelton and for the Harrisburg High School Board, with the following conclusions: (1) Diphtheria cannot be diagnosed in its early stages without the assistance of the laboratory. (2) In negative reports on examinations for diagnosis subsequent cultures should be taken in suspicious cases. (3) Throats of patients having had diphtheria are not free from the bacteria at any given time after the onset of the infection. (4) Negative cultures should be found before quarantine for diphtheria is removed. (5) When diphtheria bacilli persist in a throat after disappearance of all other manifestations of disease they may often be readily eliminated by using buttermilk as a gargle. (6) Virulent diphtheria bacilli may be present in a nose or throat without causing any symptoms in the host though capable of causing the disease in contacts. (7) Membraneous laryngitis or croup may be caused by the pneumococcus and such infection may prove fatal.

The Heart of the Athlete: Its Prospect and Protection. Dr. Robert N. Willson of Philadelphia said that two vital questions involved in college and schoolboy competitive athletics were: (1) The ultimate (post-graduation) result of public competitive athletics upon the health and lives of the participants; (2) the possibility of determining the genuine physical integrity of the proposed participant or his lack of the same, especially with respect to his heart. Reference was made to the many deaths in recent years among former athletes. He knew of no instance of recovery from a major infectious disease in an athlete, except in the typhoid epidemic at Easton, where a number of undergraduates—probably not then shorn of their resisting forces—had made a successful fight and recovered. It was to be remembered that the normal heart would not tolerate repeated insults without loss of recuperative power. Latent athletic injuries would seem to explain the tendency of the strong and robust to die when the less powerful won out against infectious disease. A still more radical evil was the encouragement offered by college and university to the schoolboy to emulate his college brother in competitive athletics. Dr. Willson said that he stopped short of advising against active competition as the Germans had but pointed rather to signboards written in bold letters. Trainers should be taught the meaning of the collapse of to-day in the future of the athlete. He believed that some day college authorities must of necessity conclude that no form of athletic event was sane which demanded of the participants the semiconscious state of heart exhaustion at its conclusion.

Dr. N. A. Stauffer of Philadelphia believed in competitive sports for the same reason that he favored competition in other professions. He referred to the fact that all of the University of Pennsylvania football team were in excellent health and observed that records of athletes compiled by other authors did not bear out Dr. Willson's statement that competitve sports were harmful, except in the unprepared.

Dr. Albert E. Roussel said that all physicians should appreciate the value of graduated exercise throughout the greater portion of life; the exercise, however, should be in selected cases and under supervision.

Dr. Judson Daland of Philadelphia suggested that the late results in athletes apparently due to excessive work might be due to excesses in alcohol, tobacco, or in other directions. In changing also from an active life to a quiet one cardiovascular incompetency was much more marked.

Dr. Willson, in closing, stated that he was not opposed to competitive athletics if they could be rendered sane. The point he had raised was the action of the athlete's heart in the presence of systemic, especially, infectious disease. He believed it time to safeguard the hearts, vessels, and lives of the school and college boys.

Second Day—Wednesday, September 22.

Some Criteria Underlying Prognosis in Certain Forms of Cardiac Insufficiency.—Dr. James E. Talley of Philadelphia said that the average patient of middle life with symptoms suggesting beginning cardiac insufficiency would probably have either (1) Primary chronic, endo-, and myocardial disease, usually rheumatic; (2) primary endo- or myocardial disease with secondary nephritis; (3) primary renal disease with a secondary myocardial and vascular disease; (4) primary arterial or arteriocapillary sclerosis with secondary cardiac and renal disease; (5) syphilitic cardiovascular disease. Groups 2, 3, and 4 were groups of special interest because of their frequency, association with pathological elevation of blood pressure, and because their study had tended away from the conception of renal disease being solely responsible for hypertension and toward the renewal of the old conception of primary arteriolar-capillary fibrosis. Reference was made to the study of these cases by Janeway and Stengel. The underlying criteria in prognosis were to be found in symptoms and objective signs. Periodic early morning headache meant a uremic death for a large number and an apoplectic death for a somewhat less number. Although all three groups were doomed, the one with the vastly impaired elimination would have a renal death, and probably earlier than the other two.

Dr. Joseph Sailer of Philadelphia said that the differential diagnosis here was in degree rather than in kind and that in such diagnosis Dr. Talley had most properly laid stress upon blood pressure, colorimetric tests of the functional capacity of the kidneys and the graphic methods of recording the action of the heart. These methods, however, were not absolute. The increase or decrease in the functional capacity of the kidneys, the rise or fall of arterial tension, and possibly the modification of the heart tracing were far more significant than any single observation.

Dr. H. B. Allyn of Philadelphia regarded the cause of the disease as of much importance in prognosis. He had seen within a few days a patient left with aortic insufficiency from scarlet fever when three years old who was now approaching fifty and whose heart for the last fifteen years had needed very little attention. On the other hand, in the presense of a myocardial degeneration prognosis was very much worse. Dyspnea—its degree and the readiness with which it was induced—was often of more value in prognosis than any physical sign.

Dr. H. A. Hare of Philadelphia believed that the more experience one had in cardiovascular disease the more cautious one became in prognosis. While pulsus alternans was of grave import it was by no means unusual to see a patient with this symptom live for several years. In prognosis in cardiac disease the patient should be studied as a whole and not alone from examinations of the heart, even though such examinations were made with instruments of precision.

Dr. Robert N. Willson of Philadelphia remarked upon the difficulty of determining the degree of muscular cardiac disease in a given case. The tests so vaunted were to his mind of little value, and many a heart tested in the office and pronounced sound was not competent.

Dr. James M. Anders of Philadelphia remarked that the most satisfactory method of determining a prognosis was to observe the patient for a given time, which privilege should always be requested.

The Electrocardiogram; Its Value as an Aid in Diagnosis.—Drs. James D. Heard, F. B. Utley, and A. P. D'Zmura of Pittsburgh presented this paper, which was read by Dr. Heard. It was stated that the electrocardiograph was capable of furnishing information upon the site of origin of the excitation wave, its subsequent course of propagation through the conducting system and the heart muscles, the existing preponderance of one cavity over another, the method of drug action and the indications for its use and discontinuance; definite evidence regarding certain disturbances of mechanism based upon galvanometric curves was at present accepted as final. The importance of regarding a given patient from the standpoint of disturbance of cardiac mechanism rather than from valve lesion or "myocarditis" was shown. With the exception of the pulsus alternans the electrocardiograph was shown to be the instrument of choice in diagnosing disturbances of cardiac mechanism. Illustrative plates, prints and tracings were exhibited.

Dr. Edward B. Krumbhaar of Philadelphia said that as the best demonstrator of the type of arrhythmia the electrocardiograph had unquestionably proved its clinical value. Auricular flutter could be determined only by this method. It was hoped that it might also be of value in the study of the functional capacity of the diseased heart muscle. He felt that if the attention of the clinician could be diverted from the valvular murmur and focused upon the actual state of the heart muscle a great advance would be made in treatment. Upon these

lines the electrocardiograph had already shown the hitherto unknown existence of defects in individual branches of the bundle of His.

The Significance of Cardiac Pain.—Dr. DAVID RIESMAN of Philadelphia classed the causes of pain in the region of the heart as cardiac and extracardiac. Among the latter dyspepsia, herpes zoster, pleurisy, and pleurodynia were the most common. Of the cardiac causes myocardial weakness was of great practical importance as it might be overlooked because murmurs were often absent. Additional causes of cardiac pain were angina pectoris and aortitis. Reference was made to pseudoangina pectoris and to the question whether the term should or should not be employed.

Dr. LAWRENCE LITCHFIELD of Pittsburgh said that of two cases of which he had knowledge one had been attended by the best men in the country and had died from an anginoid attack without ever having been told that the cardiac pain was grave. The other case was of the type presenting pain in both arms. The cardiac disease was not regarded as serious, but the man had died within a month in an anginoid attack.

Dr. JAMES E. TALLEY of Philadelphia remarked, apropos of the cases cited by Dr. Litchfield, that in cases in which angina pectoris was suspected, the less found wrong with the heart upon examination, the more certain might one be of the diagnosis. In a series of 500 cardiovascular and cardiorenal cases there were thirty-five cases of genuine angina pectoris. One-third had succumbed to an acute anginal attack, and two-thirds to gradual cardiac death.

Dr. SOLOMON SOLIS-COHEN of Philadelphia called attention to the importance of syphilitic aortitis and so-called pseudoangina in that syphilitic aortitis was often mistaken for angina, the syphilitic nature of the condition overlooked, and the patient, therefore, allowed to get into a much worse state than he otherwise might. Dr. Cohen had observed many cases of so-called pseudoangina in which the pain occurred without structural lesions in the myocardium coronary arteries, or the aorta, in which upon proper recognition and treatment the pain had disappeared and the patient live, as in one case under his observation at the time, for more than twenty-five years.

Dr. ROBERT N. WILLSON of Philadelphia said there were two distinct types of true cardiac pain,—the dull heavy pain of distention and dilatation, and the sharp cutting pain of aortic valve and aortic disease. He regarded as questionable whether angina might be properly included under cardiac pain; certainly such right had not been demonstrated. He believed there was no such entity as pseudoangina pectoris. The cardiac nervous mechanism, including the ganglia of the auricles and of the coronary sinus under the influence of nicotine, showed definite signs of disease, and here he believed eventually would be found the real seat of angina. Should this be so, it would again be permissible to speak of angina as cardiac pain.

Dr. RIESMAN in closing said that by cardiac pain he meant pain in the cardiac region. The crux of the matter was involved in the question whether angina pectoris was a disease, or a symptom. To be borne in mind was the fact that there could be very sharp pains paroxysmal in character that were not associated with the dread prognosis acompanying the disease called angina pectoris.

Treatment of Myocarditis.—Dr. JAMES M. ANDERS of Philadelphia considered the treatment of acute myocarditis due to the acute infections including rheumatism and rarely syphilis. When antirheumatic measures were indicated the heart was to be carefully guarded by stimulants and modification of this treatment might be necessary because of cardiac weakness. Digitalis was warned against when the myocardium was the seat of an acute inflammatory degeneration. In all forms of severe acute myocarditis prolonged absolute rest was enjoined. In chronic myocarditis the exclusion of chronic valvulitis was exceedingly difficult in the presence of murmurs. In the stage of compensation exercise must not be such that would tax the reserve force. In chronic myocarditis due to lues salvarsan should not be administered intravenously. In diet a low protein content was indicated with a minimum of flesh foods, strong stock soups, and legumes and an elimination of all articles causing intestinal fermentation. Suitable changes of air were beneficial, as were also carbonated baths in appropriate cases. In the stage of insufficiency, physical and mental rest were imperative and in some cases cardiac stimulants were necessary. The untoward effect of prolonged rest might be minimized by resistance exercises. Digitalis, if administered, should be given cautiously combined with an arterial relaxant. In decided failure of compensation Dr. Anders had found most useful strychnine, gr. 1/40; caffeine citrate, gr. 1; spartein sulphate, gr. 1/4. Venesection was possibly useful in excessive hypertension in threatened apoplexy. Saline purgatives were advised. In diet the digestible proteins were freely allowed, with the exception of those rich in purin bases. The fluid intake should be lesseneed, especially in the presence of edema.

Dr. DAVID RIESMAN of Philadelphia observed that the term myocarditis was rather loosely used when applied to acute diseases. Chronic myocarditis was never a single process. Functional and structural changes in the vessels, lymphatics, arterioles, and viscera were to be studied from the functional and anatomical standpoints. In the treatment of acute myocardial degeneration the essential point was that of food. When milk was given as the sole diet milk sugar should be added. The patient's life with its activities was to be adapted to the capacity of the heart as nearly as could be determined, for such capacity, unfortunately there was no definite test. With compensation lost rest and digitalis were the main remedies.

Inadequacy of Ordinary Methods of Disinfecting Typhoid Stools.—Dr. EDGAR M. GREEN of Easton in this paper said that reports from about thirty hospitals throughout the State showed that most of the institutions were disinfecting stools with chloride of lime, carbolic acid, or some of the composite commercial disinfectants with a varying period of time from a few minutes to an indefinite time. Pathological experiments showed such disinfection was useless. Steam sterilization which could be made complete in a typhoid stool in from 20 to 30 minutes was strongly advised in all hospitals. In private practice where steam was not available the well broken up stool should be exposed to a 6 per cent. solution of commercial formaldehyde for at least two hours, or treated with a cupful of commercial unslaked lime and hot water.

Dr. B. FRANKLYN ROYER of Harrisburg agreed with Dr. Green that hospitals should use steam in the disinfection of stools and urged that nurses in training be thoroughly taught effective methods of the disinfection.

Some Remarks with Regard to Hemoptysis in Pulmonary Tuberculosis and Its Treatment.—Dr. ELMER H. FUNK of Philadelphia restricted the term hemoptysis to the expectoration of blood with its origin below the glottis and said that by far the most frequent cause of hemoptysis so considered was tuberculous infection. The possible association of other causative conditions was, however, to be borne in mind. Among 373 patients in the department for diseases of the chest of the Jefferson Hospital with advanced pulmonary tuberculosis hemoptysis was present in 164, or 44 per cent. In 167 patients treated to the end the symptom was noted in 90 instances, 54 per cent. While hemoptysis was most frequent in young adult life there had been reported the death of an infant of three months from hemoptysis due to pulmonary tuberculosis and other cases had been collected in young children. While the average adult patient died within four years after the first hemorrhage, Goethe had had a profuse hemorrhage at nineteen and another at eighty-two; Rousseau had one at twenty-three and lived to the age of sixty-six. It had been the experience of the author that the extent of the lesion did not bear a direct relation to the occurrence of hemorrhage; it might be the first or the last symptom of the disease. In the studies carried out at the Jefferson Hospital pulmonary hemorrhage had been grouped under: (1) Frank profuse hemorrhage; (2) small and mild hemorrhage; (3) persisting hemorrhages; (4) blood streaked sputum. It was advised that the expectoration of blood streaked sputum be given as careful thought as the profuse frank hemorrhage. Reference was made to what might be called an epidemic of blood spitting in a group of consumptives and to a series of observations being made in such connection. In the treatment of hemoptysis in pulmonary tuberculosis individualization was said to be the keynote of success. Rest was by far the most important therapeutic procedure. Dr. Funk was inclined to the belief that emetine was of distinct value in hemoptysis in which there was a tendency to repeated small hemorrhages or in cases suggesting capillary bleeding. The time-honored ice bag to the chest had been disregarded. Persistent bleeding called for a consideration of therapeutic artificial pneumo-

thorax. Of vital importance was the free daily movement of the bowels, in the absence of positive contraindications.

Dr. C. R. PHILLIPS of Harrisburg reported their observations at State Tuberculosis Dispensary No. 13 from March 1, 1908, to March 1, 1915, covering a series of 5,700 cases diagnosed as tuberculosis pulmonalis, in which they had concluded that: about as many people died from tuberculosis without having had hemorrhage as those who had, hemorrhages were as likely to occur early in the disease as late; dispensaries and sanatoria reduced the frequency of hemorrhage. In only 21 per cent. did hemorrhage occur after having come under their care. Hemorrhage *per se* could not be considered; it was but a part of a vast clinical and pathological picture, the significance of which depended upon the accompanying conditions.

The Use of Tuberculin and Other Bacterial Products (Bacterins, Vaccines, etc.) by the Mouth.—Dr. SOLOMON SOLIS-COHEN of Philadelphia reported the results of five years' personal observations, chiefly with tuberculin; also with preparations of pneumococci, staphylococci, and streptococci. The bacterial preparation was given in about one ounce of physiological salt solution or diluted beef juice with the stomach empty; repeated according to the effect, usually in ascending doses, every third to seventh day. With tuberculin, special and careful management was necessary to avoid toxic reaction. While the method of administration did not confer power upon the vaccine to do that which vaccines could not do under any circumstances, it was in most cases of equal efficacy with the subcutaneous injection. Digestion was not disturbed.

Dr. JOHN A. RODDY of Philadelphia said that the results of studies at the Jefferson Hospital gave evidence of reaction from administration by the mouth of the following strains of killed bacteria. Staphylococci, streptococci, pneumococci, and the bacillus of Friedlander. These evidence lymphocytosis or leucocytosis; pronounced typical vaccine reaction from overdoses; decided clinical improvement, amounting in about one-half the cases to complete clinical recovery. In the majority of patients so treated after other methods had failed there was some improvement. While the group of cases was too small from which to draw sweeping conclusions it was fair to believe that the method showed distinct clinical efficacy and was worthy of further investigation.

Third Day—Thursday, September 23.

Observations on Thyroid Therapy. — Dr. WILLIAM HARMAR GOOD of Philadelphia from a study of the chaotic condition of thyroid therapy concluded that the average dose, 4 grains, of thyroid recommended by the U. S. Pharmacopeia, was very dangerously excessive, especially in myxedema, where its indication was most clear. He believed that 1 or, at the most, 2 grains, might be considered a safe average dose. The improper and confusing term, thyroid extract, he believed should be disregarded for glandulæ thyroidæ sicca, which was the proper term.

Chronic Arthritis.—Dr. THOMAS MCCRAE of Philadelphia drew attention to an infection as the etiological factor in the great majority of cases of chronic arthritis. This knowledge was of especial importance in view of the often progressive form of the condition. The application of the etiological therapy should be distinguished from measures merely symptomatic or those directed to improve the condition of the joints already damaged.

Dr. A. B. HIRSH of Philadelphia said that the terms, "rheumatoid arthritis" and "chronic rheumatism" should be named only to be discarded. A tenetative nosology, he said, was now possible for chronic arthritic disease, based upon the researches of Dr. McCrae and others in this field. Three factors involved in the definite treatment method of one group of joint infections, wrongly classed, "deforming arthritis" were (1) removal of the source of infection; (2) persistent local applications over each affected joint until all possible removal deposit was gone; (3) a systematic effort to correct the patient's general metabolism. An exhaustive differential treatment was essential; the most efficient local treatment was the high pressure, small volume, and low frequency static wave current sent through 22-gauge flexible metal plates closely fitting the involved joints.

The Tertiary Manifestations of Syphilis as Seen in a General Medical Ward.—Dr. JOHN H. MUSSER, JR., of Philadelphia based this study upon the results of the Wassermann test made in every case of chronic disease in the men's medical service at the Presbyterian Hospital in the last four months, excluding frank pneumonia, typhoid fever cases, and necessarily those dying or leaving before the test could be made. One-fifth of the patients with chronic disease had syphilis. Cases were reported showing the diverse forms assumed by the disease. While the therapeutic results were good they could scarcely be called brilliant. The author concluded that a large percentage of cases of chronic disease was dependent upon syphilitic infection; that it was impossible always to detect such infection without the Wassermann reaction; and, that because of the importance of diagnosis of such cases a Wassermann test of the blood serum should be made in every case of chronic disease admitted to the general medical ward.

Dr. JOSEPH SAILER of Philadelphia, in illustration of the frequently unusual manifestation of syphilitic infection, cited two cases, both in physicians. One suffered merely from malnutrition and indefinite digestive disturbance for which there was no adequate explanation. In this case the Wassermann was positive. Two weeks following the first injection of salvarsan the man had gained ten pounds and had since remained well. The other patient suffered merely from an irritative dry cough of the most persistent character. He was the father of three healthy children. There were present none of the ordinary manifestations of syphilis. A positive Wassermann suggested the use of salvarsan and the cough stopped almost immediately after the first intravenous injection. The author assumed from laboratory reports that at least 9,000,000 people in the United States were suffering from this disease and thought it fair to conclude that in the majority of this number the manifestations were so obscure that there was no suspicion of its existence.

The Influence of Low and High Protein Intake upon the Excretion of the Acetone Bodies in the Urine in Diabetes Mellitus.—Dr. JACOB ROSENBLOOM of Pittsburgh from a study of five cases of diabetes found that the amount of protein fed played an important rôle in the excretion of the acetone bodies in the urine. From experimental data the conclusion was drawn that this increased excretion was due to the presence in the protein molecule of certain amino acids that were ketogenetic. It was suggested that the selection of proteins poor in amino acids might control the excretion of the acetone bodies in diabetes mellitus.

Dr. C. L. PALMER of Pittsburgh emphasized the point that certain constituents of ordinary protein food, such as meat, had a ketogenetic influence by the separation of the NH_2 group from their amino acids and expressed the hope that Dr. Rosenbloom and other biological chemists would continue the search into the intricate phenomena of diabetes mellitus.

NEW YORK NEUROLOGICAL SOCIETY.

Three Hundred and Thirty-ninth Regular Meeting Held Tuesday, April 6, 1915.

Dr. WILLIAM M. LESZYNSKY, PRESIDING.

Tuberculous Meningoependymitis with Dilatation of Cavum Septi Pellucidi. — Dr. FREDERICK TILNEY presented this case. The patient, a fifteen months infant, had a perfectly characteristic tubercular meningitis. An interesting fact in the case, however, was that the child suffered from right hemiplegia the last three weeks before death. This warranted the belief that possibly there might be some degeneration of the Wallerian type, but no evidence was found of secondary degeneration in the motor area. The pathology of the condition showed a typical state of basal meningitis with miliary tubercles. The septum lucidum was filled with thick gelatinous substance. There was present a sinistral version. The brain itself presented no changes except in the region of the ventricles where there was tubercle formation giving characteristic tubercular ependymitis. The space was thickened between the two layers of the septum which was a dilated sac, containing a gelatinous mass. There were also small hemorrhages in the folia of the right cerebellum. Dilatation of the foramena on both sides was noticeable (in the specimen) as well as that of the lateral ventricles and interior walls. Dr. Tilney said that the sinistral version depended upon which of the nerves was most involved. Further study would have to be given to the case. As to the formation of gelatinous material in the fifth ventricle, there was, under normal conditions, a

little fluid, and therefore this fluid was an exudate from the inflammatory process into the Septi. The child had died the previous December and the specimen dated from that time.

Case of Tumor of the Right Occipital Lobe.—Dr. H. CLIMENKO presented this case. The patient, a male, about sixty years of age, complained of failing vision and headache. Family history: Father died of tumor of chest wall; four sisters and brother living and well; no history of new growth or diabetes. Personal history: Married thirty-nine years; six children living and well; one child died at three years with abdominal colic; one miscarriage. Gonorrhea and syphilis denied; no smoking or drinking. Past history: Patient has had diabetes for seven years; has passed small amounts of sugar, less than 1 per cent.; has had polyuria and polydipsia; has lost weight and felt weak. Present illness began two and one-half weeks ago when patient found he was doing his work improperly and found he had failing eyesight and slight frontal headache, with dizziness. His vertigo increased so that he was forced to give up work; he had difficulty in getting home, a distance of eight blocks, walking into many people on the way. One week previously, while reading, patient saw many colored animals and objects before his eyes, when the headache became more severe. He had hallucinations of myriads of rapidly moving objects and various colors. The vision was hazy. Since then the acuity of vision had been shown to have diminished. Headaches had become more severe and generalized, with increase of vertigo, coming on in attacks. The previous day vertigo was severe enough to make patient fall. The falling was not to any particular side, nor did objects rotate in any particular direction. For the past six days patient had been vomiting several times daily, the vomiting recurring with increase in headache. It was not projectile. When the headache became throbbing in character, loud splitting sounds were heard, like the stroke of a hammer on an anvil. There had been no change in smell or taste; no impairment of muscular power; no sensory symptoms other than the optic and auditory ones. The physical examination showed: Gait: no cerebellar tilt to head; no abnormality of gait or falling in either direction; station: no Rhomberg; no ataxia; scalp: no boney tenderness; eyes: at outer angle right eye echymotic spot, result of fall; pupils, react to 1 and a Wernecke's reaction to left; both halves of each retina sensitive to beam of light causing contraction of pupil at right lower portion of iris; conjunctiva moderately congested; no nystagmus; a left homonymous hemianopsia present; bilateral choked disc; veins markedly distended. Lungs: negative except for occasional râles at bases; heart: somewhat slow; pulses: Corrigan pulse; some capillary sclerosis; abdomen: reflexes diminished left side; cremasteric present and active; extremities: no diminution of muscular power on either side; no atrophy; descent of right arm more rapid than left; no ataxia; no asteriognosis; no change in pain or pressure, but faulty localization of position of left arm (patient overpoints with right hand in trying to find the left); does not overpoint with left in trying to find right; cannot mimic position of fingers of left hand with right, but can mimic positions of right hand with left; slight hypetonia of left lower extremity; descent of left more rapid than that of right; no fault in localization; knee-jerk diminished, but obtainable and equal on both sides; achilles reflex present; equal blood pressure, systolic 160; diastolic 60. February 16 visual fields showed left homonymous hemianopsia, quadrantic, about three-eighths of left halves of fields involved, entire upper quadrant and upper part of lower quadrant. Lumbar puncture showed initial pressure equal 330 mm. 5 c.c. yellow fluid removed. Exploratory craniotomy by Dr. Elsberg over occipitoparietal region; no increased tension found; no tumor found; *x*-ray examination negative; Wassermann negative in blood and spinal fluid.

Dr. ABRAHAMSON said he saw the patient when he entered Mt. Sinai Hospital. At first there was a tendency toward quadrantic vision, but later the entire half field was disturbed. The question was, were we dealing with an occipital lobe lesion or with deeper seated disease of the optic radiations? There was some disturbance of the deeper muscle sensibility. The man could not imitate very well. Localization was not very accurate. The lesion was probably deep seated and most likely parietal as well. The brain appeared normal. It was not always possible for the surgeon, on palpation, to determine whether there was not a soft glimoa involving the deeper structures. Diabetes might cause retinitis and swelling and localized softening of the brain. The history, moreover, of rather a sudden onset indicated that there had at one time been a hemorrhage which caused the exacerbation of the symptoms. The tumor was probably deep down, catching the fibers from the parietal lobes. It was more likely in the radiations than in the cuneus.

Dr. STRAUSS said he would like to call attention to two points. This man had an optic neuritis. Tumors in this region very often did not cause choked disc, although they were pretty large. A patient admitted to the service a week ago had come in in stupor and so a satisfactory examination could not be made. The examination of the brain revealed a large glioma with hemorrhages occupying the left occipital lobe, closing up the posterior horn of the lateral ventricles, but not going back into the calcarine region. It involved the optic radiation. There was no optic neuritis in that individual.

Dr. DANA said that the case might give rise to some historical reminiscences on his part as it was similar to the first case of operation for tumor of the brain ever done in this country. It was some 25 years ago, when Dr. Seguin made a diagnosis of occipital lobe tumor; Dr. Weir did the operation and found an encapsulated tumor, hard, and rather easily removed. The patient died. Dr. Dana thought, as did others, that the present case was an infiltrating glioma. One saw a good many cases with similar group of symptoms, due to thrombosis and softening, but the distinction from tumor could easily be made.

Dr. LESZYNSKY said he thought they must agree that this was a gliomatous infiltration, but not necessarily in the occipital lobe. In regard to the symptomatology of occipital lobe tumors, there might be very few symptoms. An intelligent woman of 44 years gave a history of several months' severe headache, with occasional vomiting and disturbance of vision. The headaches increased. Examination showed very slight optic neuritis, distinct homonymous hemianopsia, and vision 20/30 in each eye. No positive localization could be made at the first examination. Two and a half years before she had fallen and struck her head over the occipital region, but there were no immediate symptoms. Several months later Dr. Cushing found the symptoms had progressed, but very few sensory symptoms were present. He did a decompression and a few weeks later removed a very large tumor (endothelioma) originating in the tentorium and involving the mesial surface of the right occipital lobe. Later there was a recurrence.

Unusual Case of Multiple Sclerosis.—Dr. S. P. GOODHART showed this patient. He said the case was interesting in that its symptomatology suggested differential diagnosis between disseminated sclerosis, paralysis agitans and lenticular degeneration of the Wilson type. History of the case was as follows: The patient, a Russian Jewess, aged 29, gave a negative family history except that the father and mother were first cousins; previous to present illness her history was negative; initial symptoms occurred in her thirteenth year; there was a fine tremor of the right arm upon voluntary movement; the left arm became similarly affected a year later; headaches and pains along the spine followed in the next few years; larger excursion movements of the intention type developed later; at fifteen with subjective sensations of weakness there appeared flaccid paralysis of the left leg, followed a year later by the right. Tremor of the upper extremities then became more aggravated; fine tremor, of the Parkinson type, both in tempo and in character, as seen in paralysis agitans, appeared about five years ago; spasticity of both lower limbs developed gradually within the next few years and the same phenomenon, together with marked contractures up the upper limbs appeared somewhat later. Extreme contractures, as seen in the fingers, with the adducted and extended thumb lying flat on the palm, and the proximal phalanges of the fingers somewhat flexed, the distal phalanges extended, together with the fine tremor with the extremity quiescent, strongly suggested the P. A. position. Paroxysms of dysphagia began at the age of 26, and these attacks became so severe that when fluid was taken it would pass through the pharynx into the nose; at various times there were severe attacks of dysphagia. Speech within the last few years had become slow and measured; the voice had deepened in timbre and had a suggestive monotone; it was entirely lacking in rhythm; the facies had gradually assumed the present form; the expression was of the masked

type, due in part to the spasticity of the facial muscles; forced laughter was occasional and the mouth was at times held with the lips widely separated and the jaws apart; this position and the expression were suggestive of Wilson's disease, as seen in one case. On attempts at speech there was sometimes an involuntary effect of smiling, due probably to the automatic action of the muscles involved in this expression; on slight innervation there was a rhythmical tremor of the tongue and lips, and at times, on first attempts at speech, there was slight and occasionally an extensive tremor of the body and of the arms; on voluntary movement the tremor of the upper extremities became distinctly of the intention type; on intense emotion movements became widely extensive and irregular; there were marked flexor contractures of both upper and lower extremities. While the position of both hands and fingers were quite typical of advanced paralysis agitans, the contractures, however, were more pronounced than were found in that disease. There was nystagmus in extreme lateral position of the eyeball, varying from rotary to lateral oscillation. The position of trunk, head, general carriage, expression of face in repose and tone of voice were suggestive of Parkinson's; on active innervation of the facial muscles, however, the expression changed to that suggestive of the euphoria not uncommon in multiple sclerosis. The abdominals were occasionally present on the right side; very indistinctly elicited on the left; in spite of the contractures in the upper extremities the reflexes were not decidedly increased; Babinski and clonus and markedly increased knee jerks were present, especially on the right side; in passive movements of the arm, the rigidities showed a tendency to cogwheel interruption, far less marked, however, than in Parkinson's. In differential diagnosis, as symptoms of multiple sclerosis, there were: age and manner of inception; intention tremor; variable abdominals; slow speech; emotional symptoms; evidence of pyramidal tract involvement and nystagmus; of paralysis agitans there were: tremor while at rest; contractures; though extreme and far more than usually seen in this disease; posture and gait; the entire body moving in toto; tendency to retro and propulsion; voice and facies distinctive; of lenticular degeneration there were: the occasionally widely opened mouth; contractures; excursive movements; no emaciation and no mental deterioration; of chronic cerebellar tremor: while there was a somewhat characteristic tremor, there was no hypotonia and the presence of so many other symptoms excluded this as a diagnosis. This case emphasized what all now believed, that the pathology of all the conditions above mentioned was doubtless to be found in the midbrain and its connections. The nomenclature required a change, since what we had hitherto regarded as disease entities were really symptom complexes and all part of the same pathological process. The cerebellum, the lenticular and caudate nuclei, the paths to and from the thalami were the principle seats involved.

Dr. ABRAHAMSON said the patient had been under his observation for years at the Montefiore Home. She was almost an exact counterpart of another case, W. H., in the home for many years, and whose brain and cord were being studied by Dr. J. R. Hunt and Dr. Dunlap. The latter were described about eighteen years ago by Dr. B. Sachs under the title of multiple sclerosis and paralysis agitans in a boy. The advance reports of the findings were negative in character. The girl and the young man both showed signs of paralysis agitans, of multiple sclerosis and of Wilson's disease. It was not Wilson's disease because this was an extra pyramidal affection; this was a distinctly pyramidal tract disease; other features negatived Wilson's disease; as for multiple sclerosis, the pathological findings in the young man showed no traces of it. It resembled mostly a paralysis agitans and very likely the finer microscopical examinations would bear this out. Italian investigators sought to include the juvenile cases of Parkinson's disease with the cerebral diplegiæ; the crossed legged progression; bilateral pyramidal tract involvement, etc., in both of these cases, did certainly resemble the clinical group of Little. At present one ought to be content with a regional localization (leaving the nature of the process to be determined in the future), *i. e.* a diffuse degenerative disease of the basal ganglia and midbrain.

Dr. DANA said that the autopsy showed in the case of Willie H. that there was no degeneration of the pyramidal tracts. He thought that neurologists would have to follow the alienists for a time and use the term "allied to" in their diagnosis of these cases. The case shown here, as well as that of W. H. and some so-called cases of Wilson's disease, were in the group "allied to" paralysis agitans. Clinically they most resembled this disease, and anatomically the lesions were in the same regions. He was not so sure that the lenticular nucleus degenerations in Wilson's disease were important as the cause of the specific symptoms. The lenticular nuclei could probably be badly softened, as in gas poisoning, and the patient get well.

Dr. STRAUSS asked Dr. Dana about lenticular softening in gas poisoning. What symptoms would he ascribe to lenticular softening? Cases he had seen of gas poisoning with lenticular involvement had come to autopsy. They had never come out of coma.

Dr. DANA said that his views as to the symptoms of acute lenticular poisoning were based on certain clinical cases, and the fact that in prolonged gas poisoning there was almost always a softening of the lenticular nuclei. The cases he had seen had shown on return to consciousness mental confusion and excitement, and later motor disturbances, very much like those seen in paralysis agitans and the Wilson disease. In regard to this latter disease, he thought that perhaps too much emphasis had been placed upon the importance of the lenticular lesions than ever. In the acute gas cases there was complete recovery with probably distinct scars in each lenticular nucleus.

Dr. GOODHART said he thought there need not be symptoms with softening of the lenticular nuclei. One case that came to autopsy had no symptoms. He thought only extensive degeneration, involving the tracts passing through, would show symptoms.

Anatomical Studies Explaining Lesions Following Thrombosis of the Posterior Inferior Artery, with Lantern Slides.—Dr. M. T. BURROWS read this paper by invitation. Definite clinical symptoms frequently accompanied occlusion of the vertebral artery where it coursed over the surface of the medulla oblongata and the posterior inferior cerebellar artery, near its origin. The symptoms were indicative of lesions involving the olive, the formatio reticularis in the region of the olive, the nuclei of the IX, X and XI nerves and the longitudinal tracts passing down through the region, the restiform body and frequently the root of the V nerve. Several cases had been reported where areas of softening had not included the entire region indicated by the symptom complex. Dr. H. M. Thomas had reported cases with typical symptoms which had later cleared up and at autopsy the thrombosed vessels were found but there were no areas of softening. Injections of the separate arteries of the medulla had shown that the region in question was supplied by a number of small branches from the vertebral, the posterior inferior cerebellar artery, or both. In a large number of brains the branches were terminal branches. The posterior inferior cerebellar artery was variable both in size and position. It was, however, always present, although in some brains it might supply only a very small part of the cortex of the cerebellum. It might arise at any level from the vertebral artery. In a large percentage of the brains studied it arose at the level of the olive to supply a part of the branches to the area in question but only in a few cases did all these branches arise from this trunk. The nuclei of the VI, VII, and VIII nerves were supplied by similar lateral and terminal branches. These branches arose, however, in most brains from the middle cerebellar artery or the basilar. In a few brains these vessels might also come from the posterior cerebellar artery. The remaining portion of the medulla was supplied by vessels which anastomosed frequently with each other, with vessels of the spinal cord, and those of the opposite side. The portion of the descending root of the V nerve, substantia gelatinosa Rolando, lying at the level of the olive, might be supplied by the same vessels which supplied the penetrating arteries to the formatio reticularis, but it was frequently supplied by separate branches which coursed from below upwards or from above downwards. This was also true for the restiform body. This accounted for the frequent absence of symptoms from these parts. In a limited number of brains large anastomoses had been found between the vessels supplying the region in question, connecting the end branches of these vessels with vessels of the pons above and the spinal cord below. In a few cases these anastomoses were of sufficient size to prevent symptoms following occlusion

of these arteries at their origin from vertebral or posterior inferior cerebellar artery. In others they were smaller, so that symptoms might develop for a time from a temporary anemia of the part, later to disappear without softening as the anastomoses enlarged. The latter were frequently small and variable, as were the vessels. The branches of one vessel might intermingle with others so that penetrating arteries in the same horizontal plane had a different origin. A few of these vessels might be terminal while others had small anastomotic connections with vessels of other parts. At the instance of occlusion of these vessels symptoms indicating involvement of all of this region might be observed while later some of the symptoms might disappear and others persisting might be variable. When death occurred one would expect to find areas of softening not indicative of all the symptoms noted.

Studies of Atypical Children from the Department of Ungraded Classes.—Dr. WILLIAM B. NOYES read this paper (see Vol. 87, p. 885).

Dr. CLIMENKO said he would like to ask Dr. Noyes a few questions. The Jewish race had practised long hours of study for 2000 years, and it had not hurt them. Why restrict that now? What was a mental or psychical equivalent of chorea? He understood that chorea was an acute infectious disease; how could there be a psychic equivalent? He did not understand the report of infantilism of the uterus. How were the exact measurements obtained? In regard to Jewish mental deficiency he thought there was a peculiar psychology of the Jew. The imagination was overdeveloped in the Jewish child. It worked at the expense of the other faculties.

Dr. NEUSTAEDTER said he was connected with the Board of Health in school work both clinically and privately. Dr. Noyes was to be congratulated on the amount of ground he had covered. The society should arrange a symposium on the subject to discuss the question from the standpoint of public education.

Dr. NOYES said the point in regard to the Jewish children working after hours in a Rabbinical school was a serious one. The surroundings might be unsanitary, the child might be sick and tired out. This might be a serious menace. Sydenham's chorea might be an infectious disease, but the question raised in the paper was as to whether there might not be an accompanying mental state. The child was nervous, cried for nothing, and failed in school work, especially in attention and memory. If they could diagnose such cases they were doing good work. The case of infantilism was observed in private practice over several years. The gynecological examination was made by a competent woman physician by rectum and was accurate. Pituitary extract was used in this case without result. There were certainly distinctive features among Jewish children as among other races, but there was a similarity in defectives of all races, and they were usually lacking in imagination. The Jew was less liable to the more brutal and coarser types common to other nationalities.

AMERICAN ELECTRO-THERAPEUTIC ASSOCIATION.

Twenty-fifth Annual Meeting, Held at Atlantic City, N. J., Sept. 14, 15, and 16, 1915.

DR. JOHN W. TORBETT OF MARLIN, TEX., IN THE CHAIR.

Deep Röntgen Therapy in the Post-Operative Treatment of Carcinoma of the Breast.—Dr. GEORGE E. PFAHLER of Philadelphia read this paper. He claimed that since three-fourths of the patients with cancer of the breast came for operation only after the disease had spread from its original source and involved neighboring glands, that most of them could not expect to get well from surgery alone. Since cancerous tissue had been shown repeatedly to disappear as a result of *x*-ray treatment, even where far advanced, it could more surely be made to disappear if applied immediately after operation. The rays would help to prevent the spread of the disease, and would do much toward preventing its recurrence. At least 25 per cent. more patients could be gotten well of cancer of the breast if every patient were treated properly by the *x*-rays after operation. It was just as important to have this *x*-ray work properly done as to have the surgery properly done.

Report of Cases of Pulmonary Tuberculosis Treated by the Röntgen Ray.—Dr. J. D. GIBSON of Denver reported 757 cases of pulmonary tuberculosis which he had treated during the last fourteen years with the Röntgen ray. Of these 102 had been lost sight of, 566 were living to-day, and 91 were known to be dead. These cases consisted of 96 first stage cases, 343 second stage cases, and 318 third stage cases. Thirty of those that were reported dead had received less than two months' treatment. The author emphasized the importance of early diagnosis. Even before tubercle bacilli were found in the sputum, cases should be diagnosed by means of Röntgenograms, physical examination, and clinical history. Every case discovered in the prebacillary stage was positively curable by means of the ordinary method of treatment, with the addition of the *x*-ray and ozone. The author claimed that by this method the physicians of the United States could eliminate tuberculosis as a factor in the death rate. In other words, in ten years by applying these principles the death rate from tuberculosis could be made less than that from smallpox at the present time.

An Advance in the Treatment of Deforming Arthritis.—Dr. A. B. HIRSH of Philadelphia read this paper. He held that differentiation of varieties of the affection was of minor value for the electrotherapist, as the treatment was uniform for them all. An accurate diagnosis, to exclude other joint diseases, was a *sine qua non* for success. He divided the treatment into (1) removal of the causative center of infection; (2) improvement of the general nutrition, and (3) direct applications to each affected joint for a return, as far as possible, to normal condition. Besides static, sinusoidal and continuous currents, a corrected dietary, together with radium emanation water and with stock and autogenous vaccines, as adjuncts, were indicated. When faithfully carried out, these would lead, as a rule, to removal of the disease.

Report of Progress in the Fulguration of Malignant Growths.—Dr. WORTHINGTON S. RUSSELL of New York spoke of the work at the New York Skin and Cancer Hospital in the treatment of malignant growths by the de Keating Hart method of fulguration, and showed numerous lantern slides illustrating the results obtained. Since 1912 they had treated about 400 cases of cancer of all stages. As yet they were not in a position to draw positive conclusions.

The Physical Treatment of Reflex Disturbances.—Dr. FRED H. MORSE of Boston read this paper. He said there were many reflex conditions, like headache, backache, in fact, pains in various parts of the body, hysteria, temporary mental derangements, that were due to functionally disturbed or acutely diseased conditions of some of the organs which were of consequence enough to require special treatment independent of the underlying cause, which in the majority of instances was intestinal stasis. Also after the cause was apparently or really removed these reflex symptoms continue indefinitely, which was an inducement for patients to take sedative drugs, patent medicines, etc. While due respect was given to the various physical and electrical modalities, such as could be derived from the use of the static current, high frequency, *x*-ray, vibration, etc., the galvanic current, because of its more definite action, and the fact that it could be more accurately measured, was, in the experience of the author, more efficacious in the relief of these symptoms than any other one form of physical treatment, and also because of its interpolar action, which was recognized as having a direct nutritional effect in the deeper tissues. Authorities were quoted to substantiate the idea that the constant current was of much more consequence in the treatment of disease than had been accredited to it in recent years, and he hoped to see a revival of interest in it in the future.

Hyperthyroidism and Its Treatment.—Dr. WILLIAM BENHAM SNOW of New York read a paper on this subject. He said the method employed was the combined use of the static wave current, *x*-ray, and mechanical vibration. The electrical current reduced the gland by forcing out accumulated colloid and effete matter. The *x*-ray effectively inhibited or lessened the excessive secretion of the thyroid gland, the disturbing factor. Mechanical vibration applied over the proper intervertebral spaces aided by contracting the arteries, thereby to a degree diminishing the excess secretion. Dr. Snow claimed for the method uniform success, even in extreme cases, without danger or inconvenience to the patient. The disturbing heart symptoms were permanently corrected; there was a return to health, with

prompt increase in body weight; and the ophthalmic symptoms improved under the combined method.

The Utility of the Static Machine.—Dr. HERBERT F. PITCHER of Haverhill, Mass., in this paper made a plea for the intelligent use of the static machine. The well meaning physician who lays aside a good static machine lost one of the most valuable therapeutic agents in existence. No instrument required more study and knowledge, and there was none which would give richer returns when employed in a scientific manner. The author emphasized the importance of keeping the machine dry and clean.

Different Forms of Neuritis and Their Treatment.—Dr. MARY ARNOLD SNOW of New York said the treatment depended wholly on the pathological condition presented and the case. Drug therapy was usually but palliative. The physical modalities included dry hot air, radiant light and heat, the static wave current, static sparks, the static brush discharge, the de Kraft blue pencil brush discharge, d'Arsonvalization, the static resonator effleuve, the Oudin current, mechanical vibration, and the *x*-ray, each having its respective place in the relief and cure of neuritis.

The Treatment of Headache.—Dr. FREDERIC DE KRAFT of New York, after reciting the various causes of headache, called especial attention to the uses of electricity in the treatment of toxic headache. By the use of the high frequency current the blood could be heated to such a degree that the smaller blood-vessels in the skin and mucous membranes became widely dilated. As a result of this rush of large volumes of blood to the periphery for cooling effect, relief of venous engorgement in internal organs was effected. Renewed activity occurred resulting in an improvement of elimination. Dr. de Kraft also called attention to the mechanical effects of the static wave current, the static induced and the sinusoidal current. When employed with large electrodes over the abdomen and over the dorsal and lumbar region these modalities might be depended upon in restoring the tone of both voluntary and involuntary muscular fiber. This would bring about improved vascular tone and removal of venous stasis in the splanchnic area. As a result of the improvement in the activity of the organs of elimination greater freedom from toxic elements in the blood was secured. He also called attention to the general oxidizing and pain relieving effects of the static brush discharge. A judicious combination of the use of these electrical modalities, together with exercise in the open air and regulation of the diet to suit the needs of the system, would result in the removal of periodical toxic headache in a very large number of cases.

Dilatations of the Aorta.—Dr. A. W. YALE of Philadelphia, in this paper discussed the pathology of dilatations of the aorta, the importance of the use of the fluoroscope as an aid in diagnosis, and the sphygmomanometer readings. He advocated treatment with the static condensed current followed by vibration of the seventh cervical interspace, and reported cases treated by this method.

Diathermic Treatment of Thrombo-Angeitis Obliterans.—Dr. WILLIAM T. JOHNSON of Philadelphia said that this was a thrombotic process, which occurred in both arteries and veins, usually in the lower extremities, probably caused by some microbial agent. The failure in nutrition went on to gangrene, and amputation became imperative. The treatment consisted in applying the high frequency current by the diathermic method, one suitable electrode being placed over the toes, which were properly protected, and the other on the limb at a point above the manifestations of the disease. Great care must be taken to avoid burning. The current strength was largely determined by the sensations of the patient, although it was best not to exceed 500 milliamperes. Daily treatments should be given.

Report of a Case of Polyneuritis of Motor Type.—Dr. WILLIAM MARTIN of Atlantic City reported this case. The etiological factor in the case was of a virulent toxic type, at the time thought to be uremic, occurring at mid-term of pregnancy. Evacuation of the uterus stopped the seizure, but left the patient with a practical paralysis of the voluntary muscles and some of the organic functions. Loss of motion and sensation in legs was complete. Treatment was by the use of the static wave over the spine, sinusoidal and interrupted constant current, alternated, in labile manner, applied to affected parts. Spinal vibration and vibration to motor points were added to the above. The patient made a complete recovery.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

MASSACHUSETTS STATE BOARD OF REGISTRATION IN MEDICINE.

September, 1914.

(*Concluded from page* 726.)

DIAGNOSIS AND THERAPEUTICS.

1. Mention three of the most frequent complications which may arise during an attack of lobar pneumonia. Give treatment for one of them.
2. What complications may arise in whooping-cough? What means should be adopted in the treatment of the disease to prevent them?
3. Define and give etiology of Ludwig's angina (cellulitis of the neck).
4. Give the pathognomonic symptom or symptoms, if such there be, of malaria. Also your treatment for that disease.
5. Write a page on the causes, symptoms, and treatment of exophthalmic goiter.
6. Give description, causes, and treatment of a case of urticaria.
7. Patient, a man 44 years of age, began a year ago with frequent attacks of vertigo, persistent and increasing headache, difficulty of vision and speech, convulsions without loss of consciousness, and at times nausea and vomiting. What is your diagnosis?
8. Outline a course of treatment for a case of gout.
9. Give causes, symptoms, and treatment of herpes zoster.
10. What indications or symptoms would call for the administration of ergot? If your practice does not include the use of drugs, what methods would you employ in place of the drug?

OBSTETRICS AND GYNECOLOGY.

1. Why should the blood-pressure be taken during pregnancy?
2. How should a pregnant woman be advised concerning the care of her digestive organs during pregnancy?
3. How would you diagnose a twin pregnancy at the eighth month?
4. Can you always make a differential diagnosis between uterine fibroma and pregnancy? If so, how?
5. If a hand is found presenting during labor, what should be done?
6. What would lead you to suspect a dead fetus in utero at the eighth month? What questions would you ask the parents, and what advice would you give?
7. What is the explanation of pus tubes? Assuming that the patient may not be operated on, what will probably be the future history of such a case?
8. What is the law relating to the care of the eye of a new-born child?
9. Give the etiology and treatment of icterus neonatorum.
10. How do you treat caput succedaneum?

SURGERY.

1. A woman 60 years of age, on rising in the morning, finds that her urine is distinctly bloody. She has no pain. What investigations should be made?
2. A patient has a continued fever lasting two weeks, ranging from 99 in the morning to 101.5 at night. She has two to four loose stools daily. The tongue is coated. Her abdomen is slightly tender to pressure to the left of the bladder region, and below the margin of the ribs 1 inch to the right of the right mammary line there is another tender area with slight resistance. Two years ago she had her breast removed for a so-called fibroid tumor. She has a negative Widal. She has a white count of 15,000. What would you do?
3. What are the indications for splenectomy?
4. What would you do for osteomyelitis of the tibia?
5. What is meant by artificial pneumothorax?
6. Discuss the surgical problem of abscess of the lung.
7. Describe briefly a case of abdominal fat necrosis, and state how it should be treated.
8. Give the etiology of cholelithiasis.
9. Under what circumstances may anastomosis of blood-vessels be employed?
10. A patient has round cell sarcoma of the glands of the neck. What may be done, and what is the probable history following treatment?

PEDIATRICS AND TOXICOLOGY.

1. What standards should be required of milk producers?
2. Give etiology and treatment of cholera infantum.
3. What would indicate a pyloric stenosis in early life?
4. Give your treatment for chorea.
5. What are the dangers incident to removal of tonsils and adenoids?
6. What are the different forms of congenital herniæ; what should be done in each case?
7. What is the cause of hydrocephalus? What treatment would you recommend?
8. Describe a case of toadstool poisoning and give treatment.
9. Differentiate strychnia and belladonna poisoning.
10. Describe clinically and pathologically chronic lead poisoning.

ANSWERS.

DIAGNOSIS AND THERAPEUTICS.

1. Three important complications which may occur in lobar pneumonia: Pleurisy, pericarditis, and endocarditis. *Pleurisy* may require morphine to alleviate the pain, or heat or cold, or a blister; a saline cathartic is of service; and aspiration may be indicated.

2. *Complications of whooping-cough:* Hemorrhages, bronchopneumonia, emphysema, and pleurisy. Fresh air, isolation, opiates, chloral, bromides, belladonna and quinine are among the most useful remedies. Kilmer's belt is said to be of service.

3. *Ludwig's angina* is an acute suppurative inflammation of the cellular tissue in front of the neck; it begins in the floor of the mouth, generally in the submaxillary gland. It is due to infection by the *streptococcus pyogenes*, and may follow diphtheria, scarlatina or injuries.

4. Chills, fever, and sweating constitute the typical paroxysm of malaria.

"The specific for malarial fever is quinine, which, properly given, destroys the parasites in the blood. It should be given promptly, and in the early stages in doses up to 30 grains in the twenty-four hours, and continued in doses sufficient to produce moderate singing in the ears for a week after the parasites have disappeared from the blood. The dose may then be gradually reduced, but the drug must be continued for at least three months. It may be given in capsule or in acid solution. In grave or pernicious cases it may have to be given hypodermically, to secure a prompt effect, in doses up to 10 grains thrice daily. The injection should be made into muscle, not subcutaneously. In chronic cases small doses of quinine, if plasmodia are present, are enough."—(Wheeler and Jack's *Practice of Medicine.*)

5. *Exophthalmic goiter* is a disease of unknown origin, occurring most frequently in females. Fear, fright, worry, excitement, shock, overstrain, and thyroid derangement have all been suggested as etiological factors. The *symptoms* are tachycardia, intention tremor, enlargement of the thyroid and exophthalmus. The upper eyelid is retracted, and there are other eye symptoms. Treatment consists in rest (both physical and mental), fresh air, moderate diet, absence of excitement; belladonna, bromides and other drugs have been recommended and also condemned; recently serum treatment has been advocated; surgical treatment (partial thyroidectomy, and excision of the superior ganglion of the cervical sympathetic nerve) has been recommended, and if adopted local anesthesia should be used.

6. "*Urticaria* is an inflammatory affection of the skin, characterized by the formation of evanescent whitish and pinkish elevations, attended by intense itching. It usually arises from some disturbance of the alimentary canal. Certain articles of food, such as lobsters, crabs, sausage, strawberries, etc., and certain drugs, as quinine, copaiba, cubebs, salicylic acid, etc., are prone to produce the affection. The treatment consists in the use of emetics, laxatives, and enemas to exnel the offending substances. Intestinal antiseptics should then be administered. Salol or phenacetin (gr. 5-10) may be given in subacute cases. Lotions containing carbolic acid, menthol, liquor carbonis detergens, benzoic acid, sodium carbonate, etc., may be used to relieve the itching."—(*Pocket Cyclopedia.*)

7. Cerebral tumor, or arteriosclerosis of cerebral arteries.

8. "*Treatment of gout.*—During the acute stage, the limb must be kept at rest and elevated, and hot fomentations should be applied to the joints. The diet should consist of milk and barley water, and farinaceous foods. Plain water may be freely taken, and the mineral waters have no advantage over it. Medicinal treatment should begin with a mercurial purge, and the bowels should be daily opened by a saline laxative. Colchicum wine should be given every four hours, along with citrate of potassium and hyoscyamus. It should be stopped when the pain is relieved, and if it fails morphine may be required. Laudanum or lead and opium lotion may be added to the fomentations. When the acute attack subsides, gentle friction or shampooing, and passive movements are beneficial. In *chronic gout*, careful regulation of diet, avoidance of food rich in nucleins (sweetbreads, liver, kidneys), moderation in the use of alcohol, or still better, total abstinence, and proper exercise are the principal points to remember. Arsenic, strychnine, quinine, guaiacum, and iodide of potassium may all be useful in different cases. A course of waters at a spa is valuable from the regular life that it ensures."—(Wheeler and Jack's *Practice of Medicine.*)

9. HERPES ZOSTER. *Causes.*—"The eruption and consequent neuralgic pains are the immediate result of an inflammation of the posterior ganglia of the spinal nerve roots; but the cause producing this condition is obscure. Among the many that have been suggested are: cold, injuries to nerves, anemia, malaria, and the medicinal use of arsenic. *Symptoms.*—The affection begins with neuralgic pains, either of a burning or lightning-like character, with slight febrile phenomena, followed by the appearance of papulovesicles along the tract of pain; these soon become vesicles situated on bright red, highly inflamed bases. The vesicles are about the size of pin heads, or, perhaps, a little larger; usually discrete, although they frequently coalesce, forming irregular patches, appearing in groups until the third to the fifth or even tenth day, when they gradually desiccate, and at the end of the second week nothing remains except occasionally a slight scar, which may disappear or become permanent. When the eruption is at its height, it is perfect in its anatomic formation, each vesicle being well shaped and seated on a bright red, inflamed patch of skin, and distended with a translucent, yellowish fluid. The vesicles show no tendency to rupture spontaneously. In rare instances they may become purulent, hemorrhagic, or gangrenous. The eruption is almost invariably confined to one side of the body, although in rare instances it is seen upon both sides. It is usually found upon well known nerve tracts. Recurrence is rare. *Treatment.*—The pain will require the administration of antipyrin, gr. xv, every three or four hours; phenacetin, gr. v, every three hours; sodium salicylate, gr. x to xv, every three hours; or if very severe, morphine, gr. ⅛, and atropine, gr. 1/100, hypodermically near the lesion. A combination of zinc phosphide and nux vomica is sometimes of value. Locally, aristol, boric acid, zinc oxide, and similar powders dusted over the lesions are of value. Flexible collodion, containing morphine, painted over the vesicles serves to protect them and lessen the pain."—(Hughes' *Practice of Medicine.*)

10. ERGOT. *Therapeutic indications:* To promote uterine contractions during third stage of labor; fibroids, menorrhagia, postpartum hemorrhage. Some forms of amenorrhea and dysmenorrhea, dysentery, arterial hemorrhage, congestive headache, laxity of sphincters, of bladder or rectum, hemorrhoids, aneurysm, diabetes, urinary incontinence, direct paralysis of the sphincter vesicæ, atonic spermatorrhea.

OBSTETRICS AND GYNECOLOGY.

1. The blood-pressure should be taken during pregnancy, because a continuously increased pressure is one of the earliest evidences of a toxemic condition.

2. The patient should be advised to avoid indigestible or very highly seasoned articles of food; her diet should be nutritious and sufficient. In patients who have previously had unduly heavy children it would be well to restrict the carbohydrates and fluids during the last two or three months of pregnancy. The tendency to constipation, which may be increased during pregnancy, should be overcome by laxative foods or fruit.

3. Multiple pregnancy may be diagnosed by the following signs: (1) The abdomen may be irregular in shape and may show a sulcus indicating the space between the two fetal sacs; (2) persistent and increased tension of the uterine walls; (3) two fetal heart sounds

may be heard; (4) multiplicity of small parts; (5) two fetal heads or backs may be palpated; (6) diminished fetal mobility. Sometimes it is difficult to diagnose the condition before the birth of one child.

4. At times it is difficult to make a differential diagnosis between uterine fibroma and pregnancy; but *if you can afford to wait the course of time will prove the* diagnosis. The following table is from Dudley's *Gynecology:*

PREGNANCY.	FIBROIDS.
1. History of pregnancy.	1. Absent.
2. Uterus soft and elastic.	2. Usually irregular in form and harder.
3. Consistence varies with uterine contraction.	3. Uterine contractions not marked—very important sign.
4. Cervix soft.	4. Hard or not so soft.
5. Regular and uniform increase in size of uterus.	5. Growth slower and irregular.
6. Later, ballottement, fetal heart-tones.	6. Absent.
7. Palpation of fetus.	7. Palpation of myoma.

5. When a hand is found presenting: In head presentations if the condition be diagnosed before rupture of the membrane nothing should be done until the cervix is completely dilated. Then the hand may be pushed up to allow the head alone to engage in the brim. If this fail, forceps may be applied to the head if there be no risk of catching the arm, or version may be carried out. In extracting with forceps the arm may slip up. When the case is made out only after the arm is well engaged in the brim, the head should be delivered with forceps. In breech presentations, sometimes the hand presents. Nothing need be done. The hand may or may not slip up.—(Jewett's *Obstetrics.*)

6. Symptoms of death of fetus are: cessation of the signs of pregnancy, the abdomen and uterus are both diminished in size, the fetal heart sounds and movements are absent, there is no pulsation in the cord, the mother's breasts become flaccid and occasionally secrete milk. If the fetus has been dead for some time crepitus of its cranial bones may be elicited.

Fetal death. Causes: Syphilis, apoplexy of placenta or membranes, diseases of ovum or uterus, nephritis, poisoning (including tobacco and alcohol). *Positive sign:* Failure, after repeated examinations, to get the fetal heart sounds and movements after they have been obtained on previous occasions. *Treatment:* Induction of abortion or premature labor, at once, with complete removal of the contents of the uterus.

Questions will be on the line of the *cause* of the condition; and advice will be given about the treatment of the causal condition.

7. *Pus tube*, or pyosalpinx, or purulent salpingitis is a "disease caused by the septic and gonorrheal varieties of endometritis. The inflammation of the uterine mucosa extends directly to the tubes and produces in them the same form of infection. Purulent salpingitis is a very common disease, and is, with very few exceptions, the cause of the various inflammatory lesions met in the pelvis. The vast majority of cases that are due to sepsis are puerperal in origin, and they even exceed in number those that are due to gonorrhea. In nearly all instances where the endometrium is the seat of a gonorrheal or septic infection the tubes become involved; on the other hand, however, we undoubtedly meet cases in which the disease remains confined to the uterine cavity and the oviducts escape entirely.

"There are several ways by which the infection may escape from the tube to the adjacent structures: 1. The purulent secretion may escape through the abdominal opening of the tube. 2. The infection may be carried by the lymphatic channels through the walls of the tube. 3. The pathogenic organisms may penetrate the mesosalpinx and infect the cellular tissue of the broad ligament. 4. A pyosalpinx may rupture and its contents escape into the pelvic cavity. 5. Adhesions may form between the tube and the surrounding structures and later on the infection may pass through them to the adherent organ.

"A gonococcus infection starts as a subacute or a chronic condition and is not, as a rule, immediately dangerous to life. A streptococcus infection, on the other hand, is acute or active from the beginning and is always perilous to life from the first. Both forms usually cause permanent damage to the tubes as well as pelvic adhesions, sterility, and chronic invalidism, and they also endanger the life of the patient from recurrent attacks of peritonitis, fresh infection, rupture of a tubal abscess, and exhaustion following a prolonged suppuration."—(Ashton's *Gynecology.*)

8. OPHTHALMIA NEONATORUM. *Prophylaxis:* Whenever there is a possibility of infection, or in every case, wash the eyelids of the newborn child with clean warm water, and drop on the cornea of each eye one drop of a 1 or 2 per cent. solution of nitrate of silver immediately after birth.

Treatment: Wash the eyes carefully every half hour with a saturated solution of boric acid; pus must not be allowed to accumulate. Two drops of a 2 per cent. solution of nitrate of silver must also be dropped on to the cornea every night and morning. The eyes must be covered with a light, cold, wet compress. The patient must be isolated, and all cloths and compresses used must be burnt.

9. *Icterus neonatorum* is caused by the resorption of bile, due to the small caliber of the biliary duct; or to bacterial infection of the blood. Treatment is, as a rule, unnecessary; a mild laxative or enema may be given; in severe cases treatment is of no use.

10. *Caput succedaneum* requires no treatment as it disappears gradually within a few weeks.

SURGERY.

1. The source of the blood should be determined. "In *renal* hematuria the blood is intimately mixed with the urine, individual red cells are usually decolorized, and blood casts are found. If the blood is from the *pelvis of the kidney*, or the *ureter*, coagula corresponding in shape to the pelvis, or the ureter, may be found. It may be necessary to employ ureteral catheterization. In hemorrhage from the *bladder*, the blood and the urine are not so distinctly blended, the clots may be of such an irregular form and large size as to indicate their origin, and the individual cells retain their normal appearance. The cystoscope may be required to determine this point. If the blood is from the *urethra* it ordinarily drips away spontaneously, and if the urine is voided the last portion is clear."—(Butler's *Diagnostics of Internal Medicine.*)

2. With no more information than that given in the question I would not advise anything to be done.

3. *Splenectomy is indicated* in some cases of movable spleen, hypertrophy, injury and tumors of the spleen.

4. *Osteomyelitis of the tibia.* "Treatment must be very prompt. A free incision must be made through the periosteum and the pus evacuated. In any case, whether pus is found or not, the surface of bone must be gouged away to expose the medulla freely, and any gangrenous tissue scraped out. The cavity must then be washed out and freely drained. The wound in the soft structures is not closed in any part. If symptoms of pyemia occur, it may be necessary to amputate the limb through the joint or bone above, so as to cut off the source of the emboli. When a large portion of, or the whole diaphysis is necrosed there are two courses; either to cut short the disease by removing the dead portion at once, or to leave the sequestrum to stimulate the formation of an involucrum. Where there is a single bone, as in the arm and thigh, the sequestrum is left; where there is a double set of bones, as in the forearm and leg, the sequestrum is removed at once. Celluloid, zinc, and ivory rods have been inserted to stimulate osteogenesis. In most cases it is doubtful how much bone is actually dead, so that it is better to provide free drainage, wait six weeks or longer, and then open up the cloacæ in the newly formed involucrum to remove the sequestrum. The cavity heals by granulation."—(*Aids to Surgery.*)

5. *Artificial pneumothorax* is a condition of pneumothorax produced by the injection of nitrogen (or other gas) into the pleural sac; it has been used for the cure of phthisis.

6. "*Pulmonary abscess* when acute is usually a sequel of septic pneumonia, and is often associated with gangrene of the lung. Chronic abscess may be due to the spread of an empyema or of a hepatic abscess to the lung. The sputum is abundant, yellow, and cream like, and contains elastic fibers and hematoidin crystals. The physical signs of a cavity in the lung are present, and this may be localized by the *x*-rays. The result of pneumonotomy in such cases is on the whole satisfactory. Pyemic abscesses are usually multiple, and therefore not so amenable to surgical treatment."—(Thomson and Miles' *Manual of Surgery.*)

7. "*Fat necrosis* is a common concomitant of acute hemorrhagic and gangrenous pancreatitis, and may be observed also in association with chronic suppurative and chronic interstitial pancreatitis. It occurs as disseminated or multiple minute foci in or upon the pancreas, and as larger foci (2 to 3 mm. in diameter) in the fat of the omentum, and of the subperitoneal and retroperitoneal tissues, and sometimes in the pericardial and subcutaneous fat. Extremely large foci have occasionally been observed. The foci are whitish or yellowish and opaque (in marked contrast to the translucent yellow of the normal fat), and they are frequently surrounded by a narrow zone of hemorrhage. They consist of lime and certain fatty acids. Flexner has demonstrated the presence of the fat splitting ferment (presumably that of the pancreatic juice) in distant necrotic foci (subcutaneous and peritoneal fat), as well as in the foci in the immediate vicinity of the pancreas. Fat necrosis is believed to result from diffusion of the pancreatic ferment in consequence of hemorrhagic destruction of the gland or obstruction of the ducts."—(Kelly's *Praetice of Medicine.*)

Treatment: "As the diagnosis of these conditions can rarely be made with certainty, an exploratory laparotomy must be performed. After the abdomen is opened, the recognition of fat necrosis, evidenced by the minute, opaque, white areas scattered through the omentum and mesentery, and the presence of a serohemorrhagic effusion, go far to establish the diagnosis. The most simple and direct access to the pancreas is obtained by making an opening in the gastrocolic omentum, pulling the stomach upwards and the transverse colon downwards, and incising the posterior parietal peritoneum. The gland thus exposed is then palpated so as to localize the area of disease, and, after packing off the peritoneal cavity, the pancreas is incised. Necrosed tissue is removed with the spoon or scoop, and the cavity packed with gauze. If there is an accumulation of blood, as in the hemorrhagic form, this is removed, and, to prevent further extravasation, the cavity must be firmly packed. If there is a collection of pus, provision must be made for drainage either through the abdominal wound or through a separate opening made behind in the right or left costovertebral angle. If there is also cholelithiasis, this must be dealt with later."—(Thomson and Miles' *Surgery.*)

8. *Etiology of cholelithiasis.*—Any obstruction to the free outflow of bile, catarrhal inflammation of the bile ducts, bacteria, foreign bodies; excess of carbohydrate diet and sedentary habits, with constipation are predisposing causes.

9. *Anastomosis of blood vessels* has been employed in cases of threatened or commencing gangrene of the extremities, associated with arteriosclerosis.

10. If practicable, the whole mass should be removed; if there are extensive adhesions removal is impossible. Secondary growths, and metastasis to viscera are likely to occur, and exhaustion, shock, and death ensue.

PEDIATRICS AND TOXICOLOGY.

1. *Essentials for the production and preservation of pure dairy milk:* Vaughan's rules are as follows: "(1) The cows should be healthy, and the milk of any animal which seems indisposed should not be mixed with that from the healthy animals. (2) Cows must not be fed upon swill or the refuse from breweries or glucose factories, or upon any other fermented food. (3) Milch cows must not be allowed to drink from stagnant pools, but must have access to fresh, pure water. (4) The pasture must be freed from noxious weeds, and the barn and yard must be kept clean. (5) The udders should be washed and then wiped dry before each milking. (6) The milk must be at once thoroughly cooled. This is best done in the summer by placing the milk can in a tank of cold water or ice water, the water being of the same depth as the milk in the can. It would be well if the water in the tank could be kept flowing, and this will be necessary unless ice water is used. The tank should be thoroughly cleaned each day to prevent bad odors. The can should remain uncovered during the cooling, and the milk should be gently stirred. The temperature should be reduced to 60° Fahr., or lower, within an hour. The can should remain in cold water till ready for delivery. (7) Milk should be delivered, during the summer, in refrigerated cans or in bottles about which ice is packed during transportation. (8) When received by the consumer it must be kept in a clean place, and at a temperature some degrees below 60° Fahr."

2. CHOLERA INFANTUM. *Causes:* It is caused by microorganisms. It is very rarely seen in breast-fed babies, being met with almost invariably in those artificially fed. It is most common among the poor of large cities during very dry and hot summers, and it often assumes an epidemic form. *Treatment.*—When vomiting is very severe, the stomach should be washed out with a warm solution, such as saline, or ½ to 1 per cent. boric acid, or 1 per cent. sodium bicarbonate, or a solution of resorcin, 1 in 5,000. After this drop doses of the glycerin of carbolic acid in a teaspoonful of water every hour should be tried, or small doses of calomel placed on the tongue may be given. All food by the mouth had better be withheld, and only small pieces of ice given to suck, or if the child be very young, the ice may be wrapped in a cloth, which it may be allowed to suck. At the same time a sinapism is applied to the epigastrium, one part of mustard to four parts of flour. Dr. Holt relies most on the hypodermic injection of morphine and atropine, and he advises repeated small doses as being preferable to one large dose. For a child a year old 1/50 grain of morphine with 1/800 grain of atropine may be injected and repeated in an hour. It soothes, and the child falls into a quiet sleep for a few hours, after which the stomach will retain small quantities of light nourishment. After this lull in the attack, one or other of the antiseptic drugs may have a trial."—*Aids to Diseases of Children.*)

3. *Indications of pyloric stenosis.*—Persistent and projectile vomiting, scanty feces and urine, emaciation, dilated stomach with collapsed intestines; sometimes a thickening around the pylorus may be felt.

4. *The treatment of chorea* consists in rest and the avoidance of overexertion of any kind. Correct any error of refraction or gastrointestinal disturbance. Tea, coffee, candy, cakes, and sweets should not be a part of the diet of children. Milk should be given in large quantities. A daily warm bath, systematic massage, and electricity to the spine are useful. Chloral and bromide are occasionally necessary to control the movements. Arsenic in Fowler's solution, three drops three times daily, diluted, may be given to a child 6 to 9 years of age, increasing one drop every day. Constitutional symptoms of the arsenic-poisoning should be watched for carefully. When anemia is present, iron in Blaud's pill, gr. 5-15, or the tincture, gtt. 10-30, three times daily, may be given to a child. Quinine may be given in large doses. The fluid extract of cimicifuga (♏ 10-20) may be given to a child 6 years old, increasing the dose until headache, dizziness, etc., are produced. Trional and chloralamid are indicated if the sleep is disturbed. Recurrence is prevented by the continuance of the treatment just given. Complications, such as rheumatism and endocarditis, will require the same treatment as if occurring independently. The building up of the general health and moral and suggestive treatment are useful in all forms of the disease.—(*Pocket Cyclopedia.*)

5. *Dangers incident to removal of tonsils and adenoids:* Laceration of surrounding tissues, hemorrhage, asphyxia, death from the anesthetic particularly in children who show evidences of the status lymphaticus.

6. *Varieties of congenital hernia: Congenital inguinal hernia*, in which the sac is formed by the funicular process; sometimes the sac lies above and distinct from the tunica vaginalis (*funicular* variety); and sometimes the sac is continuous with the tunica vaginalis (*vaginal* variety). *Treatment* consists of a well fitting truss; after three years of age operation may be considered. There is also a *congenital umbilical* hernia, in which the intestine protrudes into the base of the umbilical cord; it is a rare condition and demands prompt laparatomy with reduction of the intestine, and closure of the umbilical opening by sutures.

7. "*Acute hydrocephalus*, is a synonym for tuberculous meningitis. *Chronic hydrocephalus*, to which the term is now usually restricted, may be (1) *Congenital.* The causes are not known, but there is sometimes a family proclivity to the affection. (2) *Mechanical:* due to obstruction of the veins of Galen, as by the pressure of a tumor, or to blocking of the foramen of Mengendie, as by meningitis, or of the iter. (3) *Idiopathie.* This form is due to serous effusion into the ventricles, and may occur at any age. A serous meningitis and an angioneurotic condition have both been invoked to explain it.

"*Treatment* is very unsatisfactory, if not hopeless. (1) Pressure by strips of plaster or elastic bands. (2)

Puncturing at various intervals, and drawing off the fluid. The ventricles may be tapped, and direct drainage established, or the fluid may be more slowly removed by puncture of the subarachnoid sac in the lumbar region."—(Wheeler and Jack's *Handbook of Medicine.*)

8. *Symptoms of toadstool poisoning:* These sometimes do not appear for several hours, and there may be no disagreeable taste to indicate the poisonous nature of the food. Then there is likely to be sudden and great prostration, with cold perspiration, headache, amaurosis and stupor, or wild delirium. There is frequently marked cyanosis, and sometimes icterus. Usually there is some fever, with rapid, feeble pulse. The urine is scanty and albuminous or bloody and sometimes suppressed. Death usually occurs in from eighteen hours to three or four days from exhaustion or cardiac paralysis. There is usually much abdominal pain and sometimes diarrhea, with rice water discharges closely resembling cholera. *Treatment:* Elimination of the poison by emetics and cathartics and the hypodermic use of atropine. The stomach tube is not usually very successful in removing the poisonous material, as it clings tenaciously to the walls of the stomach. There is no chemical antidote known. Atropine is the best physiologic antidote and frequently gives very prompt relief.—(Riley's *Toxicology.*)

9. *Symptoms of belladonna poisoning:* In the first stage, that of delirium, there are, dryness of the throat, thirst, difficulty of deglutition and spasms upon swallowing liquids, face at first pale, afterwards highly reddened, pulse extremely rapid, eyes prominent, brilliant, with widely-dilated pupils, complete paralysis of accommodation, disturbances of vision, attacks of giddiness and vertigo, with severe headache, followed by delirium, occasionally silent or muttering, but usually violent, noisy, and destructive, accompanied by the most fantastic delusions and hallucinations. Usually the urine is retained, and the body temperature is above the normal. The delirium gradually subsides, and the second stage, that of coma, is established, with slow, stertorous respiration, and gradually failing pulse, until death occurs from respiratory or cardiac paralysis, or sometimes in an attack of syncope during apparent amelioration.—(Witthaus.)

The *symptoms of poisoning by strychnine* are as follows: "Strychnine produces a sense of suffocation, thirst, tetanic spasms, usually opisthotonos, sometimes emprosthotonos, occasionally vomiting, contraction of the pupils during the spasms, and death, either by asphyxia during a paroxysm, or by exhaustion during a remission. The symptoms appear in from a few minutes to an hour after taking the poison, usually in less than twenty minutes; and death in from five minutes to six hours, usually within two hours."

10. *Chronic lead poisoning:* "The early symptoms are often very obscure. Various symptoms of indigestion are first noticed with progressive emaciation and mental depression, with anemia and a peculiar whiteness of the skin probably due to contraction of the peripheral capillaries. Sometimes a blanching of the fundus of the eye or amaurosis due to a similar contraction of the capillaries is an early symptom. Then a twisting grinding pain around the umbilicus comes on and gradually becomes more severe. It may be relieved by pressure. The abdomen is hard and retricted. As a rule the bowels are obstinately constipated, but occasionally there may be scanty, hard, clay colored, painful evacuations. The urine is diminished or suppressed, the skin sallow, cold, and clammy, the breath fetid, mouth and throat dry, and a blue line on the edge of the gums next the teeth, most noticeable next to the incisors, which are discolored and brown. This blue line may be developed as early as three days after ingestion of the poison. The gums are tender and bleed easily. The pulse is generally decreased in frequency. As the case progresses, or after repeated attacks, paralysis begins to appear, affecting chiefly the extensor muscles of the forearm, though not limited to them, sometimes extending to the interossei, and generally affecting first those muscles which are most imperfectly supplied with blood. The paralysis is symmetrical, generally affecting the corresponding muscles in both arms, and is often preceded by numbness of the fingers and hands. The affected muscles become more or less atrophied, leading to general debility ("lead palsy"). The nervous system becomes affected, and headache, vertigo, amblyopia, amaurosis, delirium (sometimes furious) and epileptoid convulsions precede death. Albuminuria is frequently, and jaundice occasionally, present. In many cases severe pain in the joints is one of the most prominent symptoms, probably due in some manner to interference with the functions of the kidneys.

Treatment: "For the removal of lead from the tissues with which it has entered into a more or less stable combination potassium (or sodium) iodide in doses of 10 grains three times a day has long been recognized as one of the best. It is but just to say that its efficacy has recently been called in question by some of our best clinicians. Warm sulphur baths have been found useful. Atropine or morphine and atropine may be given hypodermically for relief of the colic. Cocaine hypodermically has also been successfully used to relieve both the pain and constipation. Calomel and gamboge, castor oil, or olive oil, may be given to overcome the constipation. Belladonna or hyoscyamus may be added with advantage to either of the cathartics. Alum sometimes acts well as a cathartic in these cases. As a prophylactic measure tea as a drink and a dose of sulphur occasionally, both act by precipitating lead from solution."—(Riley's *Toxicology.*)

BULLETIN OF APPROACHING EXAMINATIONS

STATE	NAME AND ADDRESS OF SECRETARY	PLACE AND DATE OF NEXT EXAMINATION†	
Alabama*	W. H. Sanders, Montgomery	Montgomery	Jan. 11
Arizona*	J. W. Thomas, Phoenix	Phoenix	Jan. 4
Arkansas	T. J. Stout, Brinkley	Little Rock	Nov. 9
California	C. B. Pinkham, Sacramento	Los Angeles	Dec. 14
Colorado	David A. Strickler, Empire Building, Denver	Denver	Jan. 4
Connecticut*	Chas. A. Tuttle, New Haven	New Haven	Nov. 9
Delaware	J. H. Wilson, Dover	Dover	Dec. 14
Dist. of Col'ba.	E. P. Copeland, Washington	Washington	Jan. 11
Florida*	E. W. Warren, Palatka	Jacksonville	Dec. 7
Georgia	C. T. Nolan, Marietta	Atlanta / Augusta	Jan 1
Idaho*	Charles A. Dettman, Burke	Wallace	
Illinois	C. S. Drake, Springfield	Chicago	Jan.
Indiana	W. T. Gott, Crawfordsville	Indianapolis	Jan. 11
Iowa	G. H. Sumner, Des Moines	Des Moines	
Kansas	H. A. Dykes, Lebanon	Topeka	Feb. 8
Kentucky	J. N. McCormack, Bowling Green	Louisville	Dec. 14
Louisiana	E. L. Leckert, New Orleans	New Orleans	Dec. 2
Maine	F. W. Searle, Portland	Portland	Nov. 9
Maryland	J. McP. Scott, Hagerstown	Baltimore	Dec. 14
Massachusetts*	W. P. Bowers, State House, Boston	Boston	Nov. 9
Michigan	B. D. Harison, 205 Whitney Building, Detroit	Ann. Arbor	June, 13
Minnesota	T. McDavitt, St. Paul	Minneapolis	Jan. 4
Mississippi	E. H. Galloway, Jackson	Jackson	
Missouri	J. A. B. Adcock, Jefferson City	St. Louis	Dec. 13
Montana*	Wm. C. Riddell, Helena	Helena	April 4
Nebraska	H. B. Cummins, Seward	Lincoln	Nov. 10
Nevada	S. L. Lee, Carson City	Carson City	
N. Hampshire	Walter T. Crosby, Manchester	Concord	Dec.
New Jersey	H. G. Norton, Trenton	Trenton	
New Mexico	W. E. Kaser, East Las Vegas	Santa Fe	
New York	H. H. Horner, Univ. of State of New York, Albany	New York / Albany / Syracuse / Buffalo	Jan. 25
N. Carolina	H. A. Royster, Raleigh	Raleigh	June
N. Dakota	G. M. Williamson, Grand Forks	Grand Forks	Jan. 4
Ohio	Geo. H. Matson, Columbus	Columbus	Dec. 7
Oklahoma	J. W. Duke, Guthrie	Oklahoma City.	
Oregon	B. E. Miller, Portland	Portland	Jan. 4
Pennsylvania	N. C. Schaeffer, Harrisburgh	Philadelphia / Pittsburgh / Harrisburgh	Jan.
Rhode Island	G. T. Swarts, Providence	Providence	Jan. 6
S. Carolina	H. E. Boozer, Columbia	Columbia	June 13
S. Dakota	P. B. Jenkins, Waubay	Pierre	June. 13
Tennessee	A. B. DeLoach, Memphis	Memphis / Nashville / Knoxville	June
Texas	M. P. McElhannon, Belton	Dallas	Nov. 9
Utah	G. F. Harding, Salt Lake City	Salt Lake City	Jan 3
Vermont	W. Scott Nay, Underhill	Montpelier	Jan. 11
Virginia	J. N. Barney, Fredericksburg	Richmond	Dec. 14
Washington*	C. N. Suttner, Walla Walla	Spokane	Jan. 4
W. Virginia	S. L. Jepson, Charleston	Elkins	Nov. 9
Wisconsin	J. M. Dodd, Ashland	Madison	Jan 11
Wyoming	H. E. McCollum, Laramie	Laramie	

*No reciprocity recognized by these States.

†Applicants should in every case write to the secretary or all the details regarding the examination in any particular State

Tubercle Bacilli in the Circulating Blood.—C. R. Austrian and L. Hamman were unable to demonstrate the presence of tubercle bacilli in the blood in a single instance notwithstanding the fact that many of the patients when examined were in the last stages of the disease. In animals, when the disease remains localized in the lungs, tubercle bacilli are not found in the circulating blood. When the disease becomes generalized, as it does in the late stages of pulmonary infection and very soon after overwhelming intravenous injections, circulating tubercle bacilli are frequently demonstrable. The evidence presented points strongly against the mobilization of tubercle bacilli by the injection of tuberculin. A larger number of positive results was revealed by the method of animal inoculation than by the microscopical examination of the sediment obtained by treating blood according to the acetic-acid-antiformin method.—*Bulletin of the Johns Hopkins Hospital.*

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RHEUMATISM AND THE SKIN.

BY WILLIAM P. CUNNINGHAM, A.M., M.D.,

NEW YORK.

IN our feverish quest of the nimble bacillus we are apt to lose sight of the fact that fire will burn and cold will freeze and trauma produce inflammatory reaction. Tracing etiology through the microscopic lens we are deflected from the consideration of the truths discernible to the naked eye. We discredit the evidences of our senses and the deductions of our reason in referring all pathological manifestations to the activity of microorganisms. A blow on the head will kill without the intervention of a miliary aneurysm caused by the *Spirochæta pallida*. A wound of the chest will kill without the intervention of the pneumococcus. Fright will paralyze the cardiac ganglia without the preparatory meddling of the *Bacillus rheumaticus*. Carbolic acid will rapidly destroy the blood stream not only without the cooperation of any description of bacillus but with the actual coincidental destruction of every such wanderer as it may encounter in its onward sweep. Diabetic gangrene will inexorably advance upon the vital defences with never a suspicion of preliminary microbic complicity, the entire process being chemical and mechanical. The sudden exposure of an overheated head to the gratifying influence of a current of air may invite the terrifying phenomenon of Bell's palsy. The sudden checking of the general perspiration may eventuate in a prompt suppression of urine and all the other manifestations of acute nephritis. Prolonged defiance of the summer sun may bring about the extremely dangerous cerebral congestion denominated insolation. Prolonged subjection to the winter's cold may result in the loss of fingers, toes, and ears and the production of peripheral neuritis. The inordinate ingestion of alcohol will arouse a frenzy equal in all its horrifying details to that of the best authenticated microbic delirium. It will shrink and harden the liver and make the rectum bloom with hemorrhoidal profusion. It will bring to the nose and cheeks a brilliant efflorescence, occasionally diversified with shades of regal purple. Persistence will effect a change in the contour of the organ characterized by the development of irregular lobulations scientifically described as rhinophyma and popularly derided as "tomato" nose. And all this mischief comes about with never a hint of a microorganism! The mechanical causation of intestinal stasis with its far-reaching evil consequences, has been determined by the abdominal operators, and the question of germs becomes important only after the field has been long prepared by defective drainage. The various bacilli that haunt this serpentine sewer, are regularly swept away by the brisk efficiency of unimpeded peristalsis, and have no time to generate and exploit their peculiar toxins. In bowels that are regularly and effectually evacuated no opportunity is afforded for the multiplication of infective bacteria. Intussusception will plunge a rugged active child into an agonizing fight for life, with the implication of bacteria a secondary consideration. An endarteritis will cut off the circulation at a minute point in the gastric mucosa and the acid gastric juice will eat into the undefended tissue, producing a gastric ulcer without the assistance of any microorganism. Exophthalmic goiter, a common clinical picture of the most distressing character, is never referred to a microbic origin. The ingestion of certain vegetable substances induces a train of symptoms varying with the identity of the toxic alkaloids. We recognize the injurious effects of aconite, morphine, conium, tobacco, *et al.*, and realize that here we have definite and well differentiated pathological conditions in which there are no germs involved whatever!

The foregoing illustrations taken at random from hundreds that might be cited are not intended to discredit the incalculable service of the microscopist in the study of pathology. It would be idle and absurd to make any such attempt. The triumphs of his genius and patience are too striking and too numerous to suffer any diminution at the hands of ignorant detraction. The typhoid bacillus, the pneumococcus, the Klebs-Loeffler bacillus, the streptococcus, the staphylococcus, all the mighty host of pathogenic pigmies that swarm the defences of our anatomy seeking a point to break down our resistance, testify eloquently to the mental prowess and indefatigable energy of the man with the lens. But lest, in our intense enthusiasm, we be carried away from a correct perspective of the origin of disease, it is essential to give the germ only that consideration to which it is actually entitled and devote to other influences equally pernicious, a reasonable share of assiduity! For instance what a lamentable loss to medical science would be a blotting out of the discoveries of biological chemistry! Had the great minds that have evolved the fascinating principles of colloid chemisty been diverted from their purpose in the quest of microorganisms how gravely would the health of man have suffered!

With colloid chemistry came the great truth of acid intoxication. With this came the clearing up of many obscure phenomena, and the hopeful management of disease on the rational basis of neutralization. It might be impossible to prevent the assault of the germ upon the susceptible tissues, it might be quite as impossible to destroy it after its assault had been effected, but it was established that one of the gravest consequences was the production of an acidosis, and this could be met and counteracted by the administration of alkalies and neutral salts. The preservation of a normal meta-

bolism, and adequate elimination depend upon the absorptive capacity of the colloidal tissues of which our parenchyma is composed. If this is at its normal level function will be smooth and effective. If it is increased there occurs a turgescence of the thirsty tissues mechanically blocking the process of secretion, and wholly or partially putting the organ out of action. The cells of the kidney swell and we have suppression of urine. The cells of the cerebrum swell and we have stupor, delirium, and coma —all the manifestations of the old-fashioned but correctly and scientifically denominated "wet brain!" The cells of the lungs swell and we have a pulmonary edema. The colloid tissues of the eye swell and we have the increased ocular tension known as glaucoma. The colloid tissues of the larynx swell and we have edema glottidis. In general as well as local edema we have this same increased capacity of the tissues to absorb water. And invariably the agency thus effecting the hydration of the colloids is acid intoxication. Acid intoxication might be defined as the presence of acid in the tissues in sufficient amount to increase their absorptive powers. The smallest conceivable amount of acid will do this to a certain degree if it is not promptly neutralized! We are apt to picture acid intoxication as a "delirious" condition due to the circulation of a large amount of acid through the system. The actual fact is that it means the presence in the blood or cells of any (even the minutest) quantity of unneutralized acid toxin. Acid toxemia would be a more illuminating terms. A true acidemia means rapid dissolution. This is encountered only in circumstances such as carbolic acid poisoning. By acidemia we ordinarily intend to convey the impression of a lessened alkalinity or the tendency to the development of acid in excess of the system's power of immediate neutralization. It is to this tendency that the term "acidosis" is applied and while not an exactly scientific term it is so convenient and so generally accepted that its rejection would be a positive disadvantage.

Every pathological condition interfering with the proper oxygenation of the cells of the economy induces an acidosis. This is plain to see. If the cells do not receive their adequate supply of oxygen, the waste product (carbonic acid), accumulates and there is an acid intoxication local or general according to the extent of the asphyxia. If it is universal as in the acute attacks of cardiac asthenia, the cyanosis of the skin and mucous membranes, is accompanied by the agonizing struggle of pulmonary edema and the bulging eyes and ringing ears of edema of the brain. In general anasarca, we observe the consequences of the same cause more gradually developed. The extremities feeling first the loss of oxygen, because of their remoteness from the inefficient heart, in response to the local preponderance of carbonic acid absorb water from the blood and swell into the shapeless cold and purple masses that we frequently encounter. As the heart steadily flags in its efforts to overcome its handicap the edema advances up the limbs and eventually invades the abdomen and thorax. If by the aid of digitalis and recumbency the relative propulsive force of the left ventricle is sufficiently increased, oxygen begins to find its way again into the acidulated tissues and they at once begin to yield up the water they had absorbed. The kidneys suffering like the subcutaneous tissues for want of oxygen are engorged and unable to perform their function and oliguria results. This may proceed also from advanced arteriosclerosis where we have practically the same defect of oxygenation owing to the insuperable resistance to the action of an otherwise capable heart. It is a noteworthy fact that anesthetics such as alcohol, chloroform, and ether, and poisons such as morphine, atropine, cocaine, and strychnine, and the toxins of the pneumococcus, *Bacillus typhosus*, et alia sui generis, and metallic salts such as arsenic and lead, because of their tendency to reduce the amount of oxygen in the organism at large have the same effect upon the kidney as inadequate circulation, and induce partial or complete suppression.

An abnormal dietary throwing upon the eliminative organs too much of the product of protein metabolism overturns the nicely balanced neutrality of the colloids, and promptly absorbing water from the blood and lymph channels they swell to proportions more or less obstructive to function and we get a picture of scanty urine, "bilious" vomiting, and "congestive" headache.

The summary of the teaching of colloid chemistry is that any ingesta, increasing the acidity or upsetting the neutrality of the cell, or any physical condition lessening the supply of oxygen to the same will cause it to become waterlogged and incapable of efficient action. The consequent symptoms vary with the peculiar function with which it is endowed. If the grand basic principle is kept in mind, the details of its application will afford very little difficulty. If you recall that your pneumonia patient is afflicted not only with a congestion of the lung, but also with an acidosis consequent on insufficient oxygenation of the blood, you will have a clearer grasp of the problem to be met and will resort to measures much more beneficial to the sufferer, than if you hammer away at the one fixed idea of whipping up his heart to overcome obstruction. It is obvious that oxygen being the serious lack, it should be provided if possible from the beginning and not be deferred until cyanosis proclaims the desperate state of the asphyxiated tissues. Better to prevent this deplorable contingency than engage in a mortal combat upon its appearance. Having endeavored to bring out the essential points in the problem of acidosis it will be interesting and instructive for us to note their applicability to the question of dermatology.

The etiology of rheumatism is disputed. On the one hand it is asserted to be an infective disease with a long suspected but as yet unidentified bacillus. With equal positiveness it is asserted to be a manifestation of disordered metabolism due to improper nutriment in persons predisposed. Still other partisans lay it to the door of intestinal stasis and affect an airy indifference to both the microbic and metabolic hypotheses, maintaining with a fair show of reason that if it were not for the inactivity of the gut the germ would never effect an entrance into the circulation or the metabolism would never be sufficiently disturbed to constitute a toxemia. Leaving this controversy to those with the time and inclination to pursue it let us be content with the practical conclusion that under any theory of origination, the eventual process is an acidosis of the intensest type, and must be dealt with accordingly. The urine is extremely acid, the perspiration also, and the normally alkaline saliva now turns litmus red. There are a few cutaneous abnormalities associated with rheumatism so persistently that there has grown up a consensus of opinion regarding them. Purpura is one of these. It is common enough to come within the experience of every clinician. It is so readily recognized that it is

rarely overlooked. It occurs on the lower extremities and its appearance may be punctate, guttate, nummular, or fantastically traced in large irregular patches in the skin. The spots are usually not uniform and the outlines, while corresponding in a general way to the terms employed, are ragged and uneven. There is a preceding or concomitant arthritis as a rule.

Erythema multiforme, as its name suggests, is an eruption of a varied configuration, appearing suddenly and accompanied by a sensation of heat. There may be erythematous patches, large flat papules, vesicles, or bullæ. There are sometimes wheels within wheels, that is circinate lesions surrounded by others. Three rings may be thus disposed. Erythema iris is the title given to this peculiar and attractive arrangement. The inner circle being the oldest begins to fade the first and assumes the hue of a receding ecchymosis. If there are three rings there will be three shades of color. This variegation has been held to bear a slight resemblance to the iridescence of the rainbow. Hence the picturesque nomenclature. If the eruption is vesicular it may follow the same disposition, and we shall have a central vesicle surrounded by a rim of vesicles or even by two. This has been dubbed herpes iris. The ordinary flat papules that constitute the greater part of the eruption are frequently marked with a characteristic central depression. They have been compared to miniature targets.

Occasionally bullous lesions testify to the severity of the exciting cause. These may be of any size and many forms. They may be round, oval, crescentic, angular, or stellate. A single bulla may occupy an entire ear. A string of bullæ may encompass the neck like a rope of pearls. They may be few or numerous. They may occur alone or interspersed with the commoner manifestations of the disease, whose favorite sites are the wrists and ankles, the back of the hands and fingers. The sides of the neck may be invaded, and in the furious bullous outbreaks the face and ears also. This dermatosis is a consequence of rheumatism. This view is sustained by the associated arthritic pains, that are generally demonstrable; by the discovery of the lesions of erythema multiforme as integral parts of Schönlein's disease (an admittedly rheumatic affection); by the speedy disappearance of the process under active antirheumatic medication. Schönlein's disease might be described as a mélange of purpura, erythema multiforme, urticaria, and angioneurotic edema, appearing in the vicinity of a swollen painful joint. A case of this sort will display all the characteristics of all the dermatoses of its composite identity. There will be splotches of purpura, flares of erythema, the uprearing of bullæ, and the rapid alternation of itching wheals and angioneurotic turgescence. Some of the bullæ will be hemorrhagic, proving the common origin of both processes.

Conceding the rheumatic etiology of erythema multiforme we are logically compelled to do the same for urticaria, and angioneurotic edema. They are so closely related that frequently we must hesitate in deciding which is urticaria and which its own first cousin. With urticaria goes angioneurotic edema, for there can be no question that one is the Lilliputian and the other the Brobdignagian representative of the same family. The responsibility of rheumatism in this relation is furthermore confirmed by the structure of the lesions. The flat papule of erythema multiforme and the wheal of urticaria and the colossal tumefaction of angioneurotic edema, are all due to the rapid absorption of water by the colloid tissues of the skin under the stimulus of an acid irritation. The competency of an acid irritation to effect such a result is acknowledged in the case of bee-sting and of contact with poison ivy. The joints in rheumatism react in precisely the same way as the cutaneous fabric. The colloids absorb water and swell, producing the gross evidences of inflammation. Into the cavity of the joint in accordance with the tendency of swollen colloids to exude a dilute liquid protein colloid, filters a serous fluid hitherto styled a transudation. Into the other serous cavities a like exudation occurs and we are confronted by a pleurisy with effusion, a pericarditis with effusion, or a hydroperitoneum. This separation of a dilute solution of itself from the swollen colloid is known as "syneresis." In the superficial edemata the presence of free fluid in the loose areolar tissues is explained in the same way. Syneresis may be fixed in the mind by translation into the colloquial expression "running away with oneself." Its primary meaning is coalescence and its secondary meaning is "carrying away with one." First the water combines with the colloid and then both water and colloid flow off together. When the kidney swells in nephritis the appearance of albumin in the urine is an illustration of syneresis. A certain amount of liquid protein is given off, the acidity that causes the turgescence also effecting a solution of the colloid.

The explanation of purpura on the colloid hypothesis at first glance affords considerable difficulty. Here we have a question of the escape of blood corpuscles from the capillaries. The theory of diapedesis, with its dual supposition of stomata in the blood vessels and an increased arterial pressure driving the corpuscles through these convenient apertures has been effectually exploded. In its place we are offered the proposition that the capillaries swelling under the influence of an acid contact the denser corpuscles are able to drive through the walls of diminished resistance. This has been shown by experiments *in vitro* to be a rational explanation.

Erythema nodosum with its pinkish painful protuberances on the crest of the tibia is of rheumatic origin in the opinion of most observers. The therapeutic test is speedily confirmatory. Confusion is little likely to occur if the clean-cut characters of the outbreak are kept in view. The sudden appearance concomitantly or in rapid succession of perhaps a dozen nodules along the anterior aspect of the leg, decidedly painful on motion and pressure, bright red in color, and ranging in size from that of a hazelnut to that of a walnut, is paralleled by no other cutaneous malady. Careless examination might confound them with the lesions of erythema induratum, which are of tuberculous origin, are confined to the back of the leg, and differ decidedly from the others in being sluggish, painless, and purplish.

If the nodules of erythema nodosum should happen to become bunched on the shin the resulting aggravation of the pain and coalescence of the areas of redness might suggest the diagnosis of cellulitis: erysipelatous or otherwise. Deliberation in searching for distinguishing signs and illuminating history is certain to be rewarded.

The nodosities that are so frequently observed upon the distal extremities of the phalanges and are liable to develop anywhere in the course of the

tendons or in the fibrous tissue, are unequivocal evidence of the rheumatic diathesis. This word "diathesis" by the way is falling into disrepute under the icy contempt of the up-to-the-minute pathologist. Being a survival of the nomenclature of the discredited humeral causation of disease it can find no place in the glossary of bacteriology. It means a state or disposition. We wise men of this generation know that there is no diseased "state" or "disposition." Disease is the result of the activity of microorganisms. It is a reaction. It would be as rational to talk of a burning building being in a "state of fire" as to talk of the human organism being in a state of disease! Disease is action—reaction, if you like. That implies movement, not stasis. This argument is all very well and all very true, but there are considerations that qualify its sweeping applicability, and mitigate the offense of the pathological heretics to whom it is so cuttingly applied.

Language is the instrument of thought, not its master. We speak of mental states. We even say that the mind may be in a state of perturbation! If there could be any more contradictory declaration than that it would be difficult to frame it. A state —a standing still of excessive excitement! We even transcend this absurdity, however, and assert quite casually that a person is in a delirious state! According to our dicriminating philology he may also be in a "feverish" state, or a sweating state, or a critical state, or in any other state implying the negation of state—except the rheumatic state or diathesis. Note the folly of allowing the language to dictate the thought instead of serving as its humble and malleable instrument! The word diathesis is not to thus be cavalierly dealt with. Properly understood it has as much right to existence as many other accepted words that will not stand acute analysis. Let us speak of the rheumatic diathesis as indicating the subacute manifestations of that disease or susceptibility to the active agent whatever that may be. The fibrous nodes from which we have become separated by our incursion into the field of etymology are noted then in those of the rheumatic diathesis. They are supposed to be the analogue of the growths upon the cardiac valves that narrow the orifice in some instances and in others prevent the proper closing of the leaflets. These nodes may be painless or, owing to the pressure exerted on the nerve filaments, may be very painful. They are a nuisance and an impediment to the free employment of the fingers. The fibrositis of the heels with which we are unfortunately too familiar in our experience of rheumatic subjects is in the same pathological classification. While not strictly a dermatological matter it often comes to us for elucidation under the impression that there is something amiss with the skin. It is rebellious to treatment, and distressing to the last degree.

The finger nails frequently show the alternate flash and recoil of the blood in the capillaries owing to their abrupt distention and collapse in aortic regurgitation. The hypertrophied left ventricle sweeps the blood onward with a powerful drive, and the regurgitation beneath the aortic column permits of its rapid recession; and we have the phenomenon of the "subungual pulse." This is not a manifestation of rheumatism of the skin, but it is a cutaneous manifestation of rheumatic endocarditis.

The nails themselves undergo a marked alteration in those afflicted with the rheumatic "diathesis." They become brittle and striated, the markings taking the longitudinal direction. It is prudent for those who note this abnormality to take stock of their general condition, and avoid the confirmatory agony of acute arthritis. It will be found as a rule that nails of this description are associated with the plethoric picture of "lithemia."

Sudamina are minute vesicles occurring in the course of conditions marked by free perspiration. They are supposed to be filled by droplets of sweat. It is a remarkable circumstance that here, as in the disease of the hands and feet known as dysidrosis or difficult sweating, there should be an associated hyperidrosis or excessive sweating. However this may be, it is a fact that rheumatism, signalized by drenching perspirations, is also complicated by the occurrence of sudamina. These sudamina often result in a punctate dermatitis whence the transition to a punctate eczema is easy and natural. Here we have an exemplification of the direct etiological connection between an acidosis like rheumatism and the commonest of fatherless dermatoses.

Intertrigo is an affliction whose obstinacy is a source of the keenest disappointment to both patient and physician. It is ascribed to the irritation incident to the friction of overlapping cutaneous surfaces. This is usually regarded as the last word on the etiology, and frantic and unavailing efforts are made to cure it along that line. Our failures are attributed to the carelessness of the patients or to anatomical conditions that are irremediable. For is not intertrigo commonest in the obese flabby sort of individual with great masses of pendulous tissue? The elephantine female, with mighty mammæ sprawling on a paunch of portentous proportions, gross, grotesque and greasy, is the favorite victim of this exasperating dermatosis. This description of the conditions favoring the development of intertrigo would seem to be a confirmation of the general opinion regarding it.

But that does not tell the whole story. This blubbery behemoth is the product of a long course of inordinate eating, drinking, and inactivity, all tending to the nutritional abnormality known as acidosis. Such a creature in the phraseology of a past generation would be called "lithemic," would be said to have the rheumatic "diathesis." The furred tongue, high-colored urine, and sour perspiration would be adduced in support of this contention. The lithemic were also subject to vague attacks of myalgia, neuralgia, and cephalgia. Their metabolism was assumed to be so disturbed as to tend to the precipitation of stony particles in the kidneys; hence the designation lithemic. The older pathologists were not so far awry at that. The tendency to stone is favored by the dietary offenses that excite acidosis. The remedy was the reduction of the disturbing ingesta and the administration of alkalies in liberal amounts. A pretty accurate imitation of the method employed to-day to combat acidosis! It is a fair deduction that the irritated oozing skin between the overriding fleshy masses, is not due to the mechanical element alone but to that plus the presence of a highly acid and mordant perspiration. The treatment by local measures, no matter how skillful, varied, and persistent, will be unprofitable if the "lithemia," the "acidosis," the rheumatic "diathesis" is not controlled and the acridity of the perspiration reduced. It is objected that babies suffer from intertrigo and to them the foregoing strictures will not apply. It is wise not to run ahead of our horses. Babies *do* suffer from intertrigo, usually from contact with irritating

urine. But *all* babies do not have intertrigo even among those who may be carelessly handled and allowed to lie in wet diapers for quite extended periods. Babies have intertrigo for the same reason exactly that adults have it. They suffer marked metabolic disturbances from improper feeding, as is a matter of general information. It will be noted that the baby least prone to this sort of cutaneous disorder is the baby fed at the breast of a rationally nourished and healthy mother.

From intertrigo to eczema is a natural and easy transition. It is often effected. I realize that an attempt to establish a rheumatic etiology for eczema would be greeted with a chorus of derision. The whole problem is in such a condition of uncertainty that another hypothesis would be an added aggravation. But there are some facts that stand out with tolerable clearness, and it is permissible to push them to their logical conclusion. To begin with, eczema is a dermatitis always caused by an irritant. The irritant may be mechanical, chemical, or thermic, operating from without. It may be metabolic, operating from within. We are all familiar with the bartender's hands; the washerwoman's hands; the bricklayer's hands; the dyer's hands. We know the effect of the winter's cold on *all* our hands, and of a strong east wind upon our faces. But we are all more or less possessed of the notion that some people are predisposed to eczema; that it is in their blood and responds to irritations that would be ineffective in others. This idea is based upon the undeniable development of eczema without detectable external excitation, and following the injudicious indulgence in certain dubious ingesta. This does not indicate that the patient has a predisposition to the dermatosis, but that he has aroused an irritant within himself that attacks the skin from the blood stream. It will be found that the dietary indiscretions that bring about an eczema are the same as those that bring about an acidosis; that would contribute to lithemia if the term were still respectable; that will in fact favor an outbreak of rheumatism. Beer, wine, whiskey, heavy meats, and made-up sweets will be found provocative of both diseases. As in rheumatism so in eczema the amount and quality of the nutritional intake must be carefully regulated. The acid-forming components, either such as are too highly nitrogenized and produce metabolic disturbance, or those whose indigestibility arouses intestinal putrefaction, should be absolutely interdicted. Cathartics, especially the saline, are indicated. And—be it carefully noted—alkalies are to be freely prescribed. The combination of an alkali with the "blood medicines" for eczema is a routine procedure. The value of alkalies in rheumatism is reduced to a dogma. Furthermore the oozing so distinctive of eczema, is of "gluey" consistency and stiffens linen. This is a quality peculiar to colloid solutions and indicates plainly that the eczema is a colloid tumefaction excited by the presence of an acid irritant, in other words an acidosis. The foregoing reflections must be taken for what they are worth. It is difficult to construct a convincing argument upon analogy. Nevertheless it is often prolific of valuable suggestion enabling us to devise many a helpful expedient.

Pityriasis rosea, with its tinkling title and its picturesque plaques of salmon pink, is the subject of controversy among dermatologists, some upholding its rheumatic origin and others ascribing it to a parasite. The Germans take the latter view and call it herpes tonsurans maculosus. While grievously sinning against euphony they have failed to demonstrate the parasite. They reason from the circular and oval conformation, and the delicate scaliness of the surface. The contenders for the opposing view point out the efficacy of the salicylates whether supplemented by external medication or not. It is an insignificant malady at the worst and derives a fictitious importance only from the alarm experienced by the patient on discovering it.

Erythema scarlatiniforme has been responsible for many erroneous diagnoses of true scarlet fever. The likeness has been intensified by the occurrence of arthritic pains in the lesser malady and its termination in desquamation. The fact that scarlet fever is frequently complicated by articular rheumatism lends plausibility to the contention that the arthralgia and efflorescence in erythema scarlatiniforme are of rheumatic origin.

In the very acute attacks of inflammatory rheumatism the skin is liable to take on a sudden evanescent erythema. The superficial circulation is disturbed. This is noticed when the surface is exposed to the air. It is a curious phenomenon, somewhat akin to that observed in meningitis.

The obscurity surrounding the origin of herpes zoster is impenetrable. We can hazard a surmise but we cannot substantiate it. Like every other human ill to which we have no clue we would ascribe it to a microorganism. There is no evidence of this whatever. It is pure assumption. No germ has been found. The discrimination of the supposititious germ in selecting one particular nerve root out of so many for the exhibition of its pernicious activity is amazing. In fact it is incredible. Roving all over the spinal column seeking an opening for its mischievous intrusion it picks out one root from sixty-two and ever thereafter ignores the rest. The rheumatic hypothesis in the eyes of its opponents would appear to call for the same sort of criticism, for does not the rheumatic active agent, if a germ, display just as incredible penetration as the one we are "supposing?" And if it is a product of faulty metabolism, how is the explanation furthered? Somewhat in this way. In the one instance we are supposing a germ endowed with the wonderful faculty of selecting one nerve root for assault and never thereafter accomplishing any pathological purpose. Whereas under the rheumatic hypothesis the cause includes that nerve root in its general depredations, and may go on to an invasion of the joints or the heels or the sciatic nerve. It has been objected that as herpes zoster never recurs it is not of rheumatic lineage. The implication and the direct assertion are both wrong. Herpes zoster sometimes recurs. And erythema nodosum admittedly rheumatic, recurs but very rarely. The singularity of the lesion in zoster is matched by the sigularity of the lesion in mitral stenosis, by the singularity of the lesion in torticollis and in rheumatic iritis. It will not do to discredit the intimated etiology by an argument based on the number of lesions, as this would eliminate many undeniably authentic conditions. The causes immediately exciting an attack of zoster are those credited with the excitation of rheumatism. Dampness, cold, and sudden closing of the sweat glands would appear to be culpable in both instances. In herpes zoster salicylate of sodium is as dependable an analgesic as any other.

It is manifestly impossible to *prove* the etiological relation of rheumatism to any of these diseases of the skin. Until we can isolate its essential cause, until we can settle the dispute between the sup-

porters of parasitism and deranged metabolism, we are in no position to make any authoritative pronouncements regarding its alleged pathological fecundity. We may, however, rationally argue from experience and analogy as to the probabilities, in many conditions reduced to the level of certainties by the accumulation of evidence. It is incontrovertible that rheumatism causes endocarditis.

The sequence of events is so uniform here that no one dreams of questioning it. Yet rheumatism is not the only cause of endocarditis and not all cases of rheumatism are thus complicated. Yet it occurs so often in connection with rheumatism that the association has become assured. Purpura has been ascribed to the same cause as we have already seen. But exactly paralleling endocarditis, all cases of purpura are not rheumatic. Some are scorbutic, some are pyemic, some are anemic, some are luetic. But the general run are rheumatic. Erythema nodosum, likewise, is placed in the rheumatic category for no better reason than its occurrence in persons showing other symptoms of rheumatism, at or preceding the time of attack. It is a matter of induction from many instances and of analogy between concurring conditions. It is as fair, then, to suggest the probability of a rheumatic etiology for some of the other rare dermatoses such as herpes zoster or for some of the commoner ones of undetermined origin, such as eczema and intertrigo.

If we will shift our ground a bit, and for the term rheumatism substitute the term "acidosis," we shall see the situation in a more convincing light. Whatever the opinion held as to the origin of rheumatism, there is unanimity regarding its producing an acidosis. And an acidosis will account for any of the dermatoses we have been discussing. The transcending importance of this conception lies in its therapeutic application. Irrespective of the pathological initiative, disregarding for the nonce the academic differences relating thereto, we have hold of a great truth pregnant with tremendous possibilities of evil if ignored, and of comfort and satisfaction if zealously pursued. This may sound like hyperbole if taken in reference to diseases of the skin, but they constitute only one phase of the subject of acid intoxication, which in its entirety comprises the weightiest problems of the conservation of human health. But even in the restricted and little heeded field of dermatology much misery may be averted by a painstaking attention to the principle involved; for be it remembered that the heartache and economic loss of an acne may be as serious to its victim as the pangs of acute arthritis; that the physical distress of a persistent pruritus may be as nerve-racking and health-wearing as a high pressure cephalalgia. Work is lost because men must scratch. Sleep stares in grim mutiny, because of the work that is lost, and the itch that is not. Health slumps; "reason totters on her throne." Is that overdrawn? Ask any of the itch-bedeviled, and note the soulful emphasis with which he will tell you that he would sooner be dead than continue as he is! Can any of the "important" pathological conditions with which practitioners are so deeply concerned produce a more desperate dejection than that? From every angle then (even that of dermatology), there is no more fascinating, fruitful and remunerative subject of investigation than *acidosis*.

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IODIDE OF POTASSIUM IN SYPHILIS.

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Many circumstances have contributed to the neglect into which iodide of potassium has recently fallen. Chief among these are the introduction of salvarsan in the treatment of spyhilis, the elaboration of more efficient methods of giving mercury, and a very general desire to explain the undoubted good effects of the iodides on gummata, arteriosclerosis, and aneurysm solely by their action in increasing the secretion of the thyroid gland. Furthermore the general recognition of the fact that the iodides are not spirocheticides has added to this neglect or even antagonism, for there are those who are antagonistic to their employment in syphilis at all. These people are often afflicted with the idea that a disease in order to be treated must be killed out, forgetting entirely the great truth that often the management of a malady, or an oblique action on it is of much more importance than its annihilation. Granting that the iodides as administered are under no circumstances detrimental to the life of the invading spirochetes, and this is by no means certainly true, there is no clinician, even of moderate experience, who has not repeatedly seen wonders performed by them, and none of us can afford to grow so saucy toward that great disease syphilis as to despise, in its treatment, any friend however humble, and iodide of potassium, as an antisyphilitic is by no means humble.

Iodide of potassium is particularly valuable in tertiary syphilis, whereas mercury and salvarsan are effective in all stages of the disease, undoubtedly in a great measure because of their spirocheticidal power. The use of one or two of these drugs, however, does not preclude the employment of the third, and as a matter of fact, when thought advisable, all three may be given.

That iodide of potassium has no particular value as an anti-syphilitic in the early stages of lues should not carry with it the assumption that it is altogether useless in this stage. As Scholtz says, it often has an excellent influence on the prodromal symptoms, such as fever, headache, and pains in the limbs, in which case it is given in moderate dosage, eight to fifteen grains (0.50-1.00) three times a day.[1] Its good effect in such an eventuality is no light matter. I have seen the headache of this early stage assume such proportions as to lead the patient, a physician, to seriously contemplate suicide.

It used to be customary to give the iodides after a course of mercury with the idea that the iodine, by chemical selection, would pick up the mercury, and carry it out of the body. With this belief of the union of the two metals in the body and the prompt exit of the pair, there often was associated a notion that mercury when not so accompanied, was tardy in passing along, and lingered especially in the bones. One now scarcely ever hears this view expressed. Indeed mercury leaves the body with remarkable speed in any event, and it is doubtful if anything but diaphoretics, diuretics, and laxatives can accelerate its departure. As, however, the iodides powerfully stimulate secretion and excretion, they aid in this way the elimination of mercury and any other foreign matters present in the body.

The specific therapeutic effect of iodide of potassium can be seen in gummatous, highly proliferative

cutaneous lesions, which often melt away under its use as if by magic, and it is important to note that this diminution in the bulk of the lesion in question occurs without any previous swelling. The importance of this lies in its contrast with the action of salvarsan, with which a preliminary congestion and swelling takes place. In a lesion in the nervous system, for instance, this preliminary congestion and consequent increase in size may precipitate an impending misfortune that might easily have been averted by giving first a few doses of iodide of potassium. Furthermore it is well known that luetic lesions of the nervous system are often directly connected with the blood-vessels, and rightly or wrongly clinicians for years have attributed to iodide of potassium an easing influence on arterial tension, and a beneficial action on the blood-vessel walls. These effects, however, may be entirely from increased general chemical action and increased secretory activity, which has already been mentioned and which will again be considered.

These three effects—the prompt diminution in the bulk of the syphilitic tumor, the possible easement of the blood pressure, and the effect on the vessel walls are not the only ones that interest the nervous system. From the by-effects of a drug may often be gained an idea of its usual mode of action.

Sometimes, for instance, iodide of potassium violently stimulates the nervous system, causing tremulousness and tachycardia, with or without swelling of the thyroid gland. In fact these symptoms are attributed to hyperthyroidism induced by the drug. I know a physician, who, on taking a rather stiff course of iodide of potassium for an opacity of the vitreous, had the satisfaction of seeing the mote disappear, but got tremulousness of the hands and a racing heart that kept him in bed for some months. The tremulousness has remained with him. These rare instances of overaction probably indicate one of the usual effects of iodide of potassium. By stimulating the thyroid gently it increases oxidation and general metabolism, and therefore increases the body capacity for oxidizing and eliminating both the cause and the products of disease.

To show how various the honest opinions may be in regard to the value of iodide of potassium I shall relate a conversation with the late John F. Morse, a man of eminently independent judgment. He said he would be in despair should he acquire syphilis, as he had a well marked idiosyncrasy toward iodide of potassium, and he was convinced mercury in this disease was valueless. The probable way he arrived at this conclusion is interesting.

Doctor Morse's chief experience at that time was gained in the County Hospital, where he had under his charge a large number of poor faint souls past corporal toil, who could not by any means be induced to undertake the labor of inunctions. As the technique of deep subcutaneous injections was not then developed, mercury had to be, in such a case, administered by the mouth, now admittedly an inefficient method. Furthermore the kidneys of these old sclerosed people were sensitive to mercury and poor eliminators, so that an efficient dose would often react badly on their general health. On the other hand their late gummatous proliferative lesions were particularly susceptible to iodide medication, and their sclerosed arteries and fading thyroid would also be favorably affected by the drug. In all probability a prolonged course of iodide of potassium at moderate dosage would be better for these old people than a thoroughgoing spirocheticidal course of mercury and salvarsan. The physician's attitude toward drugs, however, should never be partisan as that of an advocate or a politician, and a recognition of the merits of iodide of potassium should not carry with it the denial, even to such patients, of the benefits accruing from a judicious use of either mercury or salvarsan.

Iodide of potassium has no effect on the chancre, on the adenopathy, or on the eruptions of early constitutional syphilis, or on many of the eruptions of late syphilis, nor has it the power to change the Wassermann reaction from a positive to a negative. These facts must be regarded as good proofs that it is not a spirocheticide, or at least not one of great potency.

There is no doubt, however, that iodide of potassium exerts a most profound effect on the patient's physiology; its numerous striking, sometimes even dramatic, by-effects show this. Iodic catarrh and iodic acne are almost always present even with a moderate dosage. The frequent occurrence of purpura shows the effect of the drug on the blood and blood-vessels, and its influence on the thyroid gland, and through it on the circulation and on the nervous system, has been mentioned.

In organic chemistry iodine is one of the most important elements in making the various synthetic preparations, and it may be equally important in the chemical changes within the body. As a halogen it is nearly related to chlorine, and this relationship is well seen in its substitution of chlorine in animals which are deprived of NaCl, and given instead KI or NaI. In animals so fed the gastric glands secrete hydriodic (HI) instead of hydrochloric (HCl) acid.[2] The manner in which secretions loaded with iodine act in regard to calomel is also instructive, and may have a bearing on this very question. In such a case calomel ointment must not be prescribed in any situation where it may come in contact with the urine, nor may calomel powder be dusted into the eye, as in either case the extremely caustic biniodide will be formed. It would seem that under these circumstances the iodine has such a strong affinity for the Hg that it is able to supplant the Cl, so forming HgCl. It may be that some such chemical affinity is responsible for the speedy way some of the syphilitic neoplasms melt down under the influence of iodide of potassium.

From the other various preparations of iodine much may also be learned of the action of this important drug. One might imagine that iodide of sodium would be more effective than iodide of potassium, as the iodine in it is linked up with a metal sodium, that is much more abundant in the body than potassium, and also because it contains about 10 per cent. more by weight of the active ion, iodine. As a matter of fact, however, iodide of sodium is less active therapeutically than iodide of potassium, and although it has a much less disagreeable taste, has never been nearly such a favorite with the medical profession, which is a point in showing how fundamentally correct clinical opinion is apt in the main to be.

Iodide of strontium is a favorite with some, as they imagine it acts more favorably on the kidneys.

As all these three salts have probably different rates of absorption a mixture of them may attain the circulation in a steadier and more even stream

than any one of them alone. It may be this that accounts for Scholtz and others prescribing simultaneously two or three of these salts rather than one.

Iodide of rubidium acts well, and has few by-effects, but it is expensive.

A suspension of iodoform in liquid paraffin (1 c.c. of a 10 per cent. mixture) has been used, but has never become a favorite. It is said to be not unbearably painful, and acts fairly well, but it is apt to give rise to iodoform poisoning, such as skin eruptions, persistent subjective taste and smell of the drug long after its discontinuance, toxic amblyopia, and acute thyroid symptoms, such as rapid pulse, delirium, headache, vomiting, and fever. Short draws attention to the fact that these symptoms correspond exactly with those seen after the administration of excessive doses of thyroid extract.[2] From the persistence of the specific taste and smell of iodoform it might be inferred that the CHI_3 does not break up and leave the body, but either continues to circulate in the blood or remains in the thyroid gland, continually inciting it to increased production of iodothyrin.

Short further states that he has found thyroid extract quite as effectual as iodide of potassium in healing tertiary syphilitic ulcers.[3] That thyroid extract may influence a luetic lesion favorably is quite probable, because a principal constituent of it is iodothyrin. I, however, do not believe that it would act as energetically as iodide of potassium. Furthermore, anything like an effective dose should give rise to hyperthyreosis.

It may be that the secretion of the thyroid accounts for one of the most interesting phenomena of lues, the comparative immunity of women from the graver neural forms, such as tabes and general paresis. The factors entering into this view would be:

1. The thyroid is more active in females than in males, as shown by the frequency of its enlargement in females, and by the much greater number of cases of Basedow's disease in females than in males.

2. A principal constituent of thyroid secretion is iodothyrin.

3. All the iodine compounds exert a marked influence on syphilis.

4. The influence of iodothyrin, although small, would be exerted continuously and for a long time, and it must be remembered that some of the greatest phonomena in nature are produced by small causes acting through a long time.

5. The course of syphilis and especially of neural syphilis is very different in men and in women, and this difference may be due to the greater activity of the thyroid in women, especially so modifying the virus that it does not affect the nervous system.

Iodopin is a 10 or 25 per cent. chemical combination of iodine with the unsaturated fatty acids of oil of sesame. Its great advantage lies in the fact that it can conveniently be introduced subcutaneously. It has been now a long time in use, and has maintained its position.

As regards iodide of potassium the medical profession seems to be passing through an interesting period of therapeutic history. The newer methods of giving mercury, the brilliant effects of salvarsan, and the delicate check on the results of treatment afforded by the Wassermann reaction have aroused a great deal of interest and enthusiasm. The enthusiasm in regard to the physiology of the ductless glands and especially of the thyroid has also had, as has been shown, its effect on the attitude toward the therapy of the iodine preparations. Many men, however, express their enthusiasm not alone by being positive toward the object of their love or choice but by being strongly negative toward everything else. This temperamental attitude is to be deprecated in the practice of medicine.

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323 Geary Street.

ARTERIAL TENSION IN CONNECTION WITH CARDIAC MURMURS.*

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Applicants for life insurance often present themselves for examination quite unaware of any cardiac abnormality, and again they may state that they have had a murmur for years but have never experienced any symptoms whatever. In fact in the great majority of cases where there is an unmistakable lesion it is evident that compensation is well maintained. Therefore the following observations, based on personal observations made at the home office of the New York Life Insurance Company, must be considered with special reference to life insurance examination.

In many instances diagnosis is difficult; thus we find a large class of cases in which the murmur is the only evidence of cardiac lesion, so-called, "functional" murmurs. Another large class is characterized by a systolic murmur at the base, which does not fall in the category of functional murmurs because of the intensity or distribution of the murmur, the force or the displacement of the apex beat, and so on, and in this article these murmurs are placed in the group, "Aortic Obstruction," though it is not claimed by any means that they are all cases of true aortic stenosis. Indeed Hirschfelder states that aortic stenosis is the least frequent of the lesions of the left side of the heart—5 per cent. of 1,781 cases of cardiac disease at Johns Hopkins.

In this report the attempt has been made to consider only uncomplicated cases of cardiac murmur. Other conditions which might have exerted an independent influence on the blood pressure have been excluded, such as albuminuria with or without casts, glycosuria, or a recent history of the same, pulmonary lesions, marked anemia, and so forth. Exceptions are three cases in the aortic regurgitation group, one with a few hyaline casts, and two where the analysis of the urine was not known.

The blood pressure was taken by the auscultatory method, the fourth phase being selected to determine the diastolic pressure. The instruments were the Tycos and the mercury manometer, the former being checked up with the latter from time to time to make sure that the two agreed.

F. A. Faught believes that in the pulse pressure there is a definite guide to the state of the cardio-

*Read at twenty-sixth annual meeting of the Association of Life Insurance Medical Directors of America.

vascular system which is more reliable than the systolic pressure alone. He claims that the normal relation between systolic, diastolic, and pulse pressures should be, D = 2/3 S. P = ½D., or a ratio of 1-2-3, and that if this ratio be maintained the resulting arterial compensation may be regarded as safe. Reference will be made later to this pressure ratio. From observations on twenty normal cases, from 22 to 53 years of age, Faught found the tensions as follows:

	Systolic	Diastolic	Pulse
High	155	100	55
Low	110	70	35
Average	125	85	43

This works out very closely on applying the 1-2-3 ratio to the average tension. Two-thirds of 125 = 83, and one-half of 85 = 42.

Functional Murmurs.—There were seventeen cases between the ages of 19 and 41. The average blood tension of these was:

	Systolic	Diastolic	Pulse
	126	76	50
By Faught's 1-2-3 ratio	126	84	42
or a practically normal tension			

Mitral Regurgitation.—In compensated mitral regurgitation the arterial tension is practically normal, according to Norris. Hirschfelder says the tension exhibits no characteristic features, and the figures obtained are the results of varying causes. At Johns Hopkins Hirschfelder found that 29 per cent. of the cases of mitral regurgitation were associated with aortic regurgitation, 21 per cent. with mitral obstruction. In this connection it may be pointed out that a high pulse pressure in mitral regurgitation may be indicative of beginning aortic regurgitation.

Tension in 68 Cases of Simple M. R.

	Ages:	Below 20, 3 Cases	20 to 30 30 Cases	30 to 40 19 Cases	40 to 50 8 Cases	50 to 60 6 Cases	60 to 70 1 Case	70— 1 Case
Systolic,	*High*	150	175	165	185	180		
	Low	130	100	110	120	120		
	Average	140	137	135	139	147	165	145
Diastolic,	*High*	80	100	105	105	105		
	Low	60	55	55	70	80		
	Average	70	75	81	82	89	100	75
Pulse,	*High*	90	95	70	80	75		
	Low	50	20	35	45	50		
	Average	70	61	54	57	57	65	70

	S.	D.	P.
Average tension for all ages	144	82	62
According to 1-2-3 *ratio*	144	96	48
Showing an increased pulse pressure. These figures are appreciably higher than Faught's average of	125	85	43

Aortic Obstruction.—In pure aortic obstruction both the systolic and the diastolic pressures are slightly increased, partly due to the hypertrophy of the left ventricle, partly due to the general arterial sclerosis. The pulse pressure is small. (Norris.)

In aortic obstruction Hirschfelder says that tension is slightly elevated, a maximum of 130 to 160 systolic, partly due to the accompanying arteriosclerosis, partly to the increased intraventricular pressure.

Bearing in mind what was said in the beginning about the class of cases enumerated under the head of aortic obstruction, the following table of pressures is submitted:

Tension in 50 Cases of Aortic Obstruction

	Ages:	Below 20 5 Cases	20 to 30 22 Cases	30 to 40 10 Cases	40 to 50 8 Cases	50 to 60 5 Cases
Systolic,	*High*	130	160	150	180	160
	Low	110	105	115	120	115
	Average	123	135	136	146	136
Diastolic,	*High*	85	100	90	100	95
	Low	50	60	60	75	75
	Average	69	76	79	87	84
Pulse,	*High*	65	95	80	80	65
	Low	40	35	35	40	25
	Average	54	58	57	59	44

	S.	D.	P.
Average for all ages	135	79	54
Not far from the 1-2-3 ratio of	135	90	45
Or from Faught's normal average of	125	85	43

Aortic Regurgitation.—Aortic regurgitation is characterized by a greatly reduced diastolic pressure, at times only 30 to 40, where the normal is 90 to 100. Schwarzman says he is greatly impressed with this phenomenon, and when he finds such a low diastolic pressure he makes the diagnosis of aortic regurgitation even when no murmur exists, and the subsequent course of the case justifies this view.

Tension in 29 Cases of Simple and Mixed Aortic Regurgitation

Below 20			20 to 30			30 to 40			40 to 50			50 to 60		
S.	D.	P.	S.	D.	P.	S.	D.	P.	S.	D.	P.	S.	D.	P.
[1]145	55	90	[1]130	30	100	[1]140	50	90	[6]175	70	105	[1]145	85	60
			[1]135	40	95	[1]140	50	90						
			[1]125	70	55	[1]155	55	100						
			[1]110	55	55	[1]185	120	65						
			[1]140	50	90	[2]125	55	70						
			[1]145	85	60	[3]195	85	110						
			[1]150	75	75	[4]185	100	85						
			[1]125	25	100	[5]165	55	110						
			[3]145	40	105	[5]140	80	60						
			[3]120	75	45									
			[5]145	70	75									
			[3]155	70	85									
			[5]130	50	80									
			[5]200	70	130									
			[5]140	70	70									
			[5]150	60	90									
			[6]150	65	85									

[1]=Simple A. R.
[2]=A. R., A. O., M. R.
[3]=A. R., M. R.
[4]=A. R., M. R., a few hyaline casts.
[5]=A. R., A. O.
[6]=A. R., A. O., urine unknown.

TENSION IN AORTIC REGURGITATION (*Continued*)

		Simple and Complicated					Simple			
Ages:		Below 20 1 Case	20 to 30 17 Cases	30 to 40 9 Cases	40 to 50 1 Case	50 to 60 1 Case	Below 20 1 Case	20 to 30 8 Cases	30 to 40 4 Cases	50 to 60 1 Case
Systolic.	*High*		200	195				150	185	
	Low		110	125				110	140	
	Average	145	140	158	175	145	145	132	155	145
Diastolic.	*High*		85	120				85	120	
	Low		25	50				25	50	
	Average	55	59	72	70	85	55	54	69	85
Pulse.	*High*		130	110				100	100	
	Low		45	60				55	65	
	Average	90	82	86	60	60	90	79	86	60

NOTE.—A case of A. R. and M. R. showed
S. 170. D. 30. P. 140
Urine showed trace albumin, no casts.
Applicant aged 21, apparently in good health.
The fifth phase continued distinctly to zero of the dial.

	S.	D.	P.
Average tension, Mixed A. R	152	68	75
Tension according to 1-2-3 ratio	152	101	50
Average tension, Faught's normal series	125	85	43

According to Norris, in aortic regurgitation a high pressure is often seen with good compensation; thus, a systolic pressure of 180 to 200 should not be regarded as hypertension. In estimating the diastolic pressure the fourth phase, or muffled sound, must be chosen, since the fifth phase sometimes persists down to the zero of the scale.

In aortic regurgitation Hirschfelder describes two groups of cases, one the endocarditic, where there is a considerable fall in the minimum pressure, as for example, S. *150*, D. *50*, and second, the arteriosclerotic, where there is a considerable rise in the maximum pressure, as S. *170*, D. *90*.

The distinguishing feature of aortic regurgitation, therefore, is the constant high pulse pressure. Where the murmur is present but the pressure is near the normal it is probable that the leak in the valve is small.

TENSION IN EIGHT CASES OF MITRAL OBSTRUCTION

Ages:	20 to 30—3 Cases			30 to 40—5 Cases		
	S.	D	P.	S	D	P
	125	60	65	125	75	50
	125	80	45	110	85	25
	135	80	55	130	95	35
				110	75	35
				145	80	65

M.O., M.R.
M.O., A.R.

AVERAGE TENSION EIGHT CASES OF MITRAL OBSTRUCTION

Systolic		*Diastolic*		*Pulse*	
High	140	High	87	High	65
Low	117	Low	67	Low	35
Average	126	Average	77	Average	48

	S.	D.	P.
Average M. O	126	77	48
1-2-3 ratio	126	84	42
Faught's average	125	85	43

Norris says aortic regurgitation may exist without an audible murmur, or the murmur may be low-pitched and difficult to hear. Thus, Jackson in 100 autopsies found that this was the most frequently overlooked of the valvular lesions.

The following table comprises cases of simple aortic regurgitation and of aortic regurgitation with other valvular lesions. The tension of each individual case is first given.

Mitral Obstruction.—In compensated mitral obstruction the tension is more frequently above than below the normal; the pulse pressure is small. (Norris.) Faught says the blood tension may be low because only a portion of the normal amount of blood can be forced into the left ventricle. Only eight cases were observed, but the figures are presented as they may be of interest:

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TRAUMATIC HYSTERIA: TRAUMA THE CAUSE OR OCCASION?*

BY DANIEL B. HARDENBERGH, M.D.,
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IN twenty-five years of medical study and practice I have witnessed one change in medical teaching in regard to a somewhat numerous group of cases, and believe that there is now in progress a second. This group was earlier designated "railway spine," and more recently "traumatic hysteria."

Early in this period the teaching of Dana and others was gradually supplanting the theories of Erichsen that the condition had an underlying basis in pathological changes in the spinal cord.

Though the condition is now recognized as a psychosis, the cause is ascribed to trauma, physical or psychic. That the condition is strictly a psychosis rather than a neurosis seems to have been readily admitted.

That the essential cause of the cases of true hysteria occurring in these circumstances is suggestion, and not trauma, is a conclusion at which I arrived after examination of a considerable number of cases. I say true hysteria because the group is fringed by many instances where simple malingering is the predominant feature, and by some instances where actual organic injury has been sustained.

When I reached this conclusion I had not read Babinski or his followers. I might now present the points I wish to make by an extended study of their writings, and a recapitulation of their teaching, but choose rather to approach the matter from the standpoint of my own experience and reflections, believing that each member of this society will judge the soundness of the views expressed in much the same manner, in the light of personal experience.

Mrs. S.—Forty-six years old. While sitting in a railway station the single-piece moulded back and seat of the bench gave way and dropped a few inches. It was constructed low and did not drop far enough to reach the floor. She said she was dazed, and walked out of

*Read at a meeting of the First District Branch of the Medical Society of the State of New York, October, 1915.

the station; that her husband brought her back in the station, and that later she walked home. That night she complained to her husband of pains in the back and of nausea. Two days later pain in leg and arm began, and she called a physician. The pains gradually increased, and she lost strength in the legs and back so that she could not rise up in bed. Had contractures at knee and could not use left arm. Nausea persisted and control of bladder was lost, continuing for five or six months. Her claim against the railroad company was in the hands of an attorney, who was instrumental in having her removed ten months after the accident to the Neurological Institute in New York City for treatment. At that time she had not stood since early in the period following the accident. Her right arm she used in feeding herself, but her left was apparently powerless. Sight and taste were impaired; also hearing in left ear. She complained of diplopia. My examination was made two months after her admission to the hospital. She had made steady improvement since the first week. By pressure of reassurance and firm compulsion on the part of her physician there she had come to stand and to walk, exhibiting paralysis of no group of muscles, but rather the "I cannot will" of the hysterical. Physical examination revealed normal reflexes and absence of atrophies. Coordination hesitating but competent. There was a slight limitation of the field of vision in the left eye. The inability to move the left arm and leg, still claimed, gave way to persistent urging, and the limitation of movement was apparently due to action of opposing groups of muscles. There was an anesthesia of left side still claimed, but sensation was acknowledged in left scalp, and when arms had been crossed and the left hand and wrist were held against the right side of the body sensation was acknowledged in that hand and wrist. The anesthesia to pain was also superficial, deep thrusts revealing rather a hypersensitiveness. A physical stigma was noted in asymmetry of the arms, the right being 1⅝ inches longer than the left.

This case was free from many quite usual opposing claims and influences. There was no allegation by her physicians or attorneys that organic injury had been sustained. Nor from the opposing corporation was there denial of the diagnosis or contention that her physicians and attorneys had conspired otherwise than for the best interests of the subject.

With all the attending harmony, medical and legal, this case presents a remarkably clean-cut issue as to a fundamental point, the cause of the hysteria. That the woman must have had a neurotic tendency by reason of constitution or training, or both, will be admitted. What then was the determining cause of the hysteria—trauma or suggestion?

Was there in the sudden lowering of the seat upon which she rested, a fraction of a foot, sufficient physical violence to produce this chain of symptoms? That physical trauma in itself is not a satisfactory explanation of the origin of hysteria is understood; and its origin has been attributed to the mental shock or psychic trauma. Well, was there in the sinking of the low seat in this waiting room part way to the floor enough of frightfulness or horror to produce this result?

We have but to review the frequent trivial mishaps that are of almost daily occurrence in the life of everyone, the noise at night that suggests an intruder, the skidding of an automobile, the unexpected extra step in descending a staircase, to find sources of alarm of equal magnitude with this occurrence. Yet in the relation of this history the details did not occasion surprise; not to this body, nor to the fellow citizens of the subject as the progress became known.

What are the conditions that characterize and explain the case? Simply that an injury has been inflicted, preferably, I should say slight, for which a great corporation is manifestly responsible. Preferably slight, because the contemplation of serious injuries sustained, such as the loss of limb, is found rather to exclude the development of hysteria.

Serious physical injury seems to be related to subsequent hysteria rather as a deterrent than as a cause, and we have remaining as a common characteristic condition merely an offending, responsible corporation; not a physical entity, but a chain of associated ideas. And what is more likely to explain as cause hysteria, which is defined by Osler as a condition in which ideas obtain such control of the mind as to produce morbid symptoms, as the introduction and adoption of certain associated ideas. It is not necessary to assume that the subject was coached or urged by the suggestions of surrounding friends.

That persons receiving slight injuries upon the railroad had developed a set of nervous symptoms in which paralyses and loss of sensation had figured prominently, that compensation in damages had been made for same, and that in the end recovery had usually followed, was common knowledge in the community where the subject resided.

That instances in which such claimants had been revealed to the public as malingerers had also attached a certain odium to such claims is also true. Among the better informed there was the knowledge that instances had occurred in which large sums had been awarded without contest, in evident sympathy, to be followed in turn by recovery.

With such knowledge implanted in one susceptible in constitution and education to hysteria, it needs no further external suggestion to institute, when opportunity knocks, a chain of ideas that are allowed to develop until the syndrome is established. If then a false idea is at the bottom of these cases of hysteria, it becomes the physician's duty to expose and sweep aside that pretense or delusion; not so much that justice may prevail, though that is a worthy motive, as that the sum total of mental and physical morbidity may be decreased and not fostered.

Whether, precisely, the delusion is that trauma, even slight, may cause a group of symptoms of disability or suffering, or, in its more venal aspect, that such a group of symptoms when exhibited after an accident will probably be followed by abundantly assuaging damages and subsequent recovery; in whichever form, the false idea is equally pernicious in results.

There is already a wholesome distrust that leads many to inhibit the development of these ideas, and to cast aside as venal and reprehensible all notion that the slight accident to which they were exposed will lead to nervous symptoms, and afford ground for heavy claims against some one. With them the hysteria does not follow. Not that the trauma has not occurred, but that the true cause of the hysteria, the adoption and nurture of certain ideas, has never occurred. In this newer concept of the causation of hysteria lies a distinct advance in preventive medicine. When the traumatism has been found by careful examination to have produced no organic injury to the nervous system, the subject may be most confidently assured. A half belief on the part of the physician in the theories of Erichsen, or that a slight traumatism may cause hysteria, can but be reflected in the mind of the patient and become an operative factor for harm.

Nor without an adequate examination can the physician have, or impart to his patient, the confidence that the absence of organic injury warrants. In the East, self-mutilation is allowed to become

a source of additional alms to the mendicant. Here such practice would not be tolerated. It is somewhat analogous that there is here also a popular lack of sympathy with hysteria, that is at bottom wholesome, just, and salutary. The physician in his better understanding of hysteria should develop neither a fostering sympathy nor an unfounded apprehension of it.

As physicians we are not particularly interested in the financial problems of corporations; but it is well, perhaps, to note that there is one way to acquire responsibility for hysteria following trauma, and that is by assuming it. What greater contribution to the linking of the concepts of slight accident and subsequent nervous phenomena than the recognition of causative relation by those whose duty, if compatible with justice, is to dispute it?

In conclusion permit me to repeat that it has been my personal observation of traumatic hysteria that the frequency is rather inversely to the shock received. That the trivial character of the trauma, in many typical cases, and consideration of the comparatively few instances where grave injuries are followed by hysteria, make trauma an unsatisfactory explanation of the cause.

On the other hand suggestion is a natural explanation of such a condition as hysteria, and the association of the ideas of slight injuries by corporations and the development of paralyses and loss of functions is sufficiently common to be present in the average subject, and if it is on occasion of the injury entertained and fostered, it is capable and of a character to produce the symptoms of hysteria.

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ETIOLOGY OF PELLAGRA.*

By B. W. Page, A.B., M.D.,

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Since July, 1912, I have observed in more than 600 specimens of feces from 158 cases of pellagra an actively and progressively motile, cell-like body that develops into a bacillus which at first is very active. It rolls, turns summersaults, spins, and darts across the field but soon reaches a state of rest and later presents a beaded appearance. The size of the organism varies greatly. The oval form ranges from .5 to 1.5 microns in diameter. The rods vary from 2 to 6 microns in length and .5 to 2 microns in diameter. On agar it grows primarily as a coccus. On a special medium containing 2 per cent. each of beef extract, dextrose, corn, and potato with one and one-half times the usual amount of peptone it assumes the form of a bacillus. End spores are noticed in all cultures from 2 to 6 weeks old. The organism has a capsule barely visible, sometimes forming a halo. It stains with the common aniline stains for bacilli. Loeffler's alkaline methylene blue stains the organism very quickly.

Some cultural characteristics of the organism observed by me and confirmed and further tested by Prof. B. F. Kaupp of the North Carolina Experiment Station are as follows:

Corn Agar Plate.—A twenty-four hour colony measures from 1 to 2 millimeters in diameter. The surface is convex. The borders are smooth. The color is whitish gray. Forty-eight hour colonies are umbonate and measure 3 millimeters in diameter.

Corn Agar Slant.—At twenty-four hours the growth is abundant. Form, aborescent; elevation, raised; luster, glistening; topography, smooth; optical characters, opaque; chromogenesis, grayish with age; odor, slight and apparently characteristic of the organism; consistency, a tendency to be slimy; medium not effected.

Corn Agar Stab.—At the end of twenty-four hours there is apparently no growth along stab line. Surface growth abundant and same as for corn agar slant.

Potato.—The twenty-four hour growth is abundant. Surface rough and pitted. At the end of three days at incubator temperature the surface takes on a light tan color and growth covering surface has an areolate appearance. Luster, dull.

Bouillon.—Scum on surface. Bouillon not clouded at end of forty-eight hours. Heavy precipitate in bottom of old cultures. Scum wrinkled in old cultures.

Two Per Cent. Dextrose Agar Slant.—The twenty-four hour surface growth is abundant with tendency to spread over entire surface. Edges, smooth. Line of puncture not closed and growth moderate and echinulate.

Milk Inoculation.—At the end of twenty-four hours the milk is not coagulated. Slight separation of surface whey. Cultures of forty-eight hours and older show digestion of casein. Delicate membranous surface growth. Contents of tube examined after one week's time and no acid present. Medium at end of week still neutral to slightly alkaline.

Gelatin, Plain.—Stab, where stab line closes there is no growth below the surface. At the end of 24 hours at a temperature from 85° to 90° Fahr., there was a slight whitish growth at the surface but none along the needle tract. Growth continues till entire surface is covered, which is about three or four days. There is slow liquefaction of stratiform character and finally after about ten days a scum-like growth.

Two Per Cent. Each, Beef Extract, Dextrose, Corn, Potato.—Twenty-four hour growth, no scum on surface. Bouillon clouded. Heavy precipitate in bottom. Scum appears on surface in two to three days and becomes wrinkled in older cultures.

Two Per Cent. Beef Extract, Dextrose, Corn, Potato, Agar Slant.—Twenty-four hour growth very abundant, covering entire surface and extending more deeply into medium.

Two Per Cent. Dextrose Bouillon.—Fermentation tube, growth abundant at end of twenty-four hours in unclosed arm. No gas formed nor growth in closed arm. At end of forty-eight hours still no growth in closed arm. Apparently aerobic as there was a plain line of demarcation at commencement of closed portion.

Two Per Cent. Lactose Bouillon in Fermentation Tube.—Same results as in bouillon fermentation tube.

Two Per Cent. Saccharose Bouillon Fermentation Tube.—Same as in dextrose bouillon fermentation tube.

One Per Cent. Saccharose Agar Stab.—Needle tract did not close entirely and at the end of twenty-four hours showed a slight echinulate growth along the needle tract. Abundant surface growth spreading over entire surface.

One Per Cent. Saccharose Agar Slant.—A twenty-four hour growth was spread over entire surface. Tendency to be aborescent. Otherwise the same as corn agar slant.

One Per Cent. Lactose Agar Stab.—Same as corn agar stab.

* Read at a meeting of the Robeson County, N. C., Medical Society.

One Per Cent. Lactose Agar Slant.—Same as corn agar slant.

Search for the Organism in Normal Stools.—Only six normal stools have been plated out for search for this organism, but the organism was not found.

The organism seems to be pathogenic for the following reasons: *First*, it proves to be constant in the stool while definite symptoms of pellagra exist. It has been isolated from stools of three pellagrins three different times. It has been isolated from one specimen from each of thirteen other patients suffering from pellagra. I am convinced that I have observed the organism in more than 600 specimens of feces from 158 pellagrins since July, 1912.

Second, the organism in pure culture when fed to mice produces a toxin that causes death in twenty-four to ninety-six hours. Those that die early seem to die of septicemia. Those that live three or four days seem to die from general weakness and emaciation. The organisms are found in all the organs after death. Pure cultures have been obtained.

Third, blood serum from pellagrins as a rule has very little effect on the organism. In very severe cases with high fever the blood serum occasionally gives a positive widal reaction. Serum from natural blisters occurring on pellagrins and serum from blisters produced from cantharides plasters renders the organism non-motile and agglutinates them in three to thirty minutes in a mixture of the serum with an active culture in proportions of 1 to 5, or 1 to 10, or even 1 to 50. Similar tests were made with typhoid and colon bacilli with negative results. Serum from blisters of healthy individuals gives negative reactions with all these organisms. Serum from blisters of a pellagrin agglutinates the organism from the same patient and other pellagrins also.

Fourth, one of the several healthy persons previously examined with negative results, after accidental exposure in a laboratory, developed symptoms of grippe which later proved to be pellagra. The organism was isolated from the stool on the third day after symptoms developed. The organism was again isolated from the stool eight and twelve months later. Symptoms of the disease still exist.

GASTRIC SYMPTOMS IN TUBERCULOSIS.

By LOUIS HENRY LEVY, M.S., M.D.,

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THE simultaneous occurrence of symptoms of gastric disturbance and tuberculosis is becoming more recognized now that the *x*-ray has been added as an aid to diagnosis. The complaint of symptoms of gastric disturbance has often tended to make the examiner focus his attention to the supposed seat of the trouble—the stomach—and to overlook entirely or to examine less carefully other organs. The recognition of the fact that chronic conditions of the gall-bladder, of the appendix, of the heart and kidneys, often by reflex action or by congestion, set up a disturbance of the stomach, has brought these organs into the field of examination more than formerly. But that tuberculosis, whether of the lung or whether of an intraabdominal nature, may be an important factor in the production of gastric symptoms, has neither been fully appreciated nor forcibly enough impressed. At times it may be difficult to properly examine the patient for lesions in organs other than the stomach, but in chronic cases with gastric symptoms a complete examination should be insisted upon, in fairness to the patient as well as to the physician. One will be surprised to discover the many cases in which there is a definite lesion in the lung without pulmonary symptoms being present.

Of course one must bear in mind that lesions in the stomach may exist independently with a pulmonary process and bear no relation to it; and it must also be borne in mind that, when a patient presents himself with symptoms and signs of pulmonary tuberculosis and with only slight gastric disturbance, the gastric condition must not be thought simply reflex but that there may exist a definite gastric lesion which may require special attention and treatment.

The pulmonary lesion present may vary from the slightest involvement to a most extensive involvement with marked emaciation and anemia. There may be present only slight dullness at one apex, which later becomes the seat of a more extensive lesion. There may be present only an occasional click or an occasional râle brought out by coughing. There may be present a miliary condition or a massive consolidation with or without cavity formation. When the lesion in the lung is slight it may be difficult to explain the gastric symptoms because it does not seem entirely satisfactory to attribute them to reflex action. It is more probable that the symptoms are due to toxic elements liberated or produced by the tubercle bacillus. In the more advanced types with emaciation and anemia, the causes of the symptoms can be more readily understood.

Symptoms of gastric disturbance associated with tuberculosis may be produced in one of two ways: (1) Indirectly, without any changes in the stomach. (2) Directly, associated with organic changes in the stomach. When there are no changes in the stomach several factors must be considered. These depend first of all on whether the tuberculosis is pulmonary or intraabdominal and the stage of disease if pulmonary, that is, whether it is incipient, moderately advanced, far advanced or arrested. The presence of a miliary tuberculosis, consolidation or cavities also tend to alter the symptomatology. Hutchinson has stated that he has found gastric symptoms in 92 per cent. of cases of pulmonary tuberculosis which he had carefully examined. These findings have been corroborated by others (Dobell, Fenwick, and Pollack).

Fenwick has found that in a series of 500 cases of pulmonary tuberculosis that 72 per cent. of the females and 17 per cent. of the males had complained at some time or other previous to the discovery of the tuberculosis, of moderate or severe indigestion. It has also been found that gastric symptoms are less common in miliary tuberculosis and more common in cases where there is a consolidation of the lung. In miliary tuberculosis the gastric symptoms usually appear at the onset of the tuberculosis. In cases with consolidation or cavity formation the symptoms may precede these or may only appear when the patient becomes emaciated and the symptoms being due to asthenia or anemia.

The symptoms that precede the discovery of the tuberculous lesion or that accompany the onset of the condition in the order of their frequency are pain, vomiting, and disturbance of appetite. Flatulence and constipation are also present in a large number of cases. The pain, according to Hutchinson, occurs in 92 per cent. of the cases. The pain

may be either dull or sharp. More often it is dull and it is usually referred to as a sense of pressure under the lower part of the sternum. The pain may follow immediately after eating. It may come on from fifteen minutes to two hours after eating, or in a few cases it may bear no relation to meals and may be persistent. The pain usually bears some relation to the acid condition and motility of the stomach, and these two factors depend on the stage of the disease whether the condition is incipient or advanced.

Cohnheim, citing several cases in which there were marked emaciation and anemia, states that these cases were characterized by a ptosis and that he managed to obtain splash sounds in all of them. Not in any of these cases, however, was there associated pain or vomiting. Louis has found that two-thirds of his cases showed signs of dilatation. Fenwick in a series of one hundred autopsies found that sixty-four gave evidences of a dilatation of the stomach. This dilatation may be explained in one of two ways. It is either due to an atonic condition of the stomach or it may be due to the excessive feeding which is sometimes urged on tuberculous patients. The dilatation often produces periods of severe attacks of vomiting that may last as long as two weeks. The dilatation may also result in a marked hypochlorhydria with resulting fermentation and eructation of gas. The dilated or atonic stomach almost always shows a delayed motility, and hence delayed evacuation of the stomach contents. In these cases there is also a tendency toward constipation. In the very rapidly progressing cases associated with a marked anemia there is also present a hypochlorhydria, but in these cases there may be a diarrhea independent of any tuberculous involvement of the intestine.

Cohnheim mentions cases of advanced tuberculosis in which there was present a hyperchlorhydria. Einhorn mentions cases in which a hyperacidity was found, but does not state how far advanced these cases were. It will be found, however, that most of the cases in which there is a hyperacidity are in the earlier stages of the disease. Fenwick finds a normal acidity present in only 45 per cent. of the cases in his series. Of these 66 per cent. were cases with consolidation and 34 per cent. with cavities.

Those cases where organic changes have taken place in the stomach may be divided into three groups: (1) Cases associated with a gastritis. (2) Those associated with either single or multiple ulcers. (3) Those associated with tuberculous granulomata.

Gastritides may be produced by the toxins from the tuberculous lesion eliminated through the gastric mucosa and acting on it. Fenwick found well-marked evidence of gastritis in eleven out of fifteen cases. The gastritis may be either acute or chronic. Louis describes a peculiar condition of the mucosa which he calls mamillation, where there are a large number of minute elevations arranged in the form of streaks near the pylorus. Sometimes the entire stomach may be involved. At times these elevations become very large and resemble polypoid tumors. This condition is probably a chronic inflammatory condition where there is produced a contraction of newly-formed fibrous tissue between the glands.

Tuberculous ulcers of the stomach or gastric ulcers associated with tuberculosis were at one time thought very rare. Now that the condition is better known more cases are being reported. Gossman states that he found indications of tuberculosis in 40 per cent. of the 5,900 autopsies between 1900-1912 at the Munich public hospital. There were signs of tuberculous ulceration in the stomach in only 0.31 per cent. of all the cadavers or 0.76 per cent. of the tuberculous cases. A tuberculous ulceration was found in the duodenum near the pylorus in five other cases and in another group of five cases there were ulcers both in the stomach and duodenum. There was chronic pulmonary tuberculosis in all of the cases and the gastric and duodenal lesions had not been diagnosed during life. The findings confirm the possibility of the infection being carried by way of the blood, the lymph, the mouth or by spreading from adjoining lesions.

As Gossman states, ulcerations may be produced in one of four ways.

1. They may be produced through the lymph channels from affected neighboring structures or from tuberculous peritonitis. This is the view taken by Dewey who has studied the literature very carefully.

2. They may be produced by ulceration direct into the stomach from neighboring tuberculous lymph nodes. Such cases have been reported by Clayton and Wilkinson and by Besnier.

3. Ulceration may be produced by the direct action on the mucosa by bacteria which have been swallowed: ulceration from this cause is not so common. It occurs when there is marked disturbance in the motility of the stomach, or where there is a hypochlorhydria with a markedly lowered resistance on the part of the patient. In the normal stomach, the acid secretion is usually inhibitory enough while normal motility prevents the accumulation of the bacteria with the formation of a resting place for them. At times a carcinoma may lodge the organism where they will grow. Lyle reports such a case and quotes several from the literature. In Lyle's case a gastroenterostomy was performed but the patient died later from a tuberculous peritonitis.

The fourth method in which an ulcer may be produced is by the action of the bacteria through the blood stream as in cases of disseminated miliary tuberculosis. Arloing produced ulcerations in the stomach and duodenum of animals by inoculating the tubercle bacilli into the blood stream.

The pathology of tuberculous ulcers is usually the same as that of the more common ulcers of the stomach. They may vary from the very small pin head ulcerations representing hemorrhagic erosions to ulcers two inches in diameter. From the cardia to the pylorus the mucosa may be found covered with small round ulcers several centimeters in diameter. These, however, do not extend deeper than the muscularis, but in some cases have gone to the serosa. The edges are sharp and at times undermined. No tubercles have been found in this form. This is the type found in children who have died from general tuberculosis. There may be a follicular ulceration with slightly raised edges, the ulceration hardly ever extending below the mucosa. Fox has found these in 12 per cent. of his acute and 18 per cent. of his chronic cases of pulmonary tuberculosis.

If in the light of the newer teachings as demonstrated by the *x*-ray, we are to consider the first part of the duodenum, the so-called duodenal cap, described by Case and others, as continuous with and part of the pylorus, the number of cases of

ulcer is increased. Moynihan quotes 41 cases of this nature, some of which were associated with ulceration of the small intestine. Most of these ulcers have raised irregular thickened edges which may be undermined. Perry and Shaw cite a case in which miliary tubercles were visible in the base of an ulcer. Cases of perforation have been reported by Clark, Perry and Shaw, Hebb and Krauss.

The third type of gastric lesion in tuberculosis is the granuloma. This is usually situated at the pylorus and may produce a stenosis. It is a tumor-like mass which on examination will show the characteristic picture of tuberculosis with giant cells. These masses contain few bacilli. Chalier describes a case of a tumor at the pylorus in which there was no tuberculous charge yet inoculations of the tissue into guinea pigs caused their death from tuberculosis. On account of the similarity in structure of these granulomata to those lesions in pyloric obstruction in the new-born, Chalier suggested a possible similar etiology. A typical case of granuloma is one described by Ortali. The patient was a farmer of 52 who had had stomach trouble for six months, eructations, pain an hour or two after eating and vomiting every two or three days soon after eating. No blood had been noticed in the stool or vomitus. There was slight evening temperature, no cough or night sweats, but diarrhea and constipation alternated and the man grew very thin. Lactic acid but no free hydrochloric acid was found in the stomach contents and the stomach was opened up on suspicion of cancer. The pylorus region was found the seat of a hard tumor studded with granulations. Gastroenterostomy relieved the patient of his disturbances but he succumbed two months later to tuberculous peritonitis. Ortali knows of only 24 cases on record of this tumor form of tuberculosis of the stomach.

The following cases are a few of several seen by the writer and are given as type cases to illustrate some of the points brought out in this paper.

Case I.—Symptoms of Hyperacidity. Male, 45 years old. Negative alcoholic, tobacco and venereal history. When first seen he had symptoms of hyperacidity. Dull pains came on immediately after meals and were relieved by alkalis. He had no cough. Slight expectoration. Slight fever and sweating at night. The history was of one year's duration. Examination showed an involvement at both apices with signs of cavity formation on the right side. This was confirmed by *x*-ray. The sputum contained tubercle bacilli. With proper hygienic and tonic treatment, the sweating and fever disappeared and simultaneously with this the gastric symptoms also disappeared.

Case II.—Symptoms of pylorospasm and dilatation. Female 35 years old. Four years previously she had had symptoms of pulmonary disease which was diagnosed as tuberculosis and pleurisy. At that time she had lost weight; she had had night sweats and slight fever but no cough. The *x*-ray confirmed the diagnosis of tuberculosis. The pleurisy disappeared under treatment. When I saw her she was having severe attacks of persistent vomiting. This time she had no fever, no night sweats and no cough. A diagnosis of pylorospasm and dilatation of the stomach was made. Frequent lavages caused a cessation of the vomiting. I saw her again two months after this when she had further attacks of vomiting. The same treatment was followed and the vomiting ceased. The *x*-ray showed the tuberculous process still present but in a quiescent stage.

Case III.—Symptoms of gastric ulcer. Male 40 years old. He gave a history of gastric ulcer one year previously. A posterior gastroenterostomy had been performed without benefit. No ulcer could be palpated. The symptoms continued unrelieved. An operation for postoperative adhesions was next performed, also without relief. His lungs had been examined during this time and had been found negative for signs of tuberculosis; when I saw him there was a decided change. The right side almost from apex to base was found consolidated. This was proven by the *x*-ray to be a tuberculous process with marked caseation. No tubercle bacilli were found in his sputum. The symptoms now were very typical of tuberculosis. The only explanation that can be given for the late appearance of the signs of tuberculosis is that he must have had some hidden or deep-seated focus that was lit up by the lowered resistance of the lungs following the two operations. What the gastric condition was due to is difficult to say. No ulcer could be palpated and so it is possible that the lesion might have consisted of very small ulcerations.

Case IV.—Symptoms of ulcer with hematamesis. Male 32 years old. He had complained of very severe epigastric pain for one year. This pain would come on from fifteen minutes to one hour after eating and at first it was relieved by alkalis. Later the pain became so severe that hypnotics had to be resorted to. When I saw him he was emaciated; he had been having night sweats but no cough and no fever. Both physical and *x*-ray examinations showed an active process at one apex. The sputum contained tubercle bacilli. In order to get a better insight into the cause of his gastric distress it was deemed advisable to examine his stomach contents. Before this could be done he had hematemesis and vomited about 1300 c.c. of bright blood. He died ten days afterward in spite of all treatment. Inasmuch as the appearance of the symptoms of gastric ulcer were coincident with those of tuberculosis it is reasonable to assume that the ulcer was on a tuberculous basis. This, of course, is not conclusive as no autopsy could be obtained.

In concluding it may be seen that from the physiological and pathological changes in the stomach that there exists very good cause for gastric symptoms in tuberculosis. There is hardly a symptom of gastric involvement that may not be simulated or produced by tuberculosis. These symptoms may vary from the slight transient gastric pains to symptoms of gastric perforation. The symptoms may be so slight or so severe as to prevent the examiner from looking beyond the stomach for the cause. In all cases it is advisable that a complete physical examination of the chest as well as of the abdomen should be made. If this cannot be done it should be insisted upon at least in those cases with simple symptoms that do not improve under the usual treatment and particularly in those cases where careful questioning has revealed the presence of some symptom suggesting tuberculosis.

197 York Street.

IMPAIRMENT AND LOSS OF SEXUAL POWER IN ACROMEGALY.*

By WILLIAM A. BOYD, B.S., M.D.,

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Osler defines acromegaly as "a distrophy characterized by abnormal processes of growth, chiefly in the bones of the face and extremities." The oldest cases on record are those of Saucerotti-Noël, which were reported in 1772. Dr. Pierre Marie, a Frenchman and pupil of Charcot, announced to the profession his important clinical observations of this disease in 1885.[1] Edward Melchoir, however, has pointed out that Marie was possibly not the first to demonstrate a causal relationship between the hypophysis and acromegaly. He gives the credit of this to Minkowski[2] of Naunyn's clinic, who first clearly stated that an enlargement of the gland had been observed in all carefully examined cases.

Before the appearance of Marie's first memoir, a certain number of cases of this disease had been

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classed under such headings as Basedow's disease, cachexia, pachydermia, osteitis deformans, gigantism, and leontiasis ossea.

In 1890 Dr. Souza-Leite, a pupil and friend of Marie, collected and published such evidence as had accumulated respecting this disease. In this country Dr. Harvey Cushing has written much about this disorder; his monograph, "The Pituitary Body and Its Disorders," is a most valuable work, and has frequently been referred to in the preparation of this paper.[3]

Before coming to the principal portion of this paper, which, by the way, consists of mere figures, I will mention a few of the conceptions of acromegaly which deserve consideration.

There have been four different views regarding the nature of the disease, as follows:

1. At first Marie regarded the process as a general dystrophy; in his later papers published in 1888-1889 he attributed it to diminished function.

2. Massalongo in 1892, Tamburini in 1894, Benda in 1901, Modena in 1903, and Fisher in 1910 have championed the view that the condition is due to hyperfunction, and is often associated with an hypertrophy or adenomatous hyperplasia of the gland (pituitary), for it is not produced by destructive or malignant growths. According to Benda, Lewis, and Erdheim, the elements chiefly concerned in the hyperplasia are the eosinophilic cells, and there may actually be no gross enlargement of the gland.

3. Gauthier in 1892, Strümpell in 1897, Vassale in 1902, Guerrini in 1905, and Cagnetto in 1907 regard the acromegalic changes as due to some underlying nutritional disorder which affect metabolic processes, the hypophyseal enlargement being a consequence and not the cause of the malady. Cushing states that this view must be accepted by all, though it is something of a quibble, for just as in hyperthyroidism, there must be some underlying biochemical disturbance which brings about the glandular hyperplasia.

4. A few, as Silvestrini and Arnold in 1894, Warda in 1901 and Petrén in 1907, on the basis of presumably negative hypophyseal findings, conclude that acromegaly bears only an accidental relationship to pituitary lesions. Cushing states in his monograph that most of the circumstantial evidence in our possession points in the direction of an oversecretion, whether normal or pathological, and this is at least the most acceptable hypothesis.

In preparing this paper I have reviewed and studied 85 reported cases, but of these there are 20 in which there is no mention regarding the sexual function, therefore 65 cases only are used as a basis for this study.

The cases studied have been reported in literature by the following observers: Marie 8 cases, Marie and Souza-Leite 2 cases, Souza-Leite 3 cases, Cushing and his collaborators (Goetsch, Crowe, Homans, and Jacobson) 29 cases, and one case each by Verstraeten, Virchow, Freund, Shultze, Binet, Rogier, Pechadre, Farge, Erb, Hadden and Ballance, Godlee, Wilks, Tresilian, Wadsworth, Lanceraux, Fritsche and Klebs, Lombroso, Ruttle, Verga, Chalk, Fleming, Bramwell, and Hurt.[4]

As regards sex, the cases studied are almost equally divided, there being 34 males and 31 females.

The ages of the patients at the time they came under observation were as follows: In 6 cases the age was not given; 2 cases between the ages of fourteen and twenty; 13 cases between the ages of twenty and thirty; 24 cases between the ages of thirty and forty; 17 cases between the ages of forty and fifty; 2 cases between the ages of fifty and sixty; 1 case between the ages of sixty and seventy; total 65. It would therefore seem from the reports that the majority of cases came under observation between the ages of thirty and fifty.

Of the sixty-five cases the social condition of twenty-two males and eight females was not mentioned. There were seven single males and eight single females, eight married males, ten married females, and two widows.

In disorders like acromegaly having a very slow progression, it is very difficult to say just when the attack began.

In the report of some cases only the statement of the patient could be had as to the date of the beginning of the disease, as it, in many cases, was far advanced when the patient was first seen by the physician.

The following are the ages as reported when the disease began:

Males: One case each at 15, 23, 28, 29, 30, 33, 34, 36, 40, 45, 52; 3 cases at 18; 2 cases at 20; 3 cases at 24; 2 cases at 25; 3 cases at 27; 2 cases at 31, and 2 cases at 32; total 28. As will be noted, the attack began in 20 out of 28 cases between the ages of twenty and forty.

Females: One case each at 14, 15, 16, 17, 19, 21, 22, 23, 27, 29, 31, 32, 37, 38, 39, 43, 49, 56, 57; 3 cases at 20; 3 cases at 24; two cases at 25; 2 cases at 28, and 2 cases at 35; total 31. According to the above figures 19 out of 31 cases began between the ages of twenty and forty.

In four cases the sex was given as male and two cases as female, but the date of the beginning of the illness in each case was not given.

Cushing states that "unquestionably the interrelation between the hypophysis and testes or ovary appears on clinical grounds to be more intimate than between any other two members of the series, and in the large majority of cases there has been some impairment or loss of potentia sexualis in the male or female. Symptoms referable to the reproductive functions may apparently long antedate those attributable even to the hypophysis itself."

The case reports abound with examples of imperfectly acquired secondary sexual characteristics when the hypophyseal lesion antedates puberty, and of resultant amenorrhea or impotence with retrogressive sexual changes when the malady develops after the acquirement of adolescence.

Males in which there was no sexual impairment, social condition not mentioned, 12; females in which there was no sexual impairment, social condition not mentioned, 2. Males, married, in which there was no sexual impairment, 2; females, married, in which there was no sexual impairment, 2. Males, single, in which there was no sexual impairment, 2. Total number of cases having acromegaly, both sexes, in which there was no sexual impairment, 20. Total number of cases having acromegaly, both sexes, in which there was a loss of or some impairment of the sexual function, 65. Total number of cases studied and reviewed, 85. Of the 50 cases of males studied 34, or 68 per cent., had loss or some impairment of sexual power; of the 35 cases of females studied 31, or 89 per cent., had loss or some impairment of sexual power.

Of the 34 males having loss or impairment of sexual power 9 were reported as impotent, and ac-

cording to social condition were divided as follows: Married, 4; single, 3; social condition not given, 2.

Of the 31 females having loss or impairment of sexual power 23 were reported as impotent, and were divided as follows: Married, 8; widowed, 1; single, 6; social condition not given, 8.

Number of cases in which sexual power was somewhat diminished (anaphrodisia, etc.), 19. Males: married, 1; single, 2; social condition not given, 9; total males, 12. Females: married, 2; single, 3; widowed, 1; social condition not given, 1; total females, 7.

Number of cases in which there was no sexual power at the age of puberty: Males, 3; females, 1; total, 4.

Number of years which elapsed between the time the catamenia was established and the time when the amenorrhea became permanent according to social condition: Married, one patient, each 3, 6, 18, 19, and 23 years. Single, two patients, 2 years; one patient, each, 7, 12, 15, and 24 years. Social condition not given, 1 patient each, 2 and 11 years.

Number of cases in which the date of the beginning of the establishment of menstruation was not noted in the case reports: Married, 5; single, 2; widowed, 2; social condition not mentioned, 6.

The ages when the amenorrhea became permanent are given as follows: Married, 18, 19, 20, 24, 29, 32 (2), 37, 38, and 39; single, 16, 17, 21, 24, 28 (2), and 37; widowed, 42 and 43; social condition not mentioned, 18, 22, 25, 27, 35, 36, and 37 (2).

Intervals of years between the date of the establishment of the menses and the date of permanent amenorrhea: Two cases, 2 years; one case each 3, 6, 7, 11, 12, 15, 17, and 18 years.

Number of cases in which there was an absence of secondary sexual characteristics: (masculine voice, pubic and axillary hair, adolescent beard, enlargement of the genitals, etc.) Males, married, 2; single, 2; social condition not given, 1; females: married, 1; single, 2; widowed, 1.

Number of cases in which at autopsy some abnormality of the genitalia was found which had not before been noted: Males, married, 1; single, 2; females: married, 1.

Number of cases in which there was no sexual power: Males, social condition not given, 1.

Number of cases in which the genitalia were of abnormal size: Males, married, 1; single, 1; social condition not given, 1; females: married, 2; single, 1; social condition not given, 1.

Number of cases in which the genitalia were undeveloped or atrophied: Males: single, 3; social condition not given, 3; females: married, 3; single, 5; social condition not given, 1.

Of the 31 females whose cases have been studied 28 of them have had loss or some impairment of potentia sexualis: Married, 10; single, 8; widowed, 2; social condition not given, 8.

Cases in which a permanent amenorrhea had persisted: Married, 7; single, 5; social condition not mentioned, 6.

Cases in which amenorrhea was temporary: Married, 1; single, 3; widowed, 1; social condition not mentioned, 2.

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114 West Franklin Street.

ARTIFICIAL INFANT FEEDING.

By J. Epstein, M.D.,
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The best food for an infant is good milk from a healthy mother. When the supply of breast milk is insufficient for the proper nourishment of the infant, partly breast feeding and partly bottle feeding is the next best food. Quite a large number of infants are deprived of maternal feeding and are fed on all kinds of "formulas" which frequently not only fail to supply the proper food for the normal growth and development of the infant but cause various gastrointestinal disturbances.

An infant may survive a wrong diagnosis, it may tolerate poor therapeutics, but it will never take bad feeding for a long time without giving rise to loss in weight, marasmus and ultimate dissolution.

The following cases illustrate improper feeding and its effect on the health and development of the infants.

Case I.—Baby M. M., 11 weeks old, a large infant at birth, weight unknown, full term and normal labor, was brought to me because of constipation, constant crying and loss in weight. Feeding history:

1. Breast fed for 3 weeks. Mother thought her milk gave out and the infant was given the following milk mixtures:

2. Whole milk, 1 ounce; lime water, 1 ounce; milk sugar, ½ teaspoonful; water, 3 ounces. Given at each feeding twice a day for four weeks.

3. Whole milk, 2 ounces; lime water, 1 ounce; milk sugar, ½ teaspoonful; water, 4 ounces. Given at each feeding 3 times a day for two weeks.

4. Whole milk, 3 ounces; lime water, 1 ounce; milk sugar, ½ teaspoonful; water, 4 ounces. Given at each feeding 4 times a day for two weeks.

At the end of eleven weeks the infant weighed 6 pounds and 15 ounces. On examination I found the infant suffering from no other illness than starvation. I prescribed a proper food suitable for the age and condition of the infant and there was no more cause for crying, the constipation, which was the result of lack of food, was relieved without any medication and the baby rapidly gained in weight.

Case II.—G. E., 9 weeks old, full term and normal labor, birth weight unknown. Baby almost constantly cried since birth, weighing at 9 weeks 6 pounds and 13 ounces. Feeding history:

1. Was never breast fed.

2. For the first 2 weeks the baby was given an infant food and water according to directions on the label. The infant cried all the time and the food was changed to:

3. Zwieback in water strained and given at irregular hours for a few days. The infant resented this food by still more crying, and it was then put on:

4. Whole milk, 1 cup; barley water, 2 cups. The entire quantity was given during 24 hours.

On examining the baby I found nothing that it wanted except proper food given at regular hours and not a pure carbohydrate diet, which had very little food value and which the infant was probably unable to digest. It is an indefinite and unscientific method to order a cup of milk and two cups of barley water for 24 hours to be given a little each time the baby cries. The infant's food must be suitable to its digestive ability and should be given in exact quantities at regular hours.

Case III.—M. E., aged 2 months, full term instrumental delivery, birth weight 9 pounds and 8 ounces. For 6 weeks before the infant came under my observation it vomited after each feeding and was constipated. Feeding history:

1. Breast fed for 3 days.
2. Top milk, 5 teaspoonfuls; lime water, 1 ounce; water, 2 ounces. This was given every 2 hours for 2 weeks, but the baby began to vomit and the food was changed to:
3. Top milk, 5 teaspoonfuls; barley water, 2 ounces. Every 2 hours for 2 weeks; vomiting persisted and the infant was put on:
4. Condensed milk, ½ teaspoonful; barley water, 3 ounces. Every 3 hours for one week. Baby continued to vomit and the food was changed again to:
5. An infant food, 2 teaspoonfuls; water, 4 ounces. Given every 2½ hours. The weight at the end of 2 months was 6 pounds and 4 ounces.

In an effort to find a suitable food for the baby's digestion the real trouble was entirely overlooked by the attending physician for on examination I found this to be a case of pyloric stenosis.

CASE IV.—S. F., 4 months of age, a large baby at birth, weighing 10 pounds, was brought to me because of constipation and an eczema on the face and thighs which resisted treatment with all kinds of ointments and lotions. Feeding history:
1. Breast fed for 6 weeks, then
2. Whole milk and water gradually increased in quantity and strength till for the last 4 weeks the baby received 48 ounces of whole milk, 48 ounces of water with 6 teaspoonfuls of granulated sugar in 24 hours. At 4 months the weight was 15 pounds and 7 ounces.

This infant was given entirely too much food and was in a miserable condition from the itching of the eczema, sleeplessness, and constipation. I reduced the food to 48 ounces in 24 hours, giving 2 per cent. fat and 5 per cent. sugar and still the baby gained in weight so that at six months it was 17 pounds and 1 ounce. A teaspoonful of rhubarb and soda mixture relieved the constipation and a soothing ointment to the eczema cured the infant in a short time.

CASE V.—S. M., 5 weeks old, first baby, full term and normal labor, birth weight 5 pounds and 8 ounces, and at 5 weeks 5 pounds and 1 ounce. The infant was brought to me because of constipation, vomiting and restlessness. Feeding history:
1. Breast fed for 2 weeks, then
2. Upper 1 ounce of milk; whole milk, 1 ounce; lime water, ½ ounce; milk sugar, ½ ounce; water, 7½ ounces. Given 1 ounce every 2 hours.

For three weeks the infant was given 10 ounces of food a day with 2 ounces of milk, while it really needed 20 ounces of food a day with about 10 ounces of milk. It also evidently received too much fat for its digestive capacity. On increasing the amount of food and starting with a lower fat, the vomiting ceased, the constipation which was probably due to too little food was relieved and the baby gained in weight.

CASE VI.—W. J., aged 6 months, full term and normal labor, weight unknown. For 2 months before it came under my care the baby vomited after every feeding, lost in weight and was constipated. Feeding history:
1. Breast fed for 4 months and weighed 13 pounds and 1 ounce; then the baby vomited for several days and the family physician advised weaning and prescribed the following feeding:
2. Milk, 6 ounces after removing the upper 6 ounces from a quart bottle; milk sugar, 3 teaspoonfuls; milk of magnesia, 1 teaspoonful; peptogenic powder, 1 tube; water, 18 ounces. Given 4 ounces every 2½ hours for 2 weeks. The baby vomited and the food was changed from this one, very low in fat, to one high in fat.
3. Upper 10 ounces of milk; milk sugar, 1 tablespoon; lime water, 1 tablespoonful; water, 22 ounces. Given in 24 hours for one week, the vomiting became worse and the baby was put on:
4. Condensed milk, 1 teaspoonful; a little whole milk; lime water, 1 teaspoonful; water, 4 ounces. Every 2½ hours.

The vomiting persisted and the weight was now, at 6 months, 11 pounds and 5 ounces. A great injustice was done to this infant by taking it off the breast. Fortunately the mother kept up the flow of milk by the use of a breast pump, and I immediately put the infant on a mixed feeding, partly breast milk and partly a suitable milk mixture, fed every four hours, the stomach was washed once a day, the vomiting stopped, the constipation was relieved, and the baby gained in weight.

CASE VII.—E. L., 2½ months old, full term and normal labor, birth weight 6 pounds and 8 ounces and at 2½ months 7 pounds and 6 ounces, was brought to me because of poor gain in weight. Feeding history:
1. Nursed for 3 days then the "milk gave out" and the infant was put on:
2. Whole milk, 2½ tablespoonfuls; cane sugar, 1 teaspoonful; barley water, 1 cup; a pinch of salt. Three such cups of food was given during 24 hours.

Though the baby gained a little in weight in the two and a half months, it would have gained a great deal more if sufficient milk had been given. It is a very poor method of feeding by ordering milk by the tablespoonful and barley water by the cup. An exact number of ounces of milk, sugar, and water should be ordered and equally divided into the number of feedings necessary in 24 hours and fed at regular intervals.

CASE VIII.—O. M., 4 weeks old, first baby, full term and normal labor, birth weight 6 pounds and 6 ounces. Feeding history:
1. Nursed for 2 weeks. During this time the baby would take the breast in the mouth and after a few minutes' nursing would drop it and cry for a while, then would try again to nurse and drop it again crying. The infant was then weaned and put on:
2. Upper 2 ounces of milk; lime water, 1 ounce; milk sugar, 1 ounce; water, 16 ounces. Divided into 10 feedings and given every 2 hours. At the end of 4 weeks the baby's weight was 4 pounds and 9 ounces, vomited frequently and had slight diarrhea.

This infant evidently did not find enough milk in the breasts and after each attempt to nurse would drop the breast in disappointment. The milk mixture given was too poor in milk and perhaps too rich in fat. I advised the mother to give the breast four times a day and prescribed six bottle feedings a day. The mother had sufficient milk for four feedings, the baby gained in weight and the digestion rapidly improved.

CASE IX.—M. J., 7 months old, full term and normal labor, weight unknown. I was consulted because the baby's weight at 7 months was only 9 pounds and 7 ounces. Feeding history:
1. Nursed for 1 month, then weaned and put on:
2. Condensed milk, 2 teaspoonfuls; water, 5 ounces. Given every time the baby cried for 1 month. The infant vomited frequently and the food was changed to:
3. Whole milk, 15 ounces; water, 7 ounces; peptogenic milk powder, 1 measure, boiled together and given about 2 ounces every 2 hours for several weeks. Baby vomited and lost in weight.
4. Whole milk, 8 ounces; well cooked oatmeal, 2 tablespoonfuls; water, 16 ounces. Given in 24 hours for one week. The baby cried a great deal and vomited frequently and the food was then changed again to:
5. Condensed milk, 10 ounces; sugar, 1 tablespoonful; barley flour, 1 tablespoonful; water, 30 ounces.

It is really a wonder that the baby survived such frequent changes in feeding and such a poor variety of food.

CASE X.—R. M., 2 months old, first baby, full term and normal labor, birth weight 5 pounds and 8 ounces, vomited frequently and lost in weight. Feeding history:
1. For the first three days after birth a certain tea was given to serve as a food and to keep the baby asleep.
2. Barley water for 1 week, given a little every 2 hours. Baby vomited a great deal and the food was then changed to:
3. Whole milk, 6 ounces; barley water, 12 ounces. Given during 24 hours a little at a time for 3 weeks.

The baby did not do well on this feeding and was put on:

4. Condensed milk, 1 teaspoonful; water, 2½ ounces. Given every 2 hours. On this food there was vomiting and diarrhea, and it was changed again to:

5. Whole milk, 1½ ounces; water, 4½ ounces. Every 2 hours.

This infant began its earthly existence with an infusion of some seed, probably fennel seed, as a food; evidently the baby did not thrive on it and barley water was substituted, which had very little food value and was probably not digested properly. A fairly good milk mixture was then given, but it was not given in proper amounts or at exact intervals, a little being given every time the baby cried. The infant vomited, had slight diarrhea, and cried a great deal. As a remedy to the baby's ills condensed milk was given which made a bad case worse, then again milk was given. The result was that for two months the baby had no proper food or proper feeding. I put the baby on a suitable milk mixture given at regular hours, the vomiting ceased and the baby gained in weight.

The above ten cases represent only a few of a large number of babies that came under my care who were healthy at birth but were made ill by improper feeding. The majority of my little patients suffered from under feeding; only a few were overfed; while others received fairly good milk mixtures but the food was given in the wrong way, that is any time the baby cried and as much as it wanted.

In the artificial feeding of infants success may be obtained by adhering to the following principles:

1. Proper quantity of food according to the age, weight, and general condition of the infant.

2. Proper quality of food, neither too rich nor too poor in the normal constituents of milk.

3. Proper regularity of feeding, every two, three, or four hours, according to the age and the digestive ability of the infant.

4. Proper care in the keeping of milk at the right temperature and the cleanliness of the bottles and nipples; the food when served to the infant must be at body temperature.

5. Simplicity; the baby does not want anything else than plain milk, sugar, and water, all other forms of milk, ready-made foods, cereals, and lime water are not necessary. I have never used anything else in the artificial feeding of healthy infants but raw certified milk, sugar, and water. When the baby is about six months old I give once a day, besides the ordinary milk mixtures, a thick, well-cooked cereal fed with a spoon. The cereal serves to add some food value, it stimulates the digestive tract to a proper digestion of starch, and last, but not least, it breaks up the monotony of the infant's diet.

In prescribing milk mixtures I make use of the following different modifications:

1. Feeding with simple dilutions of whole milk.

2. Feeding with dilutions of top milk.

3. Feeding according to percentage formulas.

4. Feeding with humanized milk, that is cow's milk with the percentage composition of human milk which is prepared by using the upper 15 ounces of a quart bottle of raw, certified milk after standing undisturbed for about six hours at a temperature of from 40° to 50° F. This upper 15 ounces is diluted with an equal volume of cool, boiled water to which the proper amount of milk sugar has been previously added. In an article in the MEDICAL RECORD for May 29, 1915, I described its preparation in full.

175 HEWES STREET.

AN INTERESTING OBSTETRICAL CASE.

BY ISIDOR ECKERT, M.D.,

NEW YORK.

MRS. M. M., aged 24 years, engaged me to attend her in her first confinement almost three and one-half years ago. After the usual antepartum examination, I informed her that everything was normal and that, barring any unforeseen complication, she should have a normal delivery at full term. She was later influenced to change her plans and entered one of our large hospitals to be confined there by one of its attending obstetricians. After she had been in labor but a few hours, the obstetrician told her that she was suffering from a deformed pelvis and could never deliver her baby and that a cesarean section would have to be performed. The operation was successfully performed and a 6½ pound living boy was born, the mother making an uneventful recovery.

Patient again became pregnant and on consulting her former attending obstetrician was told that a cesarean section would again have to be done. During the course of her pregnancy, she also consulted me and, in her conversation, recalled to my mind what I had told her during her first pregnancy and said if I could assure her of a normal delivery at the termination of this pregnancy, she desired me to attend her in her second confinement. After the usual antepartum examination, I again informed her that, barring any unforeseen complication, she should have a normal delivery. On Friday, Aug. 13, 1915, after an actual labor lasting about twelve hours, she gave birth to a living boy, weighing 7¼ pounds. In this connection, it is also interesting to mention the fact that 1 c.c. pituitrin was given intramuscularly to hasten delivery during a tedious perineal stage.

This case is reported to show, firstly, how as a result of a grossly inaccurate diagnosis a patient was subjected to the risks of a major surgical operation; secondly, the possibility of a normal delivery following a cesarean section, and thirdly, the comparative safety in the use of pituitrin in properly indicated conditions even in a previously wounded uterus.

321 EAST FOURTH STREET.

Raynaud's Syndrome: Raynaud's Disease.—O. T. Osborne states that Raynaud's disease is not a distinct entity; it is a syndrome caused by the disturbance of one or more internal secreting glands. There is primarily no real disease of the blood vessels, but the vasomotor control is so abnormally disturbed that most profound contraction of certain blood vessels may occur in different parts of the body, perhaps more or less coincident with abnormal dilatation of other blood vessels. If the contracted blood vessels are peripheral the parts more or less lose their function and show various trophic disturbances. This blood-vessel spasm may occur in the internal organs of the body as well as peripherally, though much less frequently and more difficult of diagnosis. The syndrome is probably due to disturbances of more than one of the ductless glands of the body that have internal secretion, but there is always apparently some disturbance of the thyroid gland, perhaps a diminution of the vasodilator stuff of this gland. Judiciously applied, thyroid treatment improves the majority of cases, perhaps all, and cures some cases. Nitroglycerin is always of temporary benefit and local heat is always of immediate benefit.—*American Journal of the Medical Sciences.*

The Relationship of Infantile and Adult Death Rates.—Brownlee has made extensive studies of birth and death rates. He concludes that the conditions which produce a high infantile death rate are exactly those conditions which depress at the same time the vitality of the whole adult population. "All the evidence is against the view that a high infantile mortality produces a healthier population at adult ages."—*The Journal of Hygiene.*

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New York, November 13, 1915.

THE DIMINUTION IN CUTANEOUS RESISTANCE.

AN interesting thesis on this subject is contributed by L. Brocq to the *Annales de Dermatologie et de Syphiligraphie*, July, 1915. He notes that the normal integument is not affected by any of the irritants of moderate intensity to which the majority of individuals are exposed. However, under certain circumstances the resisting power of the skin is diminished to such an extent that the skin is more or less affected by the same irritants. Such diminution may be general, local, or regional, and it may involve one or more of the elements of the skin. An illustration of generalized diminution of cutaneous resistance is seen in the case of a patient in whom the application of a substance such as a preparation of mercury to any part of the body gives rise to an irritation irrespective of the region of the body to which the application is made. Similarly in a case of congenital bullous epidermolysis slight traumatisms give rise to ulcers in whatever part of the body these traumatisms may be received. A localized diminution of cutaneous resistance is perceived in cases in which a definite area of the skin is exposed to a prolonged or repeated irritation, as in the various occupational diseases of the skin. Sometimes a single traumatism of sufficient intensity, as the action of a powerful physical or chemical agent, may modify the vitality of the skin exposed to this agent. The recognition of this fact is of extreme importance in dermatology.

The entire thickness of the skin may be affected, as in the xeroderma pigmentosum resulting from exposure to strong sunlight, and in the hydroa vacciniforme from a similar cause. The epidermis alone may be affected as in simple erythema. In some instances the cutaneous pigment is the only element that undergoes any change as the result of the action of the external irritant. The subject of cutaneous resistance is bound up with the special susceptibilities of the individual patient. Diminished resistance of the skin may be congenital or acquired, permanent or transient. The congenital type is seen in hereditary bullous epidermolysis, in congenital pemphigus with epidermic cysts, and in xeroderma pigmentosum. A number of the instances of urticaria, strophulus, and prurigo in infancy are probably to be attributed, at any rate in part, to a congenital diminution of cutaneous resistance. Among the cases of the acquired type there must be recognized those in which there are operative certain internal causes such as renal insufficiency, defects in oxidation, gastrointestinal fermentation, disturbances of the glands of internal secretion, etc. Changes in the nervous system may play an important rôle. Climatic influences are sometimes to be detected in the diminished resistance of the skin coexisting with the transient or permanent residence of an individual in a given locality.

Brocq emphasizes the fact that in studying the eruptions resulting from the action of external agents, one must distinguish between the traumatic factors *per se*, the cutaneous resistance of the individual, and the eruptions to which he is predisposed and which occur in the areas of diminished resistance. The types of the eruptions or their morbid aspects are independent of the degree of cutaneous resistance and of the external trauma. They depend upon the individual idiosyncrasy or upon the numerous internal causes acting at the moment. Thus an urticaria may be traced to the harmful action of certain ingesta; a papulo-vesicular eczema may result from renal insufficiency or intestinal fermentation; and a psoriasis may be caused by an excessive nitrogenous intake. These facts are of eminent significance from the therapeutic viewpoint. Above all it is necessary to caution the patient against further exposure to the external trauma which was originally responsible for the diminution in cutaneous resistance.

THE PITUITARY GLAND IN DIABETES MELLITUS AND OTHER ENDOCRINE DISORDERS.

DIABETES is nowadays regarded generally as a disorder of multiple etiology. It is a variable symptom-complex dependent upon disease of one or more of the organs of internal secretion. This conception has been based partly on clinical observation and partly on experimental investigation. Until recently the pancreas was the chief center of interest in the study of the problem of diabetes, but latterly attention has been shifted mainly to the pituitary gland. That the posterior lobe of this organ plays an important part in corbohydrate metabolism has been demonstrated by Goetsch, Cushing, and Jacobson; while the last two observers, in conjunction with Weed, have shown that electrical stimulation of the pituitary gland causes glycosuria even when this organ is severed from all nervous connection with the abdominal organs.

The next point of attack has been the study of the histological changes occurring in the pituitary gland in diabetes and in other disorders of the organs of internal secretion. This investigation has been carried out by H. J. B. Fry (*Quarterly Journal of Medicine*, July, 1915). The post-mortem material available for this research comprised eight cases of diabetes mellitus in which disease of the pancreas was also demonstrated, three cases of acute pancreatitis, one case of carcinoma of the pancreas, two cases of myxedema, one case of cystic

goiter, one case of Addison's disease, and two cases of hypertrophied thymus. The most important result of this study was the demonstration of definite histological changes in the anterior lobe of the pituitary body in cases of diabetes. These changes consist in the presence of adenomatous masses of eosinophile cells, colloid invasion of the anterior lobe, and areas of cellular degeneration. In cases of acute pancreatitis and carcinoma of the pancreas histological changes in the pituitary are absent or slight. In myxedema there occurs in the pituitary an increase in weight resulting from an increase in the connective-tissue elements and a hyperplasia of the chief cells. In goiter there is a hyperplasia of the chromophile cells, especially of the eosinophilic cells, and an increase of colloid material in the interglandular cleft. No histological changes were observed in the pituitary gland in the case of Addison's disease or in the case of status thymolymphaticus.

Fry presents a tentative explanation of the activity and mode of secretion of the pituitary gland. He states that the eosinophilic and basophilic cells are derived from the chief cells by the formation of zymogen granules. The granular cells represent a stage of active secretion, and glandular activity is greater toward the center and posterior border of the anterior lobe. From the granules is formed the colloid which is temporarily stored in the interglandular cleft and thence passes into the posterior lobe and infundibulum and gains access to the cerebrospinal fluid. The hyaline and granular bodies are derived from cells of the anterior lobe which have been carried into the substance of the posterior lobe in the process of development. It is upon these cells that the call for increased secretory activity first falls. Colloid in the interglandular cleft is then utilized, and if there is an overdemand upon the secretory activity of the anterior lobe, colloid may invade the posterior part of the latter and the cells themselves become rapidly converted into colloid, until finally areas of atrophy of the cells appear. The question is still undecided whether the posterior lobe activates the colloid in its passage, or adds some specific secretion of its own, or acts merely as an indifferent supporting structure.

Splenic Enlargement in Early Syphilis.

Relatively scant attention has been paid to this subject in the literature of syphilology. This is probably owing to the fact that early cases of syphilis do not come under hospital care and hence the opportunity of studying under ideal conditions the visceral changes during this stage of the disease does not frequently arise. U. J. Wile and J. A. Elliott (*American Journal of the Medical Sciences*, October, 1915) have made a study of this subject in one hundred cases of early syphilis. In thirty-six of these they found a definite splenic enlargement. The spleen was noted as being hard and firm in seventeen cases, as tender in six cases, and as very soft in three cases. The average enlargement extended about two finger-breadths below the costal margin. This type of hypertrophy is said to resemble closely in consistency that of chronic malaria. Under antisyphilitic treatment the enlargement disappears much more slowly than do the other early manifestations. This is comparable to the slow disappearance of the general adenitis. The splenic enlargement may be present before the secondary manifestations are apparent and is thought to represent the earliest syphilitic visceropathy. The enlargement is either in the form of a soft tumor not unlike that of any other infection or may present itself as a firm, tense tumor. In a small percentage of cases the enlarged spleen is tender and sometimes extremely so. The enlargement is most frequently noted in those cases in which the general health has been seriously involved. In 76 per cent. of those cases in which the spleen was enlarged there was a definite involvement of the central nervous system. In discussing the persistence of splenic enlargement the authors suggest that the spleen acts as a reservoir for the spirochetes or their "rest forms" and that the subsequent tertiary manifestations may possibly be due to reinfection of the blood stream from the spleen rather than to recurrences *in loco* from early dissemination—malaria being pointed to as providing an analogy in this respect.

Sclerema Neonatorum.

The first recorded case of this condition was that reported by Usembezius in 1718. For many years thereafter sclerema and edema neonatorum were confused with each other until Parrot in 1877 showed the clinical and pathological lines of demarcation between the two conditions. He erred, however, in regarding sclerema as one of the signs of athrepsia. W. S. Paterson (*Quarterly Journal of Medicine*, July, 1915) has made a careful study of two cases of sclerema neonatorum which he regards as a well-defined disease not necessarily associated with or secondary to any other recognizable morbid condition. It may vary considerably in degree as to the extent and severity of its manifestations and also as to the gravity of the prognosis. The differences between true and false sclerema are only those of degree. The disease is not as rare as is generally supposed, its most characteristic feature being a palpable subcutaneous induration with which may be associated abnormalities of temperature, most notably in the direction of its being subnormal. As complications there may occur visceral changes in the form of inflammations, hemorrhages, or serous exudations. There is probably no edematous type of sclerema, the edema being a complication rather than an essential feature. Microscopic examination of a well-marked case shows subcutaneous infiltration with small cells and increased fibrosis, with atrophy of the adipose tissue. These changes suggest that the origin of the disease is probably to be found in some microbic infection. The treatment must be largely symptomatic and should also be designed to combat the toxemia.

Cerebrospinal Meningitis in Switzerland.

The Swiss Republic has for many decades been known to harbor sporadic cases of cerebrospinal meningitis. Transmission is seldom observed and therefore isolation is never thought of. Individual predisposition is very slight and the meningococcus dies so rapidly that the presence of living carriers would call ordinarily for only a brief quarantine.

Naturally when there is cumulation of cases the situation is changed. At a session last summer of the Medical Society of Basle (*Deutsche medizinische Wochenschrift*, August 26) Staehelin reported three cases, two of which occurred in soldiers. Two patients died while the other seems to have survived. Very disconcerting were the negative finds of lumbar puncture. Diagnosis was certified in the fatal cases by autopsy. Cultures of the meningococcus were submitted. In discussion Wieland noted that the prognosis is very grave for nurslings, and also for adults, especially for soldiers. On the other hand, children of school age showed a truly remarkable resistance; not only is the case mortality low among these children, but the victims make clean recoveries.

Leprous Soldiers

To those who are familiar with leprosy in its early stages it will not seem strange to learn that leprous warriors are fighting side by side with their intact fellows. Eruptions, small excrescences, and anesthetic areas presented by a subject are not necessarily recognized as parts of one general malady, and taken singly could readily be confused with other conditions, especially such as result from war's hardships. At a session last June of the Royal Imperial Medical Society of Vienna (*Muenchener medizinische Wochenschrift*, July 6) Oppenheim showed a soldier with mixed leprosy. The eruptions on his face and limbs had been regarded as eczema, while the destructive lesions on his fingers were taken for results of freezing. The soldier declared that he had three brothers, all lepers, fighting in the ranks. The men came from Sarajevo, a region in which the disease is or was endemic. When he was examined by an expert the soldier's affection was at once seen to be leprosy, and the diagnosis was clinched by the discovery of Hansen's bacillus in the nasal secretions.

Sterilization of Drinking Water for Soldiers.

The drinking water encountered in military campaigns on foreign soil is almost always bad. An abundance of small filters may be taken along with gravel as filtering material, but German troops in Southwestern Africa found these impracticable because the breakage was heavy and the filters constantly became clogged. Boiling is an old and trustworthy resource, but instead of special outfits for boiling it is best to make an abundance of very weak tea or coffee, to serve as the sole beverage. This, however, is not adapted to hot weather, for the tea and coffee must be cooled somehow. Pasteurizing should be better for warm weather on this account. Ozone and ultraviolet rays serve well for sterilizing large vessels of water. Kruse, in the military supplement of the *Muenchener medizinische Wochenschrift*, August 24, after enumerating the above methods and resources, pronounces them all defective for wholesale use. We are, therefore, forced to draw upon chemical germicides. The best of these is probably chlorinated lime, 13 parts to 100,000, which in 10 minutes will destroy all life in the water. However, it now becomes necessary to remove the chlorine. This may be done by sulphites or peroxides. This problem is left to the large manufacturers who prepare two sets of tubes in a carton, one containing chlorinated lime and the other some harmless oxidizing substance.

News of the Week.

Dinner to Dr. Goldwater.—The retiring Health Commissioner was the guest of honor at a farewell dinner at the Hotel Savoy on November 6, given by members of the Department of Health.

The City's Health.—The report of the Department of Health for the year 1914, recently issued, shows that the general health of the city was improved and that the death rate was the lowest on record. There were 74,803 deaths reported, or 13.40 per 1,000 of the population, as compared with 73,902 deaths and a rate of 13.76 in 1913. If the 1913 death rate had prevailed in 1914 there would have been 2,010 more deaths recorded. Only three large cities in the United States showed a lower death rate than New York in 1914; Seattle, 8.11; Los Angeles, 11.27, and Cleveland, 12.72. Organic heart disease caused the largest number of deaths, pulmonary tuberculosis ranking next with a total of 8,918. The other chief causes of mortality in the order of their importance were: Lobar pneumonia, 5,145 deaths; chronic kidney diseases, 5,107; bronchial pneumonia, 4,533; cancer, 4,467; infantile diarrhea, 3,432; arteriosclerosis, 2,368; diphtheria and croup, 1,491; diabetes, 979; cirrhosis of the liver, 784; appendicitis, 710. The suicides during the year numbered 935, of whom 687 were men and 248 women, while of the total 304 were native-born Americans. During the year there were 140,647 births reported, or 25.19 per 1,000 population for the entire city, the rate in Manhattan, 25.77, being the highest, and that in Queens, 23.07, the lowest. In a study of the nativity of the parents of these children it was found that in 35,558 cases both parents were born in the United States, while in 80,872 cases both were foreign born. In order more effectually to protect the health of the public, the department has divided the city into districts which are regularly covered by inspectors from the Sanitary Bureau, and special investigations were made as to the conditions of stables, and of barber shops, and the sanitary precautions taken in the manufacture of butter and cheese. The appropriation of the Department of Health for 1914 was $3,534,240.50, and of this $3,363,767.85 was expended during the year.

Trace Obnoxious Fumes.—As a result of the recent investigation by the Department of Health the sources of the offensive odors emanating from the New Jersey shore of the Hudson have been traced, and representatives of the factories involved have agreed to do their best to abate the nuisance.

Personals.—Dr. Clarence A. McWilliams of New York sailed for France on November 3, to take charge of the French Military Hospital at Passy, which is to be supported by the French Hospital of New York.

Sir Wilfred T. Grenfell, medical missionary in Labrador, will shortly sail to join the Harvard unit of the Red Cross for active work in France.

Mr. Robert Bacon, ex-United States Ambassador to France, sailed on the *Rotterdam* on November 4, in connection with the work of the American Ambulance in Paris, and also of the Harvard surgical unit of the British Army. The Harvard unit is composed of thirty-two doctors and seventy-five nurses and will be in charge of a British military hospital of over a thousand beds.

Dr. John Hewat of North Adams, Mass., who was wounded recently while serving with the British Army in France, returned to New York on No-

vember 5, bearing the Distinguished Order Service conferred on him for bravery under fire.

Dr. WILLIAM J. MALONEY, professor of neurology at the Fordham Medical School, New York, who joined the surgical force of the British Army soon after the outbreak of the war, returned to this country on October 31 to recover from a wound received while under fire with the army on the Gallipoli Peninsula last June.

Dr. WILLIAM SEAMAN BAINBRIDGE recently returned from a visit to the front in France and Belgium. Dr. Bainbridge made an inspection of the hospitals and sanitary conditions in the war zone and also in Great Britain.

Dr. WILLIAM H. WELKER, assistant professor of physiological chemistry at the College of Medicine, University of Illinois, delivered the address at the opening of the college.

Dr. JOHN C. DONALDSON of the Johns Hopkins Medical School has been appointed instructor in anatomy at the University of Cincinnati. Dr. Edward F. Malone has been advanced to the position of associate professor of anatomy in the same university.

Dr. WESLEY M. BALDWIN, formerly assistant professor of anatomy in the Cornell University Medical College, has accepted an appointment as professor of anatomy at the Albany Medical College.

Dr. CHARLES V. MORRILL has been appointed instructor in anatomy, and Dr. Robert Chambers, assistant in anatomy, at the Cornell University Medical College.

The Fight Against Patent Medicines.—The Health Department of New York announced on November 4, the first conviction in the campaign being waged against medicines and appliances falsely advertised as cures. The manufacturer of "Holman's Ague, Liver, and Stomach Pads" having pleaded guilty in Special Sessions to the charge of misleading was fined $100.

Rockefeller Institute Wins.—The damage suit for $200,000 brought against the Rockefeller Institute for Medical Research and three members of its staff, by two of the former employees at the Institute, was dismissed in the United States District Court on November 4, because the facts stated were insufficient to constitute a cause of action. The plaintiffs in the case alleged that the doctors sued had persuaded them to submit to the injection of a serum and that as a result of carelessness and negligence they had become infected with an incurable disease.

Eugenic Ordinance Planned.—The health officials of Paterson, N. J., have under consideration the passage of an ordinance requiring that applicants for marriage licenses present certificates of fitness to marry. The arguments in favor of such a law are based upon a mass of statistics regarding children born in the city hospitals.

Mother of Nine in Eighteen Months.—Mrs. Drewry of Spencer Co., Ky., is reported to be the mother of nine children in eighteen months. Mrs. Drewry, who is about thirty years old, gave birth to five children in May, 1914, and on November 5, 1915, to four boys. Seven of the nine, all boys, have thus far survived.

Twilight Sleep Hospital.—The executive committee of the Twilight Sleep Association, at a meeting in New York on November 5, decided to establish a hospital where treatment by the Freiburg method could be given. A permanent finance committee was named, to undertake the task of organization, and it is expected that sufficient funds will be forthcoming. It is the belief of the association that the growing interest in the "twilight sleep" propaganda will be increased by the creation of a permanent center for both treatment and instruction for physicians from other parts of the country.

To Test Bottled Waters.—Commissioner of Health Emerson intends to insure the purity of bottled water sold in New York City by a thorough system of tests and a sanitary survey of the sources of supply. The Commissioner has denied the statement often made by the salesmen of bottled waters that the Croton supply is unfit to drink, and has declared that on the contrary the Croton water reaches the city in the highest state of potability. It is, moreover, analyzed daily by the Department of Health, so that any contamination would be quickly discovered, while other waters sold here have not previously been subjected to such tests.

Dr. Rowntree Appointed.—The Board of Regents of the University of Minnesota, St. Paul, has announced the appointment of Dr. Leonard G. Rowntree, assistant head of the department of medicine at Johns Hopkins University, to be professor of medicine and chief of the department in the University Medical School at Minneapolis.

Interned German Surgeon Dies.—Chief Surgeon Perrenon of the German cruiser *Kronprinz Wilhelm*, interned at the Norfolk, Va., Navy Yard, died there recently of heart disease after a short illness. Dr. Perrenon was a line officer in the German Navy with the rank of captain.

Win Pardon by Braving Disease.—Dr. Joseph Goldberger of the Public Health Service, who has been searching for the cause of pellagra, a disease which killed over 11,000 persons in Mississippi alone last year, has been helped in his experimental work by prisoners in the State prisons in Mississippi who have voluntarily submitted to the experiments. Out of eleven prisoners who were observed, six have developed the disease. The men have all been pardoned and will be released as soon as a course of treatment on the prison farm has put them into good shape.

Traffic Accidents.—The National Highway Protective Society reports that during the month of October 43 persons were killed by automobiles, 6 by trolley cars, and 4 by wagons in the streets of New York City. Twenty-seven of these were children under 17 years of age. This is an increase of 13 fatal accidents as compared with October, 1914.

Acid Fumes and Tuberculosis.—Dr. S. Adolphus Knopf of New York has recently addressed a letter to the health authorities in which he states his belief that the irritating fumes and obnoxious odors from certain chemical factories on the New Jersey side of the Hudson River are active factors in the spread of tuberculosis. He states that the odors cause many people to keep their windows closed at night and that the acid fumes aggravate the condition of those suffering from respiratory diseases.

New Cabinet Office.—The movement to create a new cabinet office to be known as the Department of Health, will be revived in the next Congress. The proposal is strongly supported by the medical societies, but is opposed by Christian Scientists and osteopaths as being in the interest of the "medical trust." The political parties, however, have declared for such legislation with the object of conserving public health.

New Cancer Hospital.—The new House of Calvary, a hospital for the cancerous poor of New

York, at Featherbed Lane and Macombs Road, the Bronx, was opened on October 31, when it was blessed by Cardinal Farley. The hospital was erected at a cost of $120,000 and is in the charge of the Sisters of St. Dominic. It was formerly located on Perry Street, Manhattan.

The Late Dr. Huddleston.—At a meeting of the Medical Board of Gouverneur Hospital, held November 3, the following resolutions were adopted:

Whereas, The Medical Board of Gouverneur Hospital has learned with the deepest sorrow of the death of its president and fellow member, Dr. John Henry Huddleston, visiting physician to the hospital for the past seventeen years, and,

Whereas, By the death of Dr. Huddleston the Medical Board has lost a warm friend and wise counsellor, and the hospital has been deprived of the services of one who was constantly planning ways and means for increasing the efficiency of the service, but it is in the Out Patient Department he will especially be missed. Here his great interest, his forceful appeals for help, and rigid discipline have not only resulted in building up a well-organized and efficient system for treating the out-door poor and the care of those suffering from tuberculosis in the vicinity of the hospital, but before his death he saw the beginning of a large, fine outpatient building, be it

Resolved, That the Medical Board extends to the members of the family of deceased its sincere sympathy in their bereavement, and be it further

Resolved, That these resolutions be spread on the minutes of the Medical Board and that copies be sent to the local medical press and a copy be sent to the family of the deceased.

HENRY MANN SILVER,
EDWARD WAITZFELDER,
Committee.

Obituary Notes.—Dr. SIGMUND TYNBERG of New York, a graduate of the College of Physicians and Surgeons, New York, in 1885, visiting physician to the Central and Neurological Hospital and the Workhouse and Penitentiary Hospitals, and a member of the American Medical Association, the New York State and County Medical Societies, the Greater New York Medical Association, the German Medical Society, the Metropolitan Medical Society, and the Eastern Medical Society, died at St. Luke's Hospital on November 3, aged 51 years.

Dr. HARVEY N. ABBOTT died of apoplexy at Philadelphia on October 25, at the age of 59 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1878.

Dr. WILLIAM GEORGE KIMBALL of Huntington, Mass., a graduate of the Dartmouth Medical College, Hanover, N. H., in 1876, and a member of the Massachusetts Medical Society and the Hampshire District Medical Society, died at his home, on October 20, aged 68 years.

Dr. LLOYD N. FRIZELL of Kansas City, Mo., a graduate of the University Medical College of Kansas City in 1896, died at his home, from Bright's disease, after a long illness, on October 18.

Dr. RICHARD H. MCBAINE of St. Louis, Mo., a graduate of the College of Physicians and Surgeons, New York, in 1907, and a member of the American Medical Association, the Missouri State Medical Association, and the St. Louis City Medical Society, died in Barnes Hospital, St. Louis, from blood poisoning, after a long illness, on October 17, aged 32 years.

Dr. HERBERT E. KNOWLTON, formerly of Cambridge, Mass., a graduate of Harvard University, Medical Department, Boston, in 1891, died at his home in San Diego, Cal., on October 24, aged 49 years.

Dr. FRANK HERBERT DANIELS of New York, a graduate of the Harvard University Medical School, Boston, in 1884, visiting physician to the Knickerbocker Hospital, for some years and a member of the American Medical Association, the New York State and County Medical Societies, the Society of Medical Jurisprudence, the Harvey Society, the Manhattan Medical Society, and the Greater New York Medical Association, died October 30.

Dr. JAMES H. WRIGHT of Newark, N. J., a graduate of the Georgetown University School of Medicine, Washington, in 1867, died at his home suddenly, on October 17.

Dr. ALEXANDER PERRY of Denver, Col., a graduate of Vanderbilt University, Medical Department, Nashville, Tenn., in 1905, and a member of the American Medical Association, and the Colorado State and Denver City and County Medical Societies, died in Los Angeles, Cal., after a long illness, on October 20, aged 34 years.

Obituary.

GEORGE MILLER STERNBERG, M.D., LL.D.

WASHINGTON, D. C.

BRIG.-GEN. GEORGE MILLER STERNBERG, U. S. A., former Surgeon General of the Army, distinguished in military as well as in medical circles, died at his home in Washington, D. C., after a short illness, from heart disease, on November 3, aged 77 years. Dr. Sternberg was born on June 8, 1838, in Otsego County, N. Y., received his early education at Hartwick Seminary, and was graduated from the College of Physicians and Surgeons, New York, in 1860. Upon the outbreak of the Civil War he joined the Army Medical Corps as assistant surgeon, and "for faithful and meritorious service" was rapidly advanced. He participated in several engagements during the war and later in the Indian campaigns, was for some time in charge of the United States General Hospitals at Portsmouth, R. I., and at Cleveland, Ohio, was detailed to New York during the yellow fever epidemic of 1871, and was made a lieutenant colonel "for gallant service in performance of his professional duty under fire in action against the Indians at Clearwater, Idaho, July 12, 1877." In 1893 he became surgeon general of the United States Army, and during the Spanish War was in entire control of the medical corps. In 1900 he organized the Yellow Fever Commission, of which Major Reed was chairman. The Army Medical School also was founded during his term of service, which ended in 1902. In 1905 he was made professor of preventive medicine in the George Washington University Medical School.

Dr. Sternberg was a member of many medical societies, among them the American Medical Association, the Association of Military Surgeons of the United States, of which he was president in 1899, the Physiological Society, the Association of American Physicians, the Washington Biological Society (president in 1896), the Washington Philosophical Society (president in 1897), and the Medical Society of the District of Columbia. In recognition of his services he received the degree of LL.D. from the University of Michigan in 1894, and the same degree from Brown University in 1897.

DR. JOHN HENRY HUDDLESTON.

In Memoriam.*

By S. ADOLPHUS KNOPF, M.D.,

NEW YORK.

On Saturday, October 30, 1915, Dr. John Henry Huddleston passed away suddenly after a relatively short illness, his disease having been a double pneumonia. Those near him thought he was gradually improving when suddenly, in the early dawn of Saturday, his great soul passed out. It was, indeed, a shock to the many friends, colleagues, coworkers, and patients when they heard that John Huddleston was no more. Those who had been associated with him in hospital work had seen him only recently presiding over a board meeting with his usual dignity and tact, quiet yet strong. He appeared then in excellent physical vigor.

The funeral was held at the Lenox Avenue Unitarian Church, Dr. Merle St. Croix Wright conducting the ceremony. It was a simple, quiet and impressive service. The church was filled to its very doors with mourning friends, patients, and colleagues; all felt keenly the loss of the man whose personality had meant so much to them. Though only 51 years of age, he had secured many honors, and his life had been one of earnest work and noble achievements.

John Henry Huddleston, born on July 11, 1864, at Boston, Mass., was the son of Charles H. Huddleston and Susan Huddleston. He received his preliminary education in the Boston Latin School and later entering Harvard became a member of the class of 1886, of which he was class secretary. For the twenty-fifth reunion of the class he edited the "Report" and it was characteristic of the willingness with which he undertook the hard work that such a task necessarily imposes upon the compiler for him to write: "If you receive this Report with nearly the amount of enjoyment I have taken in gathering its contents and seeing the faces of one after another of you rise before me, I shall be abundantly repaid."

After taking the degrees of A.M. and M.D. in 1891 at Harvard, he became interne in the Children's and McLean Hospitals of Boston. In 1892 Dr. Huddleston came to New York and established himself as a general practitioner. Among his first and warmest friends in New York City was that good and great man, the Rev. Robert Collyer of the Unitarian Church of the Messiah, who often spoke to me of his affection for John Huddleston. It was not surprising that he soon became remarkably successful in practice. His thorough medical knowledge, his winning personality, and his modest and retiring manner caused him to be beloved by his patients and colleagues alike. The editor of the Medical Record said of him: "Dr. Huddleston was blessed with qualities which made him liked by all with whom he came in relation, and beloved by those admitted to his friendship. In medical practice he was the type of the perfect family physician. Of commanding physical presence, of firm will, but of most kindly and cheerful disposition, his mere entrance into the sick room inspired confidence and hope, and this went far to supplement his medical skill where cure was possible, and in bringing tranquillity and comfort to those beyond human aid." His industry and devotion to the medical profession were soon recognized by his colleagues of the Academy of Medicine who made him its secretary by a unanimous vote in December, 1900, and after faithfully serving as such for thirteen years, he became one of the trustees of this important institution. Because of his high standing in the American profession he was chosen secretary of the International Medical Congress of Madrid in 1903.

In spite of his busy life as a general practitioner Dr. Huddleston also devoted his energy and high intelligence to sociological, civic, and philanthropic works. Thus, when, some fourteen years ago, it was my rare privilege to ask him to interest himself in antituberculosis work he accepted my suggestion with enthusiasm and at once added his signature to a call for the formation of a tuberculosis committee under the auspices of the New York Charity Organization Society. Up to the time of his death he had been one of the most faithful, intelligent, and hardest workers on this committee. His knowledge and sound judgment in matters appertaining to the tuberculosis problem were soon recognized and he was asked to become a member of the Tuberculosis Committee of the State Charities Aid Association, and to interest himself in the formation of the Tuberculosis Clinics Association, of which he became vice-president. He became a member of the National Association for the Study and Prevention of Tuberculosis, an examining physician for the Stony Wold Sanatorium, and an attending physician to the Riverside Hospital-Sanatorium for the Consumptive Poor. Learning of the inestimable services which Dr. Huddleston had rendered to the antituberculosis cause, Governor Hughes appointed him a trustee of the New York State Hospital for Incipient Tuberculosis at Ray Brook, and Commissioner Goldwater invited him to become a member of the advisory board of the City Health Department.

*Read at the Meeting of the Second Annual North Atlantic and the New York State Conferences on Tuberculosis at Albany, Nov. 4, 1915.

Besides this special work in tuberculosis he filled the position of consulting physician to the United Hospital, Port Chester, N. Y., the Messiah Home for Children, and visiting physician to Gouverneur and Willard Parker Hospitals, and the medical board of the latter, in conjunction with the board of the Riverside Hospital, recently made him its president. The first sanatorium for consumptive employees in this country, that of the Metropolitan Life Insurance Company at Mount MacGregor, owes its existence very largely to Dr. Huddleston's initiative. It was in 1908, at the occasion of the Tuberculosis Congress Exhibition in New York, that he arranged for a mass meeting of all the officers and employees of the Metropolitan Life Insurance Company. During the course of the various addresses it was suggested that a sanatorium might be built by the company for its own tuberculous employees. The idea was taken up at once by the officers and directors of the company and Dr. Huddleston became their valued adviser. He helped in selecting a suitable site, supervised the construction of the buildings from a medical point of view, and when the institution was completed became its medical counsellor and consultant.

John Huddleston was a member of the American Medical Association, County and State Medical Socities, New York Pathological Society, Society for Internal Medicine, the Hospital Graduate Club, and the American Association of Military Surgeons. He was appointed assistant surgeon of the Seventh Regiment, National Guard, and retired with the grade of captain. For a number of years, from 1897 to 1911, he was a medical teacher, being chief of Prof. Hermann M. Biggs' clinic, and instructor in medicine at the University and Bellevue Medical College, a position in which he was eminently successful and a work which he assured me often, he enjoyed greatly.

In 1911 he wrote to a classmate the following interesting lines, which give an insight into the lovely and many-sided character of the man: "The last five years have meant for me personally an increasing tendency for private work to fall into the more restricted channels of diseases of the chest and abdomen, a regretted but necessary withdrawal from much of my laboratory study, from teaching, and from military duties, and increasing amount of committee business, largely in 'civic' and 'social service' fields. While during most of the year the days seem all too short, vacations have been a little longer, and the delight of the rush of midwinter is certainly equaled by the fun of the time when there is not a thought of medical or social problems. I am not a sportsman, but I have held a rod with luck attending, and sailed or motored a vacation through, and I have yet to do the same thing in successive vacations, or to find one not magnificent in experience and glorious in retrospect. My fortune is good; my family grows; I would cast a ring into the sea—but my misfortune is clear: I still do not see enough of those who are making '86."

One would hardly think that in a life so filled with daily activities Dr. Huddleston could also have found time to contribute to medical literature, yet he made some valuable contributions to scientific and popular medicine, as the following list indicates:

"A Study of 138 Cases of Pott's Paralysis," *American Journal of Medical Sciences*, August, 1894.

"The Sanitary Supervision of Tuberculosis as Practised in New York," published in collaboration with Dr. Hermann M. Biggs, 1895.

"Two Cases of Noma," *Pediatrics*, October 1, 1896.

"A Discussion of the Composition of Cream and a Consideration of the Desirability of Establishing a Standard," MEDICAL RECORD, September 11, 1897.

"The Value of the Schumburg Method of Purification of Water for Military Purposes," *The Medical News*, December 29, 1900.

"The Method of Preparation of Vaccine Virus in the Vaccine Laboratory of the New York City Health Department," *Medical News*, March 30, 1901.

"The Freezing Point of Urine; Its Determination and the Inferences Which May Be Drawn from It," *The Philadelphia Medical Journal*, June 29, 1901.

"Generalized Vaccinia," *Medical News*, Sept. 7, 1901.

The Wesley M. Carpenter Lecture of 1902 (New York Academy of Medicine), entitled "On Relations of Physical Chemistry to Medicine." MSS.

"Tetanus and Vaccine Virus," *Am. Med.*, Dec., 1903.

"Municipal Control of Tuberculosis," *Yale Medical Journal*, March, 1905.

"Am I My Brother's Keeper?" *Journal of the Outdoor Life*, July, 1911.

"Medical Work of the Tuberculosis Clinics," *Clinic Notes*, April, 1915, Vol. II, No. 2.

Because of his splendid diction and pleasing personality, Dr. Huddleston was much sought as a public speaker and presiding officer at public meetings, yet, although he never shirked duty, he did not care much for public speaking. I remember that it took quite a good deal of persuasion on my part to induce him, on the occasion of a Tuberculosis Sunday, to deliver what might be called his first tuberculosis sermon; and what a magnificent and feeling address it was! He had entitled it "Am I My Brother's Keeper?" I will quote only the concluding sentences. Deploring the inefficiency of hospital accommodation for the tuberculous poor of New York City, he said: "Where is the bed for my recently stricken brother whose best hope is in the sanatorium? Where is the bed for my mortally wounded brother, whose care at home means inevitably more cases of tuberculosis in his family? Forty-five per cent. of those now applying for entrance have to be kept waiting. Such waiting lists —the despair of the doctors—the deaths at home—echo the call. How long shall the call be sounded? How many beds would the waste of inefficient administration in nation, State, or city supply? For want of that dollar wasted my brother dies. You who are citizens of no mean city, and who would take your citizenship at its high value as a share in the administation of the affairs of a brotherhood, have a mighty task set before you, and I hale you to it. But be you citizens or non-citizens, rich or poor, old or young, bear in mind that there is no sanctuary in all this great city of ours to which you can withdraw and be safe. Wherever you are, there is your brother still calling 'Help!'"

Dr. Huddleston's gentleness with his patients, his kindness and sympathy for the lowly and unfortunate, and his devotion to his profession were among the qualities which made him the successful and beloved physician he became. He died altogether too soon, still in the prime of life and in the midst of labors not yet accomplished and dreams not yet realized, yet his life was in a sense complete, well rounded and beautiful and worthy of emulation in every respect. After all it is not the number of years of life which count, but the work we accomplish in the years during which we live.

With John Huddleston's death a man passed from this earthly career whose high conception of religion was duty and service to his fellowmen. As of old, well may it be said of him, "Well done, thou good and faithful servant."

16 WEST NINETY-FIFTH STREET.

Correspondence.

OUR LONDON LETTER

(From Our Regular Correspondent.)

CONFERENCE ON EDUCATION OF DEFECTIVES—ROYAL NAVAL VOLUNTEER RESERVE—HOME OFFICE REPORT ON EXPERIMENTS ON LIVING ANIMALS—DEAD TYPHOID BACILLI; EFFECT ON OTHER BACILLI.

LONDON, October 22, 1915.

AT the call of the National Special Schools Union we have had a conference of teachers and local education authorities, to discuss problems connected with the education of mentally and physically defective children. Mr. Cyril Jackson presided over the first session and said that under ordinary circumstances they would be looking for advance in this work through fresh legislation, but, like everything else, it was overshadowed by the vast struggle in which the nation found itself. He feared that in future there would be an increase of defective adults and they need to see what could be done for the wounded soldier, and in doing so experience with physically defective children would not come amiss.

Sir William Byrne read a paper on "Teaching in Institutes for Defectives," insisting that training directed to specific objects was more practically useful than abstract teaching. Then Mr. J. G. Legge urged that instruction in reading and arithmetic ought not to be overlooked.

Major Waldorf Astor, M. P., who presided in the afternoon, said the evidence accumulated that the cow was often responsible for non-pulmonary tuberculosis. Of course, the ideal was a supply of tubercle-free milk, but it would be years before we get dairy herds free from the infection. He believed in Pasteurization and suggested grading milk into (*a*) children's, (*b*) adults', and (*c*) cooking milk. In New York grading had coincided with a reduction of infantile mortality by over 4,000 in a year, but though the price had risen at the same time, the consumption had also increased to the great advantage of farmer, seller, and consumer. Dr. Elmslie read a paper on the treatment of cripples and was followed by Mr. Coffin of Bradford, and Mr. Spurley Hey of Manchester, who described the special school work in their respective localities.

On the second day Major Leonard Darwin read a paper on "Feeblemindedness in Its Racial Aspects." He said Dr. Tredgold had investigated the families of 61 feebleminded women and found 19 married and had 80 children; of those 80, 16 died in infancy, 20 were physically delicate or mentally dull, and 19 actually imbecile or feebleminded. From this, he said, it appeared that every feebleminded woman who became a mother was likely to produce at least one feebleminded child, and it should be noticed that the families of the feeble in mind were apt to be exceptionally large. If they were properly cared for in institutions and not allowed to become mothers there would be fewer feebleminded in future. He quoted as an instance of heredity, the case of Martin Kallikak who married in 1837; both he and the wife were sound in intellect, and their descendants, numbering several hundreds, had all been normal as far as could be ascertained. But this man had an illegitimate child, the mother being feebleminded, and from that child had sprung 222 feebleminded persons; though the conditions of their lives seem to have been the same as those of the legitimate descendants. In the discussion that followed Dr. Shrubsole hoped the conference would not be unduly depressed, for defects might be due to other causes than heredity; quite half the cases in the schools were not likely to be inherited. Major Darwin in reply to this remarked that when talking to eugenists he insisted on the influence of environment, but when talking to those concerned to provide good environment he insisted on the influence of heredity. He advised Dr. Shrubsole to do likewise.

Mr. J. W. Bunn read a paper on "The Practical Side of Special School Work," pleading that the teacher should be associated with the doctor in the selection of children for special schools.

The surgeons of the Naval Volunteer Reserve have received but slight recognition of their work, although not a few of them have given up good positions, appointments, etc., to serve their country. Their grievances have been represented to the authorities only to be ignored or rejected. The Reserve has been in existence above ten years and includes men who for years before the war have given much time to recruiting duties, for courses of instruction in naval hospitals and the service on battleships. At the outbreak of the war they were, of course, selected to occupy posts on hospital ships where important surgical work was expected. But as at the time the navy was in need of more surgeons, a number were taken on for temporary work, mostly young and some just qualified, and, of course, totally untrained in service conditions. Yet they have been allowed seniority over the more highly trained volunteer reserve—men who have devoted their leisure in time of peace to prepare to serve in war. In some cases surgeons to hospitals have thus found themselves junior in the service and precedence to their quondam assistants, house-surgeons or even their dressers! So unjust and irritating an anomaly ought to be altered without delay. It has been mentioned in Parliament and to the admiralty, but so far without any movement toward remedying what is admitted to be an injustice due to the ranking of the Naval Reserve and Royal Navy above the Volunteer Reserve. So those who in peace time equipped themselves for service in war are beginning to say they might as well have enjoyed themselves until the outbreak, when better conditions would have been offered, or even pressed upon them. The remedy is easy—merely to give the rank of acting staff surgeon to men who have held for several years honorary hospital appointments.

The Home Office Report on Experiments Performed on Living Animals in 1914 has not been completed, but a summary is issued showing the names of the places and persons registered for carrying out these investigations. The number of persons licensed was 678; of these 188 made no experiments in the year and of 8 others no report could be obtained, owing to absence of the licensees on war service. The total number of experiments was 87,253, being 905 less than in 1913. But those in which anesthesia was required numbered only 4,889. The other 82,364 (without anesthesia) were devoted to inoculations, hypodermic injections and such like. During the year 1914, there were 22,371 experiments performed by 19 licensees in investigating cancer, of which more than 21,000 were nearly all on inoculations of mice. For government and public health authorities 21 licensees report above 15,000 experiments concerned with antitoxics, vaccines, and sera, and for testing and standardizing drugs. During the year inspectors have

visited registered places, mostly without notice, and witnessed many experiments. They found the requirements of the act duly observed. Mr. G. D. Thane is the chief inspector and is assisted by a committee of 7 appointed by the Secretary of State for the Home Department.

The power possessed by the blood of persons inoculated with dead typhoid bacilli to agglutinate the *B. typhosus* and some allied bacilli has been the subject of research at the Manchester University under the direction of Dr. Delépine. The study is based on the examination of 280 soldiers injected with antityphoid vaccines in the preceding twelve months. Over 80 per cent. gave a very definite reaction, 16.4 gave no reaction. Between these the percentages were 28.2 very strong, 107 strong, 40 moderate, 8 slight or doubtful. The reaction was more likely to occur on a second inoculation than after a single one—a gradual lessening of reaction was noted with lapse of time; after a month it might disappear rapidly. In only 1 case out of 19 examined within a month was it negative. The relation of agglutination reaction to intensity of post-inoculation symptoms was (*a*) symptoms slight (113 cases), positive 96, negative 17; (*b*) well-marked, positive 138, negative 29.

Against *B. paratyphosus* B. 274 cases were tested, but this bacillus was not very satisfactory, being slightly acted upon by normal sera, but in 9 cases there was slightly stronger reaction. Against *B. enteritidis* 272 cases were tested. Result, 3 sera gave moderate reactions and 4 others slight ones.

Progress of Medical Science.

Boston Medical and Surgical Journal.

October 28, 1915

1. Non-Tuberculous Cases in the State Sanatoria. Elliott Washburn.
2. Errors in the Diagnosis of Chronic Pulmonary Disease. John B. Hawes.
3. What Constitutes Tuberculosis in Childhood? John Lovett Morse.

1. Non-Tuberculous Cases in the State Sanatoria.—Elliott Washburn asks if we are caring for any cases which, because they are non-tuberculous, ought not to be in the sanatoria. When the Rutland Sanatorium was established nearly seventeen years ago, and somewhat successful efforts were made through examinations by special, skilled examiners to restrict admissions to very early and favorable cases, it was not uncommon to hear the remark even from physicians, "So and so was cured of consumption at Rutland. I wonder if he really had it?" It would seem that the chance of error in diagnosis in well-advanced or far-advanced pulmonary tuberculosis either in adults or children ought to be small. Probably it is, and yet, on the other hand, Dr. Ash, pathologist of the Boston Consumptives' Hospital at Mattapan, reported that although that institution is intended for the care of the tuberculous only, and that most cases are far advanced, in 198 autopsies at that hospital 23 cases or 11.5 per cent. of all cases that came to autopsy proved to be non-tuberculous. In these 23 cases it was found that instead of tuberculosis, the true conditions were pneumonic sequelae in 8 instances, chronic cardio-renal in 5, septicemia in 2, aneurysm of the aorta in 2, malignant disease of the lung in 5, and actinomycosis in 1. He stated that 353 autopsies reported from eight institutions in Massachusetts and other states caring for a similar type of cases of tuberculosis showed 38, or 10.8 per cent., non-tuberculous. If this percentage of variation or error in diagnosis can be accepted as fairly true and constant in patients admitted to special hospitals as advanced in tuberculosis, may we not well ask "What is the percentage of variation in cases which are admitted as early or incipient cases—in which the true diagnosis is admittedly more difficult than in the advanced types?"

2. Errors in the Diagnosis of Chronic Pulmonary Disease.—John B. Hawes states that they occasionally meet with patients who have marked signs of pulmonary disease very suggestive of tuberculosis which later on, usually to their surprise and often to their chagrin, turn out to be due to something else. It is quite unfair to these patients to stamp them at once as advanced consumptives. It is unfair to their sanatoria and hospitals to admit such patients as these while their waiting lists are crowded with real consumptives in urgent need of treatment for themselves and of isolation from others. This paper is based on a series of such patients who had been sent to the writer as probable cases of pulmonary tuberculosis. In each of them he has been forced to the conclusion that the disease was not due to tuberculosis, but to some other cause. The study of these cases has impressed him with the need of taking nothing for granted and not jumping at conclusions, and has emphasized the necessity of a careful and painstaking history, and a thorough routine examination of the lungs and of the whole body, not only once but often repeated.

3. What Constitutes Tuberculosis in Childhood?—John Lovett Morse says that it seems to him that in the first place it is absolutely necessary to distinguish between tuberculous infection and tuberculous disease. Infection may be defined in this connection as the state of being infected, and disease as an alteration in the state of the body or of some of its organs, interrupting or disturbing the performance of the vital functions and causing symptoms of some sort. For all practical purposes, the infant comes into the world free from tuberculosis. In round numbers, 10 per cent. of all infants have become infected with tuberculosis by the end of the first year of life, and at sixteen years not more than 10 per cent. have escaped infection. A very small proportion of these children, however, have tuberculous disease. Tuberculous infection in childhood is almost invariably glandular. The condition is not one of disease unless other tissues are involved or the glandular enlargement is associated with symptoms of disease, such as fever, malaise, debility, loss of weight, and so on. If a positive d'Espine sign is not associated with a positive von Pirquet reaction, the enlargement of the glands is certainly not tuberculous. If a positive d'Espine sign is associated with a positive von Pirquet reaction, and there are signs of acute disease in the lungs, there is no way of determining at once whether the enlargement of the glands is tuberculous or not. If there are evidences of tuberculosis elsewhere, the d'Espine sign is of no importance anyway. If a child has positive d'Espine sign, a positive von Pirquet reaction, shows symptoms suggestive of tuberculous disease, and no foci of tuberculosis are found elsewhere, it is probable that the enlargement of the glands is tuberculous, and that they are not only infected, but also diseased, and the cause of the symptoms.

New York Medical Journal.

October 30, 1915.

1. An Eighteenth Century Quack in French Canada. William Renwick Riddell.
2. Pituitary Extract. Samuel Wyllis Bandler.
3. Filariasis Associated with Schistosomiasis. Randle C. Rosenberger.
4. Hypopituitarism. L. Napoleon Boston.
5. Status Thymicus Associated Probably with the Inferior Thyroid Lobe. Harris A. Houghton.
6. The Effect of Smoking on the Circulation. John Aikman.

7. The Eye in Diagnosis. William F. C. Steinbugler.
8. The Treatment of Horse Asthma by Repeated Injections of Normal Horse Serum. Louis A. Levison.
9. The Anesthetic Risk in Surgery. T. L. Dagg.
10. Infant Drug Addicts. Perry M. Lichtenstein.
11. An Unusual Complication of Acute Appendicitis. McW. B. E. Sutton.

2. Pituitary Extract.—Dr. Samuel Wyllis Bandler sounds a note of warning regarding the use of pituitary extract, but believes that nothing has been introduced into obstetrics which approaches it in value if it is used in the proper manner and in proper doses. This agent increases the contractile power of the uterus; it is evanescent in its effect, the influence lasting in proper doses about half an hour. He has seldom used more than a third of an ampoule at the first hypodermic injection; occasionally, when necessity demands, he has given one-half an ampoule. This is one of the important factors to be borne in mind; otherwise, it causes an extremely powerful contraction of the uterus which may do harm provided that all the conditions are normal, but which is certainly dangerous if the conditions are abnormal. In a slow, painful, non-progressive first stage of labor, if the head is moulded and fixed it and through the brim, pituitary extract is a splendid help.

4. Hypopituitarism.—L. Napoleon Boston reports two cases of this condition which are illustrative of Fröhlich's syndrome; both cases gave evidence of luetic taint as shown by the Wassermann reaction. At no points over the body did the patients display any hard or painful nodules of fat.

6. The Effect of Smoking on the Circulation.—John Aikman asks if there could be any relation between the percentage increase of tobacco produced and the increase in circulatory disease. A large proportion of our population is exposed to tobacco smoke from early childhood, even if they never became smokers themselves. Much of the air we breathe in homes and public buildings is charged with smoke. Opinions that have been expressed are widely conflicting and we are far from definite conclusions as to the true effects of tobacco.

8. The Treatment of Horse Asthma by Repeated Injections of Normal Horse Serum.—Louis A. Levison says that individuals exposed to the emanations from horses may react in a very characteristic manner, if they are susceptible. Contact with horse by riding or driving, working in the field, entering a stable, or even passing them on the street, may bring on a seizure characterized by difficulty in breathing, sometimes sneezing, a pressure or weight on the chest, or choking spells. The attack may be long or short-lived and may vary in severity, even from the same exposure. Some patients are aware of their susceptibility from their own observations. An attempt to immunize patients by means of repeated injections of horse serum seems entirely rational and was begun about one year ago. Three cases are cited, but the writer does not draw any conclusions from these few cases; they are merely presented to encourage others to try the method in refractory horse asthma.

10. Infant Drug Addicts.—Perry M. Lichtenstein states that textbooks teach that the opiates are excreted through mothers' milk and that the infant born of addicted parents is an unfortunate victim. The effect upon the child *in utero*, when both parents are addicts, is obvious: miscarriage; the birth of a dead child, or the birth of a child showing narcotic poisoning and with an inherited tendency toward taking narcotics. He reports cases which should serve as a warning to mothers and female addicts. The occurrence of such cases emphasizes the fact that the public must be taught the evil effects of drug addiction, and that it is the duty of every physician to warn addicts coming under his care of the serious effects that addiction may have upon their own future and upon that of future generations.

11. An Unusual Complication of Acute Appendicitis.—McW. B. E. Sutton reports this case. On operation they found at the distal end of the appendix a ruptured abscess, firmly adherent to the posterior wall of the bladder, and a beginning peritonitis. The symptom complained of, a sharp shooting pain in the vulva, he believes to be diagnostic of an adhesion to the posterior wall of the bladder.

Journal of the American Medical Association.

October 30, 1915.

1. Relation of the Hospital to the Community. Winford Smith.
2. The Essential Factors in the Diagnosis of Chronic Gastric and Duodenal Ulcers. George B. Eusterman.
3. Medical Aspects of Open-Air Schools. Sherman C. Kingsley.
4. The Sanitary Engineer in Public Health Work. Samuel Dixon and B. F. Royer.
5. Intermediate Trachelorrhaphy. Its Use as a Prophylactic Against the Pernicious Effects Sometimes Caused by Laceration of the Cervix. H. J. Bolt.
6. A Method of Testing Muscular Strength in Infantile Paralysis. E. G. Martin and Robert W. Lovett.
7. Sudden Blindness Due to Suppuration of the Accessory Nasal Sinuses, with Report of Three Cases. H. H. Stark.
8. Postoperative Detachment of the Choroid, with Especial Reference to Elliot's Operation for Glaucoma. Hans Barkan.
9. Early Diagnosis of Intussusception. Irving M. Snow.
10. Clinical and Electrocardiographic Studies on the Action of Digitalis. Alfred E. Cohn.
11. New Methods of Pyloroplasty for Congenital Pyloric Stenosis. Alfred A. Strauss.
12. Oxycephalic Exophthalmos, with Traumatic Rupture of Both Eyes. Ralph A. Fenton.
13. Malignant Tumors in and Around the Orbit, with Report of Starvation Method of Treatment. E. H. Cary.
14. Intrathecal Intracranial Injection of Autoneosalvarsanized Serum for Syphilitic Headache. Alfred Gordon.
15. Spontaneous Evolution of a Transverse Presentation, with Report of a Case. Nathaniel G. Price.
16. Appendectomy Through the Right Inguinal Canal. George De Tarnowsky.
17. A Plague-Like Disease of California Ground Squirrels Affecting Man in Ohio, with a Demonstration of Specimens. W. B. Wherry.

2. The Essential Factors in the Diagnosis of Chronic Gastric and Duodenal Ulcers.—George B. Eusterman presents this review in order to emphasize proved clinical factors and briefly to consider various phases of experimental, clinical, and therapeutic advancement in their application to the diagnosis of benign, chronic gastric, and duodenal ulcers. The observations are based on the study of 2400 cases of gastric and duodenal ulcers operatively demonstrated in the Mayo clinic from 1900 to 1914 inclusive, with an especial summary of the cases of 1913 and 1914. The average ratio of gastric to duodenal ulcers was about 1 to 3, that is, 75 per cent. of the ulcers were duodenal. Of the 264 cases of gastric ulcer, 171 occurred in males and 98 in females. The average ages were 47 and 44.5 years respectively. The average duration of symptoms was 9.8 years. In about 80 per cent. the course was intermittent. In 50 per cent. the complaint was continuous and the progressive over periods of from several months to several years prior to operation. Irrespective of the location of the ulcer, pain appeared within 4 hours after the ingestion of food in 85 per cent. of the cases; in over 30 per cent. it was present within 2 hours, in 55 per cent. within 3 hours, regarded as constant in 3.8 per cent. and irregular in 3.4 per cent. Definite nocturnal pain occurred only in 6 cases, or 2 per cent. Pain was controlled by food or alkalies, or both, in 180 cases. The majority of these (84 per cent.) showed relief after food, while alkalies alone gave relief in 15.6 per cent. There was a fairly definite history of bleeding in 73 cases, or 27.6 per cent. of this group; about 41 per cent. had hematemesis only, 15 per cent. melena, while both were mentioned in 44 per cent. Gastric analyses were carried out in 255 cases; 38 per cent. of these showed the presence of altered

blood in the extract. Gross retention was evident in 33.3 per cent. The average total acidity was 54; the average hydrochloric acid was 42. In 18 per cent. the acid values were normal or below. Under such a circumstance the possibility of carcinoma, syphilis, or associated disease was evident. The generally accepted complex of ulcer was more or less definitely present in 81 per cent. of the 212 cases; irregular or suggestive in 6.8 per cent.; classified as irregular in 5.3 per cent. In the remaining 7 per cent. the picture was atypical or the record was incomplete. A primary diagnosis of gastric ulcer was made in 174, or 66 per cent.; an alternative one in 21 cases (8 per cent.). Duodenal ulcer was the primary diagnosis in 47 cases (27 per cent.). The Roentgen ray gave definite assistance in 65 per cent. of the 113 cases examined in this series. The situation of the ulcers was as follows: The lesser curvature in 167 cases, or 63 per cent.; the pylorus, 35, or 13 per cent.; total ulcers at or near the pylorus, 87, or 33 per cent.; posterior wall 6, or 2 per cent.; 2 gastrojejunal ulcers secondary to gastroenterostomy. Multiple ulcers were noted in 15 cases, or 5.6 per cent. The complications were: Advanced cicatricial pyloric stenosis, 11.7 per cent.; evidence of perforation, 28 per per cent.; perigastritis with adhesions to neighboring structures, 28 per cent.; questionable malignancy, 11.7 per cent.; appendical disease, 33.7 per cent. In less than 25 per cent. of all cases was there no complicating factor. Of 814 cases of duodenal ulcers 628 (77 per cent.) were males and 186 (22.8 per cent.) were females. The average age was 43 years, and the average duration of symptoms was over 12 years. The clinical course was intermittent in 95 per cent. of all cases, and periodic in 50 per cent. Continuous preoperative complaint of variable duration was noted in 26 per cent. Definite relief by food was noted in 67 and partial or irregular relief in an additional 15 per cent. Relief by neutralization was present in 39 per cent. Hemorrhage was reported in 208 cases (25 per cent.) and was classified: Melena, 8.8 per cent.; hematemesis, 6 per cent.; both 10.5 per cent. A primary clinical diagnosis was made in 543 cases (66.7 per cent.) and an alternative one in 67 cases. Of 251 cases in which the tentative diagnosis of gall-bladder disease was also made, 51 (20 per cent.) showed this disease present and 51 ulcers (22.3 per cent.) were shown to be of the chronic perforating variety. The ulcer complex was fairly regular in 71 per cent., suggestive in 7.2 per cent., and irregular in 13.2 per cent.

3. Medical Aspects of Open-Air Schools.—Sherman C. Kingsley considers the problems of child life and the practicability and advantages of open-air schools. He states that open-air school advocates believe that 100 per cent. of the school children should have their fresh air and hygienic rights. In many parts of the country there is no reason why all schools should not be open-air schools all the year around, because the climate affords no serious obstacle. The open-air school movement is spreading rapidly over the country. There is a deep interest in the physical welfare of school children, and it is the conviction of part of our people that the time to serve these children is when they are in the public schools; that it is not good business to allow them to sit for six or eight years with handicaps and defects which are preventing them from receiving the thing which the school wants to give. He calls attention to the fact that there are 20,000,000 school children in the United States. These boys and girls spend 11,415 years in the school rooms of the land every school day. This means a total every school year of 2,283,000 years. He calls attention to the amount of time that is lost through drowsiness, inattention, and half asphyxiation, due to badly ventilated and overheated school rooms. The work of conducting open-air schools should have careful medical direction and supervision.

4. The Sanitary Engineer in Public Health Work.—Samuel Dixon and B. Franklin Royer believe that for efficiency a public health organization in a representative form of government should be directed by one versed in sanitary and practical medicine, as well as in sanitary engineering. A little training in entomology and geology would add to the efficiency of the executive. Coordination is the keynote of a successfully organized public health department and the sanitary engineering division is one strong arm in such an organization.

6. A Method of Testing Muscular Strength in Infantile Paralysis.—E. G. Martin and Robert W. Lovett state that the determination of the strength of partly paralyzed muscles in infantile paralysis has been done in the past by the roughest sort of guess, most often by pressing the hand against the contracting muscle. It was suggested by the physiological department of Harvard University that a more accurate means of estimating muscular strength would be of great value, and the method described was formulated with the following aims: (1) to enable a more accurate diagnosis to be made in the way of picking out the seriously affected muscles after an attack; (2) to obtain a means of indicating the muscles which were most promising for mechanical or operative treatment; (3) a quantitative measurement of this sort which would give a means of gauging the effectiveness of different modes of treatment; (4) a method of this kind might enable one to pick out from supposedly abortive cases certain cases in which remained a residual muscular paralysis too slight to be perceived by other methods. The index of muscular power employed is the resistance of the muscle group to a steady pull sufficient to overcome it. A sling is adjusted in an assigned position over the part of the limb in which the muscle group to be tested has its insertion. The sling is fastened to an accurate spring balance through which the pull is exerted. The balance must be held carefully in a line at right angle to the axis of the part of the limb to which the sling is adjusted, and is read either at the instant the muscle yields, as in the test of plantar flexion, or when the member is drawn into an assigned relationship with the body, as in knee extension. A standard technique has been worked out for certain movements.

8. Postoperative Detachment of the Choroid, with Especial Reference to Elliot's Operation for Glaucoma.—Hans Barkan concludes that clinically demonstrable postoperative detachment of the choroid takes place after cataract operations, with or without iridectomy, in about 4 per cent. of the cases; in Elliot's trephine operation in about 10 per cent.; in Lagrange's sclerotomy in about 20 per cent.; it does not occur in linear extraction, or simple iridectomy. The *sine qua non* for its existence is low intraocular tension, caused by abnormally rapid escape of aqueous humor through the wound, extending over some interval. The chamber is not shallow or absent because of the detachment; the detachment is secondary to the condition of the chamber. The fluid responsible for the detachment is derived, probably, from the choroidal blood vessels, and not improbably from the veins. Choroidal detachment is of relatively frequent occurrence after Elliot's trephine operation and should, if for statistical purposes only, be looked for, and its occurrence noted in all cases in which Elliot's operation has been performed.

10. Clinical and Electrocardiographic Studies on the Action of Digitalis.—Alfred E. Cohn states that their

studies have led them to draw a number of conclusions in regard to the way digitalis acts, and to find new criteria in the T wave and in the effect on conduction for detecting when the drug is acting. It seems important to emphasize the fact that it is essential to distinguish differences which patients suffering from heart disease present, and to study them in groups, with these differences in mind. Rhythm certainly offers a prime basis. The effect of digitalis on rate and on a number of other capacities varies with the nature of the disturbed function. In the use of the drug in pneumonia we have found it to have an action essentially similar to that found in the nonfebrile diseases. In the absence of edema, we have not observed a diuretic effect. Evidence has been found which indicates persistence of action, longer than can be accounted for if the drug acts only by virtue of its concentration. The writer believes that clearness of indications will result only if the exact mechanism of the action of the drug is ascertained.

13. Malignant Tumors in and Around the Orbit, with Report of Starvation Method of Treatment.—E. H. Cary reports twenty-four such cases and concludes as follows: 1. (*a*) All branches of each external carotid must be tied. (*b*) In the majority of cases both sides can be operated on without an interval of two weeks, and this without shock. (*c*) Sarcoma offers the best results. 2. It may be noted that all the sarcomas occurred on the left side, except two. As the common carotid arises from the transverse portion of the aorta, a morbific tendency might find nourishment in excess from this circumstance. 3. Circulation from the ophthalmic branch of the internal carotid does not prevent the value of the operation in the orbit, as Dawbarn concluded. 4. In this group of cases, sarcoma occurs in all ages. In females it occurs most often beyond the age of 19, and in males, under this age. 5. Cancer occurs in this group oftener in males and only in one case under 46 years of age, which was the ethmoidal case of 28, coming under Case 6 (sarcoma). 6. I have not found in any of my cases an anomaly in the carotid distribution. 7. The results seem best when the tumor is not disturbed, suggesting traumatism at the sight, always an exciting factor. 8. Though I have not practised ligating uniformly the accompanying veins, it may be better to do so. 9. Although certain carcinoma cases were treated with the Roentgen ray, no good results were observed. 10. In two cases in which tumors involved the optic nerves—Case 9 secondarily and Case 10 primarily—both demonstrate that the optic tracts reach the chiasm and there decussate; when a nerve proceeds to its destination, the respective nasal half possibly, and the temporal half probably are separately sheathed, as is also the papillomacular bundle of fibers, which are intact and which may be disturbed but not destroyed.

The Lancet.

October 16, 1915.

1 An Address on the Ethics and Law of Drug and Alcohol Addiction, Being the Sixth Normal Kerr Memorial Lecture. William Collins.
2. Notes on the Clinical Characteristics of Cases Treated as Paratyphoid Fever. Henry Robinson.
3. The Explanation of a Recto-urethral Anomaly, and Some Points in Normal Anatomy. Frederic Wood Jones.
4. Etiology and Prevention of Cerebrospinal Fever. Halliday Sutherland.
5. A Series of Cases of Transient Aphasia, Hemiplegia, and Hemiparesis Due to Arterial Spasm. J. Gordon Sharp.
6. Labor Complicated by Eclampsia and Glycosuria; Cesarean Section; Recovery. C. Percival White.
7. The X-Ray Treatment of Fungating Epithelioma with the Introduction of "Progressive" Infiltration. Christopher Kempster.
8. Memorandum on the Employment of Bandages for the Irrigation of Wound-surfaces with Therapeutic Solutions, and the Draining of Wounds. Almroth E. Wright.

1. An Address on the Ethics and Law of Drug and Alcohol Addiction.—William Collins delivered this lecture before the Society for the Study of Inebriety on October 12, 1915. He discusses the subject from the standpoint of free will and personal liberty and says that alcohol and drug addiction are to be regarded as examples of the surrender of self-control in favor of self-indulgence, of the voluntary preference for the lower in the presence of the higher alternative of volition, exercised in obedience to appetite rather than to the higher command of conscience. If we call inebriety a disease we must not thereby acquit its subject of all responsibility; if we call it a vice or a crime we must not on that acount relinquish remedial in favor of purely punitive treatment. He points out the need of radical reform of the pharmacy and poison laws, takes the position that alcohol is a drug and a poison, and that its use should be restricted, not by prohibition, but by restriction of preparations containing more than a moderate percentage of ethylic alcohol as if they were, what in fact they are, poisonous drugs. He also points out that legislation too far in advance of public opinion is difficult of enforcement and is liable to reversal by reaction or to fall into disrespect by aiming at more than can be achieved.

2. Clinical Characteristics of Cases Treated as Paratyphoid Fever.—Henry Robinson, while serving the British Expeditionary Force, has had the care of a number of cases whose clinical characteristics differed from anything he had met in civilian practice. The series observed consisted of 89 patients admitted to the enteric isolation wards. All cases of typhoid fever were excluded, and also several of a very mild type which were clinically paratyphoid cases in which the *Bacillus typhosus* was isolated. Of the eighty-nine patients, in forty-seven a paratyphoid bacillus was isolated from the blood, feces, and urine. Of the remaining forty-two cases a small number were perhaps not enteric cases at all, but the clinical course of the great majority of them resembled so strongly that of the former group that probably more complete investigation would have resulted in isolation of a paratyphoid organism. The writer found that paratyphoid fever (A and B) in the British Expeditionary Force is a disease much shorter and milder than typhoid fever, as met with in civilian practice and in the South African campaign. Its onset may be gradual or moderately sudden. Headache and abdominal pain are its most constant symptoms. Shivering at the onset; cough, pains in the limbs and back, diarrhea, constipation, and nose-bleeding are the next commonest symptoms; all these are met with in about 30 to 60 per cent. of the cases. Vomiting at the onset and sore-throat later are by no means rare. Definite rose spots in successive crops are found in about 60 per cent. of the cases. The abdominal reflex is absent in slightly less than 50 per cent. of the cases. The pulse rate is extraordinarily slow, even more so than in typhoid fever. Relapses of brief duration are not uncommon. Several complications occur more rarely and are the counterparts of those associated with typhoid fever. The paratyphoid bacillus, A or B, is frequently isolable from the feces, but in many cases not until the symptoms have subsided; it is also occasionally isolable from the blood, urine, and from metastatic abscesses. Distinct help is obtainable from repeated quantitive Widal reactions, but much experience is required for their interpretation and they must be read in conjunction with clinical evidence and the history of previous inoculation. On the assumption that this disease is of the enteric group the same precautions against its spread are indicated as in the case of true typhoid fever. In particular, carriers must be watched for.

4. **Cerebrospinal Fever.**—Halliday Sutherland says that we have long known that epidemics of cerebrospinal meningitis arise under cold atmospheric conditions and disappear with the advent of warm weather. In general cold air is lethal to the organism of this disease and it is impossible for infection to be carried by cold air. Overcrowding, bad sanitation, and privation are well known as predisposing causes. In the relationship between these circumstances will be found the keynote to the etiology of the disease and to a simple method of preventing it. Man by protecting himself against cold in an unphysiological manner has produced the ideal conditions for the growth and spread of this malady. The prevention of the disease is simple. In dormitories or day-rooms where men are congregated the windows should be open day and night. The greater the overcrowding the more thorough should be the natural means of ventilation. With an unlimited supply of fresh air cold is to be guarded against by suitable clothing, the avoidance of draughts, and of damp garments that draw heat from the body.

5. **Transient Aphasia, etc., Due to Arterial Spasm.**—J. Gordon Sharp reports a number of cases illustrating types of aphasia, monoplegia, hemiplegia, or hemiparesis, which were for a long time not clearly recognized. He states that they are neither embolic, hemorrhagic, nor thrombotic in origin, but depend on a temporary spasm of the middle cerebral artery or its branches. The condition is usually met with in those who have passed middle life and in those who are subjects of arteriosclerosis. Arteriosclerosis does not alone account for the spasm, and it is likewise not always associated with high systolic blood pressure. Passion and emotion may be exciting causes, and so may toxins circulating in the blood. The cerebral arteries are not more frequently atacked than others but the results are more evident. Some have said that in the transient hemiplegia under consideration extensor plantar reflex does not occur. This is not the experience of the writer, who has often demonstrated its presence. The author discusses the treatment, preventive and immediate. Alcohol, tobacco, excitement, and vitiated atmosphere are certainly determining causes in those liable, and should, therefore, be avoided. The treatment is practically that for arteriosclerosis and high systolic blood pressure.

6. **Labor Complicated by Eclampsia and Glycosuria.**—C. Percival White reports this case in which sugar was demonstrated in the urine as early as the fourth month of pregnancy. During the pregnancy the peculiar features of the urine were the small amount of albumin, the presence of a considerable but varying amount of sugar, and the possibility of producing almost at will, by diet, increase and decrease alternately of each. Between the thirty-fifth and thirty-sixth weeks cesarean section was carried out in consequence of puerperal eclampsia and the impossibility of delivery through a long conical cervix. The result of this case seems to modify somewhat the general idea that surgical interference in diabetics is rarely successful and often fatal; it moreover invalidates the statement that owing to the almost universal death of the fetus in pregnancy diabetes the mother's life alone should be considered. In this instance the development and birth of a healthy child was quite contrary to experience. Another dictum usually accepted is that should the mother survive labor or abortion, the prognosis is never favorable. This did not hold good in this case, since this patient has improved and at the end of three years has gained seven pounds in weight. This is probably largely due to unremitting care and attention.

7. **The X-Ray Treatment of Fungating Epithelioma.**—Christopher Kempster states that during the past few years he has been able to treat a large number of malignant growths and to observe the effect of various methods of filtration upon this particular form of growth. He finds that those cases which gave the best results in his hands were the ones treated by what is termed the "progressive filtration" method—that is, the gradual introduction of filters of progressive thickness. It is his custom to deliver to cauliflower fungations a full pastille dose of the rays without any filter whatever at a distance of 10.6 cm. from the anticathode, since the soft short rays from the *x*-ray tube have a singularly rapid atrophic effect when delivered in full pastille doses. This dose is repeated two or three times at weekly intervals. At the end of this time the growths have usually shrunk in a remarkable manner. An aluminum filter 1 mm. in thickness is then introduced at two or three sessions, at weekly intervals, and then successively thicker filters are used. In this way a number of satisfactory results have been obtained. The writer cites illustrative cases.

8. **The Irrigation of Wounds.**—Almroth E. Wright states that the irrigation of wounds has the following advantages over the application of wet dressings: 1. A therapeutic solution can be continuously applied, maintaining its concentration unaltered, and this, in treatment with saline solutions, is of fundamental importance. 2. With proper arrangement the therapeutic agent can be applied to all internal and external surfaces of the wound and at the same time efficient drainage can be obtained. He describes an arrangement of bandages by means of which the water can be led into the wound where it is required, can be distributed so as to wash down all the walls, and can then be carried away without any leakage into the bed. The principle of the siphon is employed with either a single or a multiple loop method of packing. The writer for this purpose classifies wounds into cylindrical wounds disposed horizontally, funnel-shaped wounds with the funnel opening disposed upward, downward, and laterally, and, finally, ascending or descending cul-de-sac wounds, and shows how in each particular type of wound an arrangement can be made for feeding in the therapeutic solution, for distributing it over the walls, and then effectively draining the wound.

British Medical Journal.

October 16, 1915.

1. Ureteral Calculus: Its Symptoms and Treatment. With a Few Illustrative Cases. David Newman.
2. Removal of a Bullet from the Right Ventricle of the Heart under Local Anesthesia. L. H. C. Birkbeck.
3. Observations on the Drainage of Gunshot Wounds. Max Page.
4. The Recruit's Heart. A Memorandum for Medical Examiners. James Mackenzie.
5. Memorandum on the Employment of Bandages for the Irrigation of Wound-Surfaces with Therapeutic Solutions, and the Draining of Wounds. Almroth E. Wright.

1. **Ureteral Calculus.**—David Newman states that many other lesions of the urinary tract may present all the symptoms of calculus, so that when the surgeon had only subjective symptoms as his guide, helped only by palpation and examination of the urine, the cases were very rare in which even an approximately correct diagnosis could be made. The problem is now greatly simplified and the diagnosis reduced to a certainty. With the aid of the *x*-ray, the cystoscope, wax-tipped and metallic ureteral bougies, and palpation of the terminal portions of the ureters, exact information can be gained. Even with these valuable aids, in a goodly number of cases, patience, careful watching, and repeated examinations may be required before a definite course of treatment can be determined. Conversant with all the recent advances both in scientific and practical urology, the surgeon realizes the value of the

physical corroborative evidence in helping him to gain a full knowledge of the lesion. In a few instances the employment of all the special methods may be necessary in order to make a diagnosis; in others one may suffice. The author cites instances in which the employment of one method has yielded the diagnosis, but states that such cases are not met with every day and consequently all methods which throw light on the diagnosis are of use. Of all these methods the radiograph is probably the most useful, but should never be allowed to become a short cut to diagnosis because of the many dangers of obtaining shadows which are liable to be taken for stone.

2. **Removal of a Bullet from the Heart.**—L. H. C. Birkbeck reports this case which occurred in a private, who was wounded eight days previous to his admission to a general hospital. The bullet had passed through, and killed a man in front of, him. The patient had not lost consciousness and had experienced only slight pain from the wound. There was a small dirty wound, one-half inch in diameter, just below and to the right of the xiphi-sternal junction, and also a painful swelling of the right parotid gland, which disappeared the following day. The heart appeared to be normal and regular. The *x*-ray examination seemed to show an object in, or close to, the lowest portion of the wall of the right ventricle. Its shape and size so far as could be made out were those of a rifle bullet. Five weeks after the patient had received the wound sharp pain developed in the left leg and the heart showed irregularity and dropped beats; operation was decided upon. Five grains of veronal were given the night before the operation and five-sixth grains of morphine during the morning before the operation. The patient was not unduly under the influence of morphine. Under local anesthesia (eucaine 1 per cent. potassium sulphate ¼ per cent. and adrenalin) Colonel H. M. W. Gray made a horse-shoe incision, with the convexity upward, extending along the sixth costal cartilage on each side and across the sternum at the level of the attachment of the fifth cartilage. This made an exposure of the track of the bullet in the depth. The perichondrium was separated from the left sixth cartilage, which was cut across at the costochondral junction and used as a lever to elevate the sternum, while the triangularis sterni, pericardium, etc., were being separated off the posterior aspect of the flap. A small portion of the sixth rib was removed close to the costo-chondral junction. The sternum, at the lower border of the fifth costal cartilages, was grooved deeply with a gouge and divided with bone forceps. The soft parts were then separated from the sternum and ribs so that the flap could be turned downward and forward. When the flap was pulled forward a hole about an inch long appeared in the pleura on the right side in the track of the bullet. The right lung collapsed, respirations became labored and quick, and the patient coughed jerkily. This was apparently the only discomfort that the patient experienced during the operation. The pericardium was opened obliquely, from the base to near the apex of the heart. The heart looked normal and no wound could be seen. On digital exploration the bullet was felt to be lying apparently fixed at the back of the heart either in the wall or the cavity of the right ventricle. The right ventricle was seized with a pair of catch forceps near the apex and a suture was passed through the muscle adjacent, thus holding the heart forward. Manipulation of the bullet caused it to change position and it was found to be free in the ventricle. It was worked as far as possible from the coronary vessels, grasped between the thumb and finger and two stitches were inserted in the muscle wall over the bullet. The wall of the ventricle was incised for half an inch, and the bullet removed with forceps. While the wall of the ventricle was still held firmly between the thumb and finger the stitches were tied. On removing the catch forceps there was brisk bleeding which was stopped by an under-running stitch. The pericardial cavity was wiped free of blood clot and filled with normal saline solution to exclude air and was then sewn up. The right pleural cavity was next filled with saline and sewn up. While the wound was being closed the chest was aspirated to remove the saline. The patient was wonderfully comfortable on being taken back to bed, but about four hours after the operation the respirations rose suddenly to 48 a minute and remained at that level until he died four and one-half days later. There was never any indication that the operation had interfered with the heart action, which averaged 120 to 130 and was wonderfully strong until within a few hours of his death. From an examination of the heart post-mortem it was found that the wounds in the heart had healed perfectly. The cause of death was judged to be multiple pulmonary infarction from clots derived from the right ventricle.

3. **Drainage of Gunshot Wounds.**—Max Page states that the rubber tubing commonly adopted for drainage has not been entirely satisfactory in war surgery. In its place he substitutes a tube made of rubber, which in section is star or pinion shaped. The outside diameter should be the same as that of ordinary full-sized drainage tubing. For certain cases the drain should be provided with a central lumen. The tube is passed through the entire length of the wound track. As a result of this arrangement a series of gutters lie against the wound surface and extend the length of the tract. When fluid is syringed into the cap it passes down each gutter, so that it is brought into contact with practically the entire wound surface, at the same time clearing away from the same area all débris. Theoretically it might be expected that this drain would give good results with continuous irrigation, but in practice relatively forceful periodical washing out of the gutters has proven more satisfactory.

Berliner klinische Wochenschrift.

September 20, 1915.

The Meiostagmin Reaction in Malignant Tumors.—Wissing recalls to the reader that this reaction is bound up in the mensuration of the depression of the surface tension which appears upon the addition of suitable antigens to the sera of cancer patients. This reaction is by no means specific for malignant tumors, for it is seen in other affections which behave themselves in the same manner. Fortunately there is no danger here of confusion and differential diagnosis. It is necessary, however, to know in just what conditions a positive meiostagmin may occur. These are as follows: (1) Febrile states. Here the reaction is transitory and subsides not long after the fever. (2) In nearly all pregnancies in the last 3 or 4 months, disappearing as a rule about two weeks after delivery. (3) Heart disease with broken compensation. (4) Cirrhosis of the liver and icterus gravis. (5) Pulmonary phthisis, afebrile, with large area. (6) Individual cases of marked diabetis mellitus (acidosis plays no rôle here). (7) Individual cases of chronic rheumatic polyarthritis. (8) Individual cases of pronounced chronic nephritis and uremia. Of all these conditions but one need be associated logically with possible cancer formation; this is jaundice, which could be due to cancer of the gall bladder or liver. If due to cho-

lelithiasis this should soon become apparent. There are numerous severe states in which a meiostagmin reaction is absent—these at least cannot cause confusion in diagnosis.

Ethylhydrocuprein in Scarlet Fever and Measles.—Hirschfelder and Schlutz, both of the University of Minnesota, speak of the fine results from the use of this quinine derivative in pneumococcus sepsis, both as prophylactic and curative. Giemsa and Werner, Izar and Nicosia have shown its great superiority over quinine in malaria. Having obtained some of the drug from Professor Morgenroth the authors have been testing it in scarlet fever and measles. In the former no favorable influence on the course of the disease was noted. The fever even lasted a little longer than in control cases. The results in measles were different. Whereas in control cases the duration of the fever averaged practically 8 days, under the use of the drug the duration was almost cut in half (4.3 days). The dose was from 1½ to 3 grains three times daily. The drug was tested in experimental rabies and experimental vaccinia with negative results.

Münchener medizinische Wochenschrift.

September 21, 1915.

A New Quinine Derivative as an Oxytocic.—Herzog describes a new drug which may come to supplement pituitrin and ergot. That quinine posses a certain amount of oxytocic and abortifacient action has long been known, and noted obstetricians have tested it within comparatively few years; and in fact were thus engaged when the hypophysis preparations were placed on the market. Were it not for the uncertainty of its action quinine would be placed by some authorities at the head of the column of oxytocics. Still when used intensively the percentage of positive results has often been high. The discovery was made that a combination of quinine and veronal is much superior to quinine alone in obstetrics. At von Herff's clinic during the past year a combination of the two has been used in 150 cases of childbirth and chiefly during the period of dilatation. The treatment was successful in from 70 to 75 per cent. of cases. The drug acts only when some pains are actually present and cannot create pains. It appears in fact to sensitize the uterus to the natural exciters of the pains. On account of its tendency to act chiefly in the first stage of labor, it can be followed up by hypophysis extract or ergot. In a few cases of beginning abortion the quinine derivative has caused prompt expulsion of the ovum but these cases were the exception.

Prevention of Epidemic Cerebrospinal Meningitis.—Petruschky, who has been forced to deal with an epidemic cumulation of cases in soldiers' barracks, gives an outline of how his successful results were obtained. The methods employed differ in one respect from those recently reported from Zürich. In that city the preventive measures were not specially stringent. Isolation of suspects was practiced, but when these did not develop the disease in two weeks they were released even if carriers. But the Zürich troops are not at war, so that the management can deal with suspects more liberally than during actual war at the front. The author, in carriers and by actual cases of disease, disinfected the room and patients' belongings, and special attention was given to pocket handkerchiefs. Everyone had to be accounted for, and they were not sent to the laundry until disinfected on the spot. The handkerchief order was enforced among the carriers. The idea came from the fact that after earlier measures had been enforced new cases still occurred; since the measures were directed to handkerchief disinfection no new cases have appeared.

Serological Studies in Tetanus Subjects.—Noeggerath and Schottelius have sought to determine whether the serum of patients and convalescents contains definite amounts of natural antitoxin. In such cases either no serum should have been given for prevention or treatment, or, when given, its protective power should if possible be determined on animals. In a large number of cases tested both patients and convalescents showed in their blood antitoxin equal to a 1/10 fold serum. It was found impossible to allow for the protective value of serum already injected. The conclusion from these experiments is that the convalescent serum of a tetanus patient is not powerful enough to be used in treating the disease.

Deutsche medizinische Wochenschrift.

September 23, 1915.

Scrofula.—Schelble states that if we abstract actual tuberculosis from clinical scrofula, the exudative diathesis remains. Tuberculosis is often associated with the latter, but apparently not in the obligate sense. The socalled scrofulous facies appears to represent sufficiently the exudative diathesis, but certain details may have a tuberculous origin. Swollen cervical lymph nodes readily arise in nonspecific lesions of the face, fauces, etc. These should not be excised even if there is suspicion of tubercle, for now we have such resources as the *x*-ray and quartz lamp. Of great importance is the subject of phlyctens on the conjunctiva, which lesion alone can set up much of the so-called scrofulous facies—impetiginous eczema of the face, swollen upper lip, swollen lymph nodes. These phlyctens can sometimes be traced to external infection, but there is also some endogenous factor. Is this tuberculosis? Half or less of those tested with tuberculin give a positive reaction, even if we exclude all cases presenting the clinical appearances or family history of the disease. It is doubtful if two varieties of phlycten exist, and of the two sources the exudative diathesis seems the choice. As an exogenous factor acting upon the latter may be mentioned the head louse which attracts to the scalp numerous pyogenics. The presumably non-tuberculous lesions of scrofula yield to measures which would hardly prevail were these lesions tuberculous or the expression of tuberculosis.

Influence of Morphine on Heterotopic Cardiac Stimulation.—Hering first cites old clinical observations and the results of animal experiment. W. T. Porter, the American physiologist, showed in 1896 that morphine favors the appearance of heterotopic stimulation of the organ. In 1891 Curschmann stated that in angina pectoris he had more than once seen death follow suddenly upon a large hypodermic of morphine. The latter is able to favor heterotopic stimulation both directly and indirectly. Indirectly it acts upon the vagus, increasing its tonus. Directly by acting on the accelerans it favors auricular flutter and this is doubtless how it caused the angina pectoris deaths. This action of morphine is hardly to be found in works on pharmacology, but various clinicians have urged much caution in the use of the drug in heart disease.

Functional Aphonia.—J. F. O'Malley states that six cases of this condition have come under his care, all having occurred in the trenches. In four cases the voice returned on asking the patient to phonate with the laryngeal mirror in situ for the purpose of examination, and a mild application of the faradic current was effective in the other two cases.—*Proceedings of the Royal Society of Medicine.*

Insurance Medicine.

War Mortality.—It is an axiom that losses in war must increase with the frequency of opportunities for losses and with their duration. Hence the number of fighting days in which great pitched battles are fought should be in direct proportion to the total losses of the war. In the Russo-Japanese war there were 40 such days. The losses by disease cannot be calculated because even under poor sanitary conditions the Russian losses of this sort were less than a third those of the Japanese. The latter were due largely to defective nutriment and beriberi.

A battle must be most carefully prearranged at the present day. Often this involves forced marching, and the troops may have to fight before they can rest. It may so transpire that these particular bodies have to face an invisible enemy as a result of which they become demoralized by losses before they can retaliate. There is a natural tendency to spread and seek cover and then regroup themselves, but since there has been no opportunity prepared for such a course they can only yield, for modern fire is quite irresistible.

In every contest moral and psychological factors play a notable role. In former times friends and comrades marched side by side, with flying banners, singing and cheering; while today the soldier fights alone in a trench or under other shelter, and hears whizzing bullets from invisible foes. He can see the fall of his neighbors. It all wears on him until demoralization sets in, which means efforts to save himself.

The losses in battles of position are naturally less than in battles of motion, so that in trench-warfare this should be the case. In the Russo-Japanese war, however, it was an instance of the most tenacious defence against the most fanatical attack. In position-warfare there are but two objectives—either to outmaneuver the enemy or to disperse him by artillery fire. The only other course possible would be for both to come out from their shelter and fight. Hence despite the vast increase in the technique of slaying, losses are much lower than in former generations. We may look forward to still smaller percentages of loss in warfare. Progressive evolution of strategy and tactics, more humane infantry bullets, advances in medical science, are among the factors which will bring this about.

To visualize these statements it is only necessary to note the fact that war premiums in Bulgaria in 1913 varied from 6 per cent. in the young to 3 per cent. in the older troops. Despite the losses of the two wars war insurance was afterward issued by the Balkan Co. without any premium, save a flat rate, single payment of 2 per cent. on taking out the policy.—*Blätter für Vertrauensärzte der Lebensversicherung*, May-August, 1915.

Referees and Examiners.—Mr. Isaac Miller Hamilton, president Federal Life, Chicago, in discussing the papers read before the fifth mid-year meeting of the Medical Section of the American Life Convention at French Lick, Ind., said that personally he believed that the business end of the medical departments of the life insurance companies had increased wonderfully in efficiency during recent years. In reference to the matter of a referee, it was one thing to have a referee who had nothing to do for the company except occasionally to name an examiner and quite another for the company to use the entire time of a capable referee who relieved the medical director of the work of appointing local examiners. Companies of the size of most of those having membership in this bureau would not find it practical perhaps to employ a referee to give his exclusive time to the service of the company. His personal observation and judgment led him to believe that unless companies were in a position to have such a service it was much better to cultivate a feeling of cooperation between medical directors. They should frequently compare their lists and freely exchange information. If a company was entering new territory its medical director should ask two or three or more of the medical directors of other companies if they would furnish him with their lists of medical examiners for the territory and respond promptly when similar requests were made of him.

Dr. Florence suggested that agents should not have blanks for appointing examiners, but that these should be sent from the medical department. With that general statement he was in complete accord; but as with all dogmatic rules, there perhaps should be some exceptions. With this fundamental requirement the agency department of a company should cooperate with the medical department and the cooperation must be begun at the time the agent was appointed. In his judgment, moreover, it should always be made clear to the local examiner that his actual appointment and the continuance of that appointment rested with the medical director, not with the agent; that the company had confidence in its agents and hoped there would be cooperation to the fullest possible extent between the agent and the examiner, but there would be a very full investigation by the medical director when differences of opinion arose.

Disputed Cause of Death.—Action was brought on a policy of insurance providing that, if death resulted from bodily injuries "effected directly and independently of all other causes through external, violent, and accidental means," the insurer would pay the sum of $2,000, and if death resulted from wounds "intentionally inflicted upon the assured by any person," the insurer would pay $400. The assured was intentionally attacked and stabbed. Gangrene of his wounds followed and he soon after died. It appeared from the testimony of the physicians who dressed his wounds and attended him that gangrene is one of the consequences that might follow an open wound, and that the insured died as a result of the gangrene, which was caused in the first instance, by the wounds, and that there would have been no blood poisoning or infection of any kind but for these wounds. It was also shown by the evidence that this infection may be produced as the result of the failure of the surgeon, who dresses the wounds, to properly disinfect his instruments; or, in other words, that gangrene or blood poisoning may set up in a wound as the result of very slight neglect or inattention, or from any cause that brings into contact with the wound some unclean object. The son and wife of the insured testified, in substance, that two days before he died they cut or untied the bandage around a wound on his thigh with their hands, and that he rubbed his hand over the wound. The court thought that it would be pure speculation to say that the cause of the death of the insured was gangrene produced by the removing of the bandages and the rubbing of the wound. The insurer was, therefore, held liable only in the amount of $400.—Casualty Co. of America v. Taylor, Ky. Court of Appeals, 176 S. W. 194.

Society Reports.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

Forty-first Annual Meeting, Held at Lexington, Kentucky, October 19, 20 and 21, 1915.

(Special Report to the MEDICAL RECORD)

THE PRESIDENT, DR. HUGH CABOT OF BOSTON, IN THE CHAIR.

The Principles of Cleft Palate Surgery. — Dr. JOSEPH RILUS EASTMAN of Indianapolis said failure in palate operations could often be traced to indifference or uncertainty on the part of the operator as to how provision could be made for arterial communications into the flaps. Naturally in deciding any case the question of whether lateral incisions were necessary the principle that there must be no tension upon sutures could not be slighted. No sutured cleft palate would heal if the coaptation sutures were under tension. However, lateral incisions were not under tension. the matter of preventing tension. If the flaps were freely and completely elevated from the hard palate, the soft palate split along the edge of the cleft and the tensor palati aponeurosis divided, there was usually no trouble in bringing the lateral halves of the palate together without tension and when they were thus drawn together they were red and vascular and in the most favorable condition for union. In turnover flap operations one severed practically all of the arteries which entered the flap excepting the very small branches which entered along the margin of the cleft where the flap was turned over. Such poorly nourished flaps did not always die nor did they always live. Certainly their viability varied with their blood supply, other things being equal. A surgeon was unfair to his patient and himself if he failed to minimize hemorrhage in every possible way during cleft palate operations. Avoidance of injury to the palatal vessels and the consequent hemostasis were of obvious value in keeping the field clear for accurate work. This was not a slight advantage. Often in a small mouth and irritable pharynx the presence of blood sufficed to make a "dismal swamp" operation of what otherwise would be a comparatively simple affair. But as essential as the blood-free field was to precise work there was a much more important aspect of the hemorrhage question. The hemorrhage not rarely led to a fatal result, perhaps through shock, perhaps through swallowing of blood with its fever inducing constituents, perhaps through the general effect of lowered vitality. For many reasons that operation was best which could be performed with the least injury to blood vessels. In wide palatal clefts the prospect of success without lateral incisions might not seem good. One might readily receive the impression that there was little or no palatal tissue to be freed and elevated by scissors-spreading dissection beginning at the edge of the cleft, the temptation to make lateral incisions in such a case being great. However, it might be said that soft palatal tissue was more abundant on the sides even though widely separated by the cleft than would be imagined by those who did not make it a practice to relax, unfold, and develop the lateral halves of the cleft palate by blunt dissection, beginning at the cleft margins. The palatal tissue was there. It was our duty to free it, smooth it, and thus broaden it. It certainly was not in the line of our duty to ruin its viability by severing its vessels in making lateral incisions.

Dr. TRUMAN W. BROPHY of Chicago said the subject of cleft palate and hare-lip had been less considered than any other in the domain of surgery by general surgeons. There was no deformity to which the human family was subject that was more conspicuous, more distressing, more dreaded than cleft palate and hare-lip, and yet general surgeons had very largely passed it up. In operating for the correction of cleft palate and hare-lip the surgeon should so perform his operation as to leave the parts in just as nearly a normal condition as possible.

Arteriosclerosis of the Uterine Vessels.—Dr. JOHN W. PRICE of Louisville stated that a careful study of sections of this case was very suggestive that the hemorrhages were the result of rupture of diseased arterioles in the submucosa. The evidence in favor of this view was, first, the arterioles in the scubmucosa were sclerosed as well as the larger vessels. Second, there were areas beneath the submucosa containing recent hemorrhages undergoing fibrosis. Third, there were other areas beneath the submucosa which appeared to be old hemorrhages which had undergone fibrosis. Fourth, there was seen in other places outside the vessels evidence of repair. Fifth, a patient had a single profuse hemorrhage three years before operation, and had no unusual bleeding during the following two years. (A single ruptured uterine vessel would explain this hemorrhage as clearly as a case of hemiplegia could be explained by the rupture of a cerebral vessel. From the consideration of such a small number of cases we could not arrive at any conclusions, but it seemed to him worth while reporting his findings, as it might lead others who also had a small number of cases to report their's, and eventually a great mass of material would be accumulated from which conclusions might be drawn. Simpson had diagnosed the condition four times before operation. He was reasonably certain of the diagnosis in most of his cases. The history of the case, and the character of the hemorrhages, and the appearance of the patient were the greatest aid in making the diagnosis in the absence of finding a palpable tumor. In cases where there was any doubt as to whether there was present a cancer of the body of the uterus, he suggested the use of the curette or a hysterectomy. In cases where the bleeding had been as serious as in his case no time should be lost in curetting, the uterus should be removed as quickly as possible, and if found after removal to be malignant, then a more radical operation at once could be performed. All of his cases, except the last one, had been treated previously by palliative and so-called conservative methods, as had been the majority of cases reported. He felt that a continuance of a palliative treatment for too long a time subjected the patient to unnecessary danger, and if the patient was suffering with a malignant condition, much valuable time was lost.

Recent Results in the X-Ray Treatment of Menorrhagia, Dysmenorrhea, and Uterine Myoma. — Dr. SIDNEY LANGE of Cincinnati said the *x*-ray treatment of menorrhagia and uterine fibroids by the production of the artificial menopause had received a new impetus by the invention of the Coolidge tube. While results obtained by the use of the older style of tube were in a measure satisfactory, yet they were difficult and tedious to elicit and failures were common. If the proper technique was employed, the effect of Coolidge tube radiation upon the ovaries was the most certain of medical phenomena. The difficulty of selecting cases and excluding the possibility of malignancy was the only just criticism that could be directed against this method of therapy. The present paper was based upon fifty consecutive cases of menorrhagia, dysmenorrhea, and uterine fibroids treated by *x*-ray therapy. In every case a satisfactory result was achieved, an artificial menopause, apparently permanent, occurring in every case regardless of the age of the patient. These cases were referred from many different sources, and while only ordinary care and skill was employed in their selection malignancy had not developed in any case either during or following the treatment. In this series of fifty cases, nineteen were treated because of persistent menorrhagia. The ages of the patients varied from seventeen years to fifty years. The minimum *x*-radiation required to bring about a permanent menopause was one treatment (100 X) in a woman of fifty-nine. The greatest amount given any patient was 800 X (eight treatments) which was required to abolish the ovarian function in a girl of twenty. Another patient of seventeen years of age required 600 X (six treatments). A woman of thirty-two required 500 X. With increase in age of the patients the amount of *x*-radiation required to abolish the menstrual flow rapidly decreased. Thus patients around forty years required 500 X (five treatments), while between forty-five and fifty years 100 X to 400 X (one to four treatments) usually sufficed.

Dr. LEWIS S. MCMURTRY of Louisville stated that the use of the *x*-ray in treatment of diseases of the pelvic organs in women was new, but the present operative treatment of fibroid tumors of the uterus was the most successful of all operations known to surgery. The mortality from the surgical treatment was lower than that from any other major operation known to surgery, consequently there ought to be solid and substantial results from any treatment that was to take the place of the surgical treatment. In Kronig's cases the patients came for treatment a long time, and while the symptoms were ameliorated in those cases he saw under Kronig, the tumor had not disappeared.

Dr. CHANNING W. BARRETT of Chicago said, in sizing

up the cause of hemorrhage from the uterus, we should remember the uterus was an organ unlike other organs, in that it had a physiological hemorrhage, and any departure from that regular bleeding might be just a little change from the normal and the cause might be very slight. In weighing the different causes of hemorrhage we had to recognize that there was a material resistance to treatment due to a change in the blood vessels themselves. Oftentimes coming on at about the menopause, we should remember the uterus was a senile organ at that time. Instead of deciding that the uterus should come out if it was malignant, and ought to remain if it was not malignant, we should bear in mind that many of these uteri had to be removed at that time. With reference to the *x*-ray treatment outlined by Dr. Lange, he did no know that it would be satisfactory for those patients as regards hemorrhage ceasing because they had only been followed until the hemorrhage stopped. The method of dealing with fibroid tumors of the uterus by taking out the ovaries in aiming to bring about cessation of the menses and an early menopause had proved entirely satisfactory more than thirty or forty years ago, because there was a time in surgery when it was considered safe to take out the ovaries and decidedly dangerous to remove the uterus, and in that period of surgery the abdomen was opened and healthy ovaries removed in order that the diseased uterus might give less trouble. He did not believe the treatment which the doctor outlined would stand the test of time.

Dr. THOMAS J. WATKINS of Chicago said that as a remedy for temporary use in these cases, he would suggest an old but very efficient one, which consisted in packing the uterus with gauze saturated with iron, Monsell's solution or the tincture. The great advantage of this was that it was usually very efficient, and it was the only packing that could be left for a long time without becoming offensive. It could be left for a week without disturbing conditions or developing odors.

Dr. LANGE in closing stated that he did not offer this method of treatment for fibroid tumor of the uterus as a substitute for surgery, but for those cases that either refused operation or for those in which operation seemed inadvisable.

Kidney Lesions Diagnosed with the Aid of the Cystoscope and X-Ray.—Drs. COURTNEY W. SHROPSHIRE and CHARLES WATTERSON of Birmingham, Ala., said our exact knowledge concerning lesions of these structures would depend on two factors: (1) the cystoscopic examination, including functional test and uranalysis; (2) the *x*-ray examination. The cystoscopic examination and functional test, together with careful uranalysis was by far the most important. Next would come the radiographic examination, and then would be placed in line the physical findings and the patient's history. Within the past month in one of their hospitals a surgeon exposed the right ureter through its entire course in a search for stone which he was unable to find. The appendix was said to be diseased and was removed. No radiographic or cystoscopic examination was made or requested. Second: We would have errors of commission on the part of the cystoscopist due to lack of judgment in interpreting the results of his examination or to the failure of the radiologist to properly read his plate. They personally placed little faith on shadows said to be within the kidney or ureter unless they were shown positively to be within one of these structures by means of the shadow catheter, pelvic injection, or the stereoscopic plate. Pelvic injection, one of the most valuable means at our command for diagnosing lesions of the kidney, was vigorously attacked some years ago by members of the medical profession who had very bad results with its use, but since these results had been shown to be due to faulty technique this procedure was no longer in ill repute. It was, therefore, the duty of the cystoscopist to insist upon these procedures which were safe and painless when properly performed before having numerous *x*-ray plates made which were worthless even though the suspicious shadows were shown.

The Urogenital Tract in Routine Examination.—Dr. STANLEY G. ZINKE of Richmond, Ky., stated that one of the sources of trouble in the male which was most frequently overlooked was the prostate. He had read somewhere, he did not recall just where, that fully eighty per cent. of those who indulged in illicit sexual intercourse suffered from gonorrhea. This would mean that a little more than seventy per cent. of our male population contracted a urethritis of gonorrheal origin. Fully sixty per cent. of those who did so, suffered from an involvement of the posterior urethra. In other words, more than forty per cent. of men had, at some period during their lives a condition which, to say the least, was accompanied by prostatic involvement to a greater or lesser degree. This from gonorrhea alone. Let us say that twenty-five per cent. of these, which was a liberal allowance, received proper treatment. This left thirty per cent. who carried with them a gland which was pathological. Add to these ten per cent. for those whose prostate was abnormal from other causes, not hypertrophies or tumors, but masturbation, withdrawal, sexual excesses, ungratified desire, etc., and we had forty per cent. of the whole having prostates which needed attention. Modern methods of examination—cystoscopy, urethroscopy, ureteral catheterization, etc., had, in spite of their value, hindered, in many instances, in the making of a proper diagnosis.

Dr. BRANSFORD LEWIS of St. Louis said the general practitioner should familiarize himself with the cystoscope and the urethroscope, because the proper application of these instruments would enable him to make a correct diagnosis. He had known a number of patients who had gone on for many years suffering because they were told by general practitioners that their trouble was practically incurable, yet their condition could have been relieved promptly by simple operative measures.

Dr. F. M. BUCKMASTER of Effingham, Ill., said he recalled the case of a woman who was operated three times before the cause of her trouble was ascertained. She was about thirty years of age, and complained of recurrent attacks of pain, slightly continuous between times, along the lower end of the ureter in the appendical region. She also complained of attacks of cystitis. There was more or less urinary disturbance all the time, especially severe at times. The abdomen was opened and the appendix removed without relieving her symptoms. A year later, the symptoms continuing, the same surgeon opened the abdomen again, and removed a tube and ovary on that side. The cystitis and attacks continued. Three years after the first operation the symptoms not only continued but became worse, and at that time pus cells and blood cells were found in the urine, and the cystitis was quite severe a large part of the time. On investigation a stone was found located in the lower end of the left ureter. This stone was removed and the woman recovered.

Dr. LEON SOLOMON of Louisville said the fact that this subject was discussed at such a meeting as this was sufficient evidence, and made it plain, that it had a bearing for the general practitioner, so-called, as well as the surgeon and specialist. It was getting to be a difficult problem for the so-called internist to know where he stood in relation to the specialist and general surgeon. With reference to the *x*-ray, it might or might not disclose the nature of the trouble, and he felt sometimes it had been the cause of surgery which was difficult and might have been avoided. He had in mind a piece of surgery which was proposed by a careful diagnostician, himself an internist, an interpreter of the *x*-ray, where the positive finding of the operation was that of a stone in the ureter. It was demonstrated in advance of the operation by the catheter *in situ* that the shadows were phleboliths.

Dr. ZINKE said that in his paper he stated that if the general practitioner had a good knowledge of uranalysis and of symptoms in connection with a good personal history, it would at least lead him on the right track if it did not give him a clue to the condition present. What was the use, for instance, of Dr. Lewis practising his specialty if all the general practitioners could make as accurate a diagnosis as he did?

Limitations of High-Frequency Treatment of Papilloma of the Bladder.—Dr. H. G. HAMER of Indianapolis said applications of the high frequency current in these cases of carcinoma showed some hemostatic effect and slight reduction in the size of tumor or, on the other hand, marked reduction in size to be followed by rapid growth uncontrolled by burning. In one case it seemed to cause more rapid extension. He formulated the following conclusions: (1) High frequency cauterization was an important addition to our means of attacking vesical papillomata of the non infiltrating type. (2) All benign papillomata should be treated primarily with the high frequency current in view of the high percentage of recurrences following open operation (50 per cent.) and the high mortality (10 per cent.). (3) In cases where suprapubic operations had been done recurrences should be looked for and, if present, treated by fulguration upon their first appearance. (4) In

dealing with papilloma involving the vesical orifice and prostatic urethra, perineal cystotomy with removal of as much of the tumor as possible, and application of the high frequency current to the remaining growth seemed a rational procedure.

Dr. JOHN R. CAULK of St. Louis said the general practitioner should consider any bleeding from the urinary tract as serious, particularly a symptomless hematuria, and not stamp these hemorrhages as due to a congested bladder neck, and various other things that were so commonly ascribed as causative factors in these cases. The general surgeon had yet to be convinced of the importance of the cystoscope in almost all cases of prostatic hypertrophy before operation. Patients should be cystoscoped because of the fact that tumors quite frequently were back of prostatic obstructions and many of the untoward results following perineal prostatectomy seemed to be due to leaving behind a tumor which was back of the obstruction. He had seen four such cases.

(*To be continued.*)

FIRST DISTRICT BRANCH OF THE MEDICAL SOCIETY OF THE STATE OF NEW YORK.

Ninth Annual Meeting, Held in Nyack, October 9, 1915.

THE PRESIDENT, DR. JAMES E. SADLIER OF POUGHKEEPSIE, IN THE CHAIR.

President's Address—The Utilization of the Knowledge We Possess.—Dr. JAMES E. SADLIER of Poughkeepsie delivered this address, in which he said that it was the generally accepted view that medicine was not an exact science, and possibly might never be such, yet he was firmly convinced that the members of the medical profession devoted more time to study, observation and thought, and were more thoroughly educated along the lines of their professional work than were the members of other great professions. Very much of the knowledge now possessed by the profession of medicine was exact in character, and while it might be elaborated and amplified in the future, the present basic principles would ever remain. Dr. Sadlier said that he was convinced that as the result of strenuous work, exhaustive in character and for other reasons, they at times failed to be practical, and went looking for some "Will-o'-the-Wisp" or Sunday disease, when if they would utilize their knowledge and judgment they could easily recognize a week-day condition, one of known and established characteristics. In illustration of this the essayist cited the frequency with which empyema was overlooked for a time, or a diagnosis made by a consulting physician that should have been determined by the physician in attendance had he but considered the possibility and weighed carefully the history and clinical findings. Cancer was another condition which they should be alert and watchful to detect, being not unmindful of the fact that chronic irritation, in all its varied types and locations, was an established predisposing element. The need should be constantly kept in mind of treating radically and early all lacerations of the female generative organs, the benign tumors, gastric ulcers, gall stones, and infective and irritative conditions about the mouth, and thereby utilizing to its known limits our present knowledge upon this subject. He emphasized the necessity of abandoning all efforts at "watchful waiting" which would lull the patient to destruction and recommended the adoption of the principle of complete eradication through surgical interference. If one lacked the ability to absolutely diagnose sufficiently early a cancer of the stomach he could establish a diagnosis of some condition of a surgical nature in time to permit of operative interference of an exploratory character. After referring to the damage that was likely to result from lack of attention to focal sources of infection, Dr. Sadlier said he was convinced that in their endeavor to diagnose many diseases, especially those of an abdominal or pelvic character, they failed, not because of lack of knowledge but from neglect to avail themselves of the advantage to be obtained from taking a proper history and carefully reviewing all the symptoms and conditions in the patient leading to his present state. Such history should be written and could seldom be obtained at one sitting and frequently required great patience and astuteness on the part of the historian. In the diagnosis of abdominal disease the *x*-ray should be utilized simply as one link in the chain of evidence, since strict reliance upon it was frequently misleading. In the acute infections, perforations, and obsructions of the organs of the abdominal and pelvic cavities they were not always practical and scientific in their pre-operative treatment; fractured bones were always put at rest immediately by temporary or permanent splinting, but acute conditions below the diaphragm were too frequently mobilized by cathartics, the result of which was to disseminate the infection and prevent localization of the disease. In these conditions rest meant freedom from all things which excited peristalsis or any muscular movement and at times the patient should be placed in such a position as would tend to localize the infective process. After speaking of the need of proper mental and physical post-operative treatment in surgical cases, Dr. Sadlier dwelt on the important part played by good nursing in the mitigation and elimination of diseased conditions. While this nursing care was exercised to its fullest extent in hospitals and to a fairly adequate degree in the homes in cities in rural districts it was not taken advantage of. In obstetric practice they were not fully executing their proper present day knowledge. They were not always caring for these patients from the aseptic standpoint as they would for a surgical case. Here asepsis could only be carried out by having the services of a professional nurse. Too much of this care was left to unskilled, careless people. It was high time that they looked to basic fundamental principles of obstetrics and insisted upon proper ante-partum and post-partum care, sufficient attention to pelvimetry and a complete knowledge of the case prior to labor, as well as proper care and environment during childbirth and the period following. The fact that the surgical treatment of disease seemed to have a continuously increasing sphere of usefulness did not eliminate the medical man from the case or lessen the great responsibility he assumed in interpreting the symptomatology and physical findings that he might be able to get timely and adequate surgery performed, for most cases were seen primarily by the family physician and upon him devolved the responsibility of suggesting surgical consultations. That the medical man might meet this responsibility it was imperative that he should familiarize himself with surgical pathology and wherever possible should compare the results of physical examination and the symtomatology of the case with the finding s as seen at operation.

Address by the President of the Medical Society of the State of New York.—Dr. W. STANTON GLEASON of Newburgh delivered this address. He said that the Medical Society of the State of New York was now one hundred and nine years old, and from the present standpoint the founders of the organization had builded better than they knew. Each year added strength to the organization and the names who took part in this upbuilding, figuratively speaking, made the hall of fame of this organization. In speaking of the government of the society, Dr. Gleason said that plan of representation in the governing body, grouped in the house of delegates, gave a voice to all and made the vote of the majority paramount. Varying suggestions had arisen from year to year as to changes in the by-laws, but that which was good had remained and that which was bad had been eliminated. To-day, after an experience of three and one-half years as a member of the council, one year as president of the First District Branch, two years a vice-president of the State Society, and six months as president, he felt that it was better to conserve that which was good than to attempt an untried course and possibly break down that which had been so well builded. Therefore it would be his endeavor to follow a conservative course. Dr. Gleason then spoke of certain matters which might affect them as members of the State Society and as practitioners, emphasizing their responsibilities to attend the meetings of their county societies and to fulfill their obligations to the county, district, and State Society as solemnly as they did other obligations in daily life. The best men socially and intellectually found time and pleasure in supporting in every sense by their presence and activity their medical social obligations. After referring to the progress of medical education during the past twenty-five years and reviewing the advance that had been made in medicine and surgery in recent years, the speaker pointed out that these things had been due almost entirely to the efforts of medical men, that philanthropists with but few exceptions had not helped medical education. Practically all that had been accomplished had been consummated by the strenuous efforts of the best minds in the medical profession.

State aid was now being extended to medical education through State universities in nearly all the States of the Union and it was to be hoped that in a few years every State in this country would join in giving aid to the cause of medical education. Medical men appreciated fully what had been accomplished but he feared the public at large did not. There was a growing disregard for the guarding and guiding influences that medicine so long held in a protecting sense over public thought and sentiment. In this attitude the public was not wholly at fault. Some thirty years ago several medical leaders in medical thought avowed through the medium of the medical journals their pessimism and almost nihilism in reference to the efficiency of drugs. These ideas made a widespread impression, not only upon medical minds but deeply impressed the layman. This was the entering wedge into the solidarity of medical influence that had paved the way for various "pathies" and "practors," and the horizon was thick with incoming phalanxes of "isms." Another influence which they must take home to themselves as general practitioners was the effect of the personal element in the treatment of disease. When a patient appeared they used all possible aids in making a physical diagnosis, but where they frequently failed was in not considering the mental attitude of the patient. One should make as complete a mental analysis of his patient's symptoms from a psychological standpoint as he did from a physical basis. Fully ten per cent of those coming to the physician's office for relief from an indefinite trouble suffered from neurasthenia to a greater or lesser degree, and this was the type of patient that floated from their offices to the various cults. One did not need to descend to the occult in the treatment of disease, but he should make himself broad enough to consider both the physical and mental in arriving at a diagnosis. Then again they should endeavor through every legitimate means to enlighten the lay mind on things medical. In closing, Dr. Gleason recommended that as economic problems were of growing importance to the general practitioner, the county medical societies should devote one meeting a year to some feature of medical economics, not only as to their methods, but as to the best means of solving our economic problems, and that each county society should have a legislative committee which would work in full accord with the central committee of the State Society. In this way they might keep themselves constantly informed and could use such influences as would redound to the good of the medical profession and the public at large. A paid lobbyist was not what they needed; it was for them to uphold the dignity, the character and the influences of a noble and dignified profession.

What Are the Indications for Removal of a Section for Microscopical Diagnosis in Suspected Malignancy?—Dr. SAMUEL E. GETTY of Yonkers read this paper. He stated that while the statistical reports of the large clinics were showing much better results in their cancer cases during the past ten years, due probably to having patients referred to them at an earlier stage of the disease and to a more thorough and perfect technique, there was still room for improvement in seeing the patients earlier. The physician was often confronted with a condition in which he had to decide the question of malignancy. In arriving at a decision the history of the patient should be gone into very carefully and a thorough examination made; if the diagnosis was not fairly complete recourse was had to a section taken from the growth for microscopical examination. It was by such preliminary examination that they often lost out, for valuable time was lost and by the preliminary operation the lymphatics were opened and it became possible for the cancer cells to make an excursion, and in this way a case that would have given a very hopeful prognosis was transformed into one which was much less favorable. There was no doubt but that the ideal condition was to have an expert pathologist at hand during the preliminary operation to make an immediate examination, but really expert pathologists were rare and were not available in the smaller cities. Again the question arose whether it was safe to trust an immediate examination which might not be entirely reliable, since such an examination was made hurriedly and there were always chances of error, and in the minds of good surgeons it was not considered final. In the opinion of the essayist, after a careful consideration of the history of the case in conjunction with the physical findings, using all methods except cutting, the probable diagnosis of malignancy was made, the correct advice to the patient was the operation one would perform if the condition were positively diagnosed as malignant. If this advice was accepted, the operation pereformed, the specimen thoroughly examined by a tissue expert, and malignancy was found to be present, the surgeon had the satisfaction of having done his patient a good turn; if the tissue removed was in the pre-cancerous stage he still had the satisfaction of having done the patient a good turn, and if the tissue was non-malignant the worst he had done was to have performed a needless operation; yet who could say that this same tissue might not have gone through the changes ending in a maliganancy if left *in situ*. It was better to perform an occasional needless operation rather than by a preliminary operation to run the risk of spreading cancer cells. The necessity for a preliminary section would seldom arise if the history of each case was checked up with the patholigical report of the specimen removed, for the surgeon would become more and more expert in diagnosis as his experience increased. They should rigidly observe the maxim, "Cut around, but never into a suspected cancer." If this advice were followed the results of surgical operations for cancer would show fewer returns of the growth.

Melanotic Sarcoma.—Dr. J. P. HOGUET of New York presented this paper, which he prefaced by stating that he was visiting the district branch societies in the interest of the propaganda department of the National Association for the Control of Cancer. He said that they were all familiar with the more common forms of cancer and recognized the necessity for early diagnosis and early surgical intervention, and hence he had chosen one of the rarer forms of malignant disease for consideration at this time. Melanotic sarcoma was easily recognizable when it had once developed, but, by that time, owing to the rapidity with which the malignant process progressed, surgical intervention was seldom effective. This form of malignancy usually had its origin in a pigmented mole and if the development of a serious condition was to be avoided, the only safe course to pursue was to remove every pigmented mole that was subject to irriation or showed any signs suggestive of pathological change. In melanotic sarcoma, after ulceration had once taken place the pathological process spread so rapidly that surgical intervention was futile. Operations on well-developed melanotic sarcoma were followed by recurrence in practically every instance.

Dr. PARKER SYMS of New York said that the fact was they did not know what cancer was. The cancer cell seemed to be distinguished from the perfectly normal cell only by the unruly production of perfect cells, and so far as was known a growth did not become malignant until its cells penetrated the basement membrane. What they had learned about cancer had been learned in clinical ways. In this way they had learned that carcinoma in its early stages was a purely local condition and if they entirely removed the growth they could effect a cure. Indeed it might be assumed that under the ideal condition of getting the case in an early stage 100 per cent of cures might be effected. Dr. Hoguet had referred to the work of the National Association for the Control of Cancer and it was a significant fact that the campaign for the dissemination of knowledge in the preventing of cancer was originated in the same way as that against tuberculosis. It was a striking fact that the knowledge possessed by the medical profession had lain dormant until the subject was brought up by a layman. Dr. Keen, in 1900, was one of the pioneers in urging upon physicians a greater watchfulness in detecting cancer in its early stages and he read a paper advising the removal of pigmented moles during their stage of non-maligancy. Dr. Bloodgood followed him in calling attention to the dangers of pigmented moles becoming malignant and then others directed attention to this possibility. Bloodgood tabulated 65 cases in which malignant transformation had taken place in pigmented moles and all resulted in death either from local recurrence or from metastases. In 79 or 80 cases in which pigmented moles were removed before they became malignant there were no untoward results. One could not tell how many of these might have become malignant. The pigmented mole was a precancerous or sarcomatous condition and if removal was effected during the precancerous stage malignancy could be prevented. Dr. Getty had brought up an important question and one upon which the profession were not united. They had been taught that in a case in which cancer was sus-

pected they should take a section for examination. Dr. Bloodgood said that he did not know of a single case in which a preliminary operation had been done and then a subsequent operation performed in which recurrence had not taken place. Cutting liberated the cancer elements, disseminated them, and made incurable what would otherwise have been a favorable case. They were now seeing cases earlier than formerly and this brought up new problems with reference to diagnosis and operation. The Pennsylvania Commission for the Investigation of Cancer reported that fourteen months on an average elapsed after the presence of a breast tumor was noticed before recourse to operation was had, so that while these cases were not seen in the last stages of cancer they were seen in a late stage. Popular education, however, was bringing these cases to the physician earlier than formerly, and hence a surgical diagnosis was not as easy as formerly. It should be remembered, however, that points of irritation were in an abnormal condition and might result in cancer. Furthermore it was conceded that diagnosis should be made at the time of operation. One read that the Mayo's relied on a frozen section examination and had no reason to regret it, but one also learned on reading further that in early mastitis as many as thirty sections were examined before deciding upon the diagnosis, so that if one relied upon an immediate examination at the time of operation the chances would be thirty to one that a wrong diagnosis might be reached. Dr. Ewing of New York would not make a diagnosis at all from a frozen section.

Dr. Wisner R. Townsend of New York said this subject was interesting to him not only from the personal standpoint but from the standpoint of the State Society. It would be remembered that when the campaig against tuberculosis was started the State Society resented it, stating that the health boards were invading the rights of private physicians. The campaign against cancer was not only not opposed by the State Society but they were doing what they could to further it. It was most encouraging to see the State Society take up something in a constructive way, and he was gratified to hear Dr. Getty's paper because it represented the unanimous views of all who have spoken authoritatively on this subject. As illustrating the effect of the campaign for publicity, Dr. Townsend related that a physician up-State had told him that he had been consulted by two women in one day because of what they had read in a lay publication with reference to the early signs of cancer. Dr. Gaylord of the Buffalo Cancer Hospital had told him that he was now receiving ten to fifteen specimens a day for examination, whereas in years past he had received but one or two. He also stated that they were now getting specimens in an earlier stage than formerly. Dr. Townsend said he had always had the highest respect for the ability of the country practitioner and believed he was the best man they had in the profession. It was he who must make an early diagnosis of cancer and must insist that if there was a tumor in the breast of a female it must be removed. As to the campaign against cancer the work going on throughout the State was reassuring. The number of papers on the subject of cancer read throughout the State during the past three weeks exceeded the number read during the last ten years.

Dr. George A. Leitner of Piermont said they had directed their attention to the need of early operation in tumors of the breast, but he wished to call attention to early carcinoma of the stomach. The surgeon was receiving many cases of carcinoma of the stomach too late to do any good. The medical man was likely to treat early cases of carcinoma as simply cases of indigestion, whereas he should resort to the *x*-ray and other methods for the diagnosis of early carcinoma of the stomach. Every so-called case of dyspepsia lasting over three months should be referred to the surgeon for diagnosis, since early diagnosis and early operation offered the only hope in carcinoma of the pylorus or stomach.

Dr. S. Oscar Meyers of Mount Vernon said that while the general practitioner had not been directly charged with negligence in diagnosing early cancer or delay in advising operation, there was an atmosphere of implied criticism of the general practitioner for the so-called neglected cases of cancer. As a general practitioner he wished to disclaim blame. The practitioner frequently after examining a case advised operation, but the patient, disliking the idea of an operation, went off to try electrotherapeutics, chiropractics, etc., and thus the general practitioner was put in the wrong when it was the fault of the patient and the various "pathies."

Dr. James E. Sadlier of Poughkeepsie said he could not let this occasion go by without emphasizing the folly of cutting into things, the exact nature of which they did not know, for the purpose of getting a specimen. He also emphasized the possibility of mistake in examination of the frozen section and said that the surgeon should become familiar with the microscopical appearance of cancer so that he could arrive at a correct diagnosis at the time of operation. Dr. Getty had sounded a warning that should be impressed upon their minds, that the practice of operating for a specimen and then operating later was most reprehensible.

Dr. J. P. Hoguet of New York said that as to the question whether every pigmented mole should be removed, that the removal of every pigmented mole was of course impossible, but that every pigmented mole that was subjected to traumatism or irritation should be removed before ulceration occurred, because very soon after ulceration took place the glands became involved and interference was then ineffective.

The Importance of the Early Recognition of Arteriosclerosis.—Dr. Louis Faugeres Bishop of New York presented this communication in which he said that the definition of arteriosclerosis in the minds of most people involved the presence of palpable physical changes in the blood vessels, with accompanying changes in the heart and other organs. In his work Dr. Bishop defined arteriosclerosis as a disease consisting of a disturbance of metabolism, meaning a disturbance of the physiology of individual cells, leading eventually to changes in the heart, blood vessels, kidneys and other organs. Thus arteriosclerosis seemed to him rather a question of pathological physiology than pathological anatomy. The importance of discovering arteriosclerosis was very great at all stages, but it would be particularly valuable if it could be recognized before permanent structural damage had taken place. It seemed to the essayist that the real origin of arteriosclerosis was a change in the relation of the cells to proteins, analogous to a sensitization such as was the basis of other anaphylactic phenomena. The causes for this change were found in what Dr. Crile had defined as the "kinetic drive." The individual was subjected to some sensitizing event, such as a severe infection, a period of great anxiety, or poisoning by some foreign protein. From the definition of the condition under consideration it was evident that the present means of detecting arteriosclerosis in its early stages were not adequate, but a person who had given long and continued thought to this matter was able to do so, just as after a prolonged examination a man of experience could form a definite opinion as to whether an individual was insane or not. It was twice as important that one should recognize arteriosclerosis now as in former times when people lived differently because during the last thirty years the number of victims of this condition had increased in the ratio of two to one. The importance of metabolism was seldom thoroughly appreciated. Upon an early appreciation of its relation to cardiovascular-renal disease depended the prevention and treatment of these conditions. First there was a general disorder of the cells of the entire body, without special localization; later some particular organ suffered sufficiently to give symptoms. If it was the heart one called it "heart disease"; if the kidneys, "kidney disease," and so on. It was not easy to make clear the distinction between arteriosclerosis, the disease, and arteriosclerosis, the lesion. Advances in our knowledge of biochemistry had made it plain that it was the qualitative relations of the protein that were important rather than the quantitative. The minuteness of the quantity of a particular food that could keep up the irritation of the cells in a person who was sensitive and continue the process of the development of arteriosclerosis was surprising. If a person was under stress of worry and diseases which were liable to render him sensitive to certain particular proteins, then was the time when careful dietetics should be instituted. The earliest symptoms of arteriosclerosis were coincident with the earliest symptoms of disturbance of metabolism, such as "biliousness," sick-headaches and intestinal fermentation. One of the earliest symptoms of the disease was discomfort in the front of the chest on exertion after eating; the next early sign was disturbance of the blood pressure, usually a tendency to high pressure, but sometimes the depressor poisons were in the ascendency. At this stage proper dietetic, hygienic, and medical treatment could very often arrest the disease entirely and restore the patient to health. At a

later stage, a checking of the process and a continuation of life and strength could be accomplished only by a continuous and strict regimen.

Dr. S. W. S. Toms of Nyack said that this condition, which one found in men and women of from fifty to fifty-five years of age, showing chest oppression after eating and especially after eating heartily, was one frequently seen in the Nyack commuter. Hurried breakfast and lunch and climbing a hill to reach home in an exhausted condition after the day's work seemed to be the cause. One found these patients with a blood pressure of from 145 to 220, irregular bowels, and more or less disturbed sleep. The physician might tell them how to regulate their lives, but the advice was not effective, because they did not follow it. It would be interesting to know how Dr. Bishop succeeded in persuading his patients to regulate their mode of life so as to get the desired results.

Dr. May Dunning Rose of New York said she would like to ask Dr. Bishop whether he had ever made a study as to the effect of the disturbance of the mineral balance in the diet upon arteriosclerosis. It was well known that in modern methods of cooking the mineral salts, especially the potassium salts, were readily dissolved and were thrown out. There was likewise a deficiency of mineral salts in white bread and granulated sugar, and it would be interesting to know what effect this deficiency of mineral salts had upon the development of arteriosclerosis.

Dr. Bishop said that in the question of diet it was his practice to cut off eggs, fish, and meat in patients with the conditions under discussion and to supply all proteins with cheese and milk, later adding chicken. If the patient took this well he then allowed eggs or lamb. He believed that the protein disturbance was qualitative and not quantitative. A low protein diet did not help but a protein free diet did help. Dr. Bishop said he was aware that Mr. McCann was an advocate of the mineral stavation theory but that in his opinion the quantity of mineral present in an ordinary diet was so much in excess of the metabolic needs of the body that it would be difficult to reduce it to a point where the result would be mineral starvation. The point brought out as to the appearance of the eye as an early indication of arteriosclerosis was well taken, but one did not necessarily need an ophthalmoscope to detect it. Dr. Draper many years ago had called attention to the shininess of the conjunctiva as an early sign of arteriosclerosis, but of course with the ophthalmoscope one could see much more. Many eye men did not take a hemorrhage of the retina as a serious matter, but when this condition was present he gave the patient a life expectation of about three years; however, with a strict dietic regimen it might possibly be six or seven years.

Hematuria: Its Clinical Significance.—Dr. Edward C. Thompson of Newburgh read this paper, in which he stated that it had been his surgical experience that the general profession had not been awake to the serious significance of renal hematuria, or rather had been slow to avail themselves of the more refined laboratory methods by which alone accuracy and diagnosis could be made. Not only was the general practitioner to be admonished in the matter of early renal diagnosis but a restraining hand should often stay the surgeon's scalpel. Hematuria did not necessarily mean a stone in the kidney, nor did a certain amount of operative skill mean a good surgeon. Renal hematuria should be borne in mind, whether existing alone or part of a symptom complex, not as pathognomonic of any disease, but as possibly a symptom of serious disease. A diagnosis of renal hematuria meant, of course, the exclusion of the urethra, the bladder, and the ureter, and was only positively made by the use of the cystoscope. Having proven a case to be one of renal hematuria, non-surgical conditions such as parasites, hemophilia and malignant types of certain infectious diseases, effects of certain drugs, acute nephritis, acute congestion of the kidney, chronic nephritis and hemorrhage due to severe muscular exercise or to tabes dorsalis must be excluded. Occasionally a movable kidney and hydronephrosis might be a cause of hematuria. Acute and chronic infections of the kidneys were often associated with hematuria. In the acute cases chills, fever, pain, and pus in the urine usually made clear the diagnosis. Occasionally in the insidious cases of pyelitis unassociated with the usual symptoms of infection hematura might be the only and therefore a perplexing symptom. A bleeding kidney without other symptoms might be the first sign of tuberculosis, neoplasm, or renal varix. To make the diagnosis of essential hematuria a hematuria must be more or less profuse, more or less constant, and without clinical symptoms except those consistent with hematuria. If, however, with the hematuria there was a highly acid urine, a slight polyuria, and an occasional afternoon temperature, tuberculosis was to be suspected. Yet all these symptoms might be absent and still the case be one of tuberculosis of the kidney. If there was any suspicion of the case, the inoculation of a guinea-pig with the patient's urine should not be neglected. A single hemorrhage of the kidney occurring in a child or an adult past middle life should be looked upon with grave suspicion. The bleeding from a renal varix very closely simulated essential hematuria. The essayist related the history of a case which he believed to be renal varix in which he believed the complete longitudinal bisections of the kidney with cutting of the venous radicals effected a cure. This case was also interesting from the fact that there was intense pain on the right side, while the cystoscope showed the bleeding from the left kidney. This was a point to be remembered in the diagnosis of kidney disease. The treatment of renal hematuria depended upon the exciting cause. In essential hematuria, if one assumed that a normal kidney might bleed, the tendency would be to treat the case conservatively; but if one believed that most, if not all, such kidneys had some pathological condition one might be somewhat more radical. It was true that most of them got well as the result of nephrotomy or nephrectomy, and it was also true that many got well without operation or any treatment. The usual methods of irritating the kidney pelvis had been rather unsatisfactory and it seemed that all bleeding at all persistent or profuse and not yielding to treatment would warrant an exploratory operation.

Dr. Edward C. Rushmore of Tuxedo called attention to the necessity of distinguishing between microscopical and macroscopical bleeding. The bleeding in many cases could only be detected by the microscope. The cases in which the bleeding was macroscopical were largely surgical conditions. He emphasized the importance of an early recognition of tuberculosis of the kidney and of the advisability of resorting to guinea-pig inoculation in every case in which there was the slightest suspicion of that condition, and also the advisability of having expert advice. A medical paper was needed describing the exact method that the practitioner could take to make a diagnosis of these kidney conditions in a short time.

Practical Deductions to Be Derived from Examination of the Blood.—Dr. Howard P. Carpenter of Poughkeepsie read this paper in which he drew attention to some of the commonly overlooked blood pictures in various conditions, as for instance when an acute appendix was in a seemingly quiescent period and examination of the blood showed perhaps 24,000 leucocytes and 95 per cent. polymorphonuclears with no eosinophiles. This did not mean that because the patient was more comfortable that operation should be postponed a day or so to see what developed; it meant to operate at once before this appendix filled with pus and ruptured into the abdomen. Again the differential point between pernicious anemia and other anemias was its tendency to progress to a fatal issue. This clinical behavior rather than a blood examination alone was necessary for the diagnosis of pernicious anemia. There were few pathological conditions upon which a leucocyte count did not throw some light, but the bare count without the differential was worse than none at all. By experience it had been learned that a pus condition was to be expected when the polynuclear count hovered around 90 per cent, even if the leucocytes as a whole were not increased. In some cases in which the patient was not reacting well to an infection there was sometimes little leucocytosis but such cases were sometimes found to have a differential count as high as 99 per cent. polynuclears. Associated with the increase of polynuclear leucocytes in the pyogenic infections there was always a diminution or absence of eosinophiles which was designated by Simon as "septic factor." As the infection was being successfully overcome the eosinophiles would return. The diminution of leucocytes in malaria was an aid not to be neglected, for it was sometimes difficult to find the malarial parasites. In a case coming under the observation of the essayist an intermittent hematuria brought up the question as to whether the condition was malaria or an infected kidney. The blood examination showed 5000 leucocytes and over 60 per cent lymphocytes. This was evidence that the case was malaria, and a more persistent search revealed the

plasmodium. An increase of leucocytes of 15,000 to 20,000 might occur within an hour after an extensive acute hemorrhage, too quickly to be due to infection. Leukemia was one condition that could be diagnosed from an examination of the blood alone, the leucocytes being enormously increased, sometimes to two or three hundred thousand with a predominance of lymphocytes in the lymphatic variety and of myelocytes in the splenomyelogenous variety. Children had a large proportion of lymphocytes and a higher total count than adults, a fact that should be borne in mind. The finding of nucleated red cells even in quite considerable numbers in blood smears was insufficient evidence upon which to base a diagnosis of pernicious anemia. If the majority of nucleated red cells were megaloblasts then other symptoms of pernicious anemia should be sought. The laboratory worker was probably discredited more times in the performance of the Widal test for typhoid fever than in any other one procedure. Many errors might be prevented if specimens sent to the laboratory were collected in capillary tubes instead of on glass, paper or metal slides. The Widal reaction usually appeared in the second week of the disease, but sometimes not until the third or fourth week or well into convalescence. A reaction often persisted for months or even for years after an attack of typhoid fever, thus making a history of much importance in the proper interpretation of a positive Widal. The essayist considered somewhat at length the significance of the Wasserman test for syphilis and stated that the proper attitude to take was that this test was of only secondary importance to a complete study of a case of syphilis. Kaplan's view that the serologist should report no serum positive unless it had resisted the best legitimate efforts to make it negative was excellent advice. However carefully a blood examination had been performed in all conditions its results were to be interpreted only in the light of the fullest possible clinical information.

Traumatic Hysteria: Trauma, Cause of Occasion.— Dr. DANIEL B. HARDENBURGH of Middletown read this paper (see page 824).

Report upon a Case of Surgery of the Liver. — Dr. GEORGE A. LEITNER of Piermont presented this paper. After briefly reviewing the traumatic and pathological conditions calling for radical interference and the results to be expected from such surgical operations, he related a case which was interesting because of its pathology and unique because only one other case of similar operation with complete recovery had been reported. Dr. W. W. Keen of Philadelphia had also successfully removed the entire left lobe of the liver. The patient was an Italian woman, thirty-three years of age, the mother of three children, the youngest seven months old. Some months after her last delivery she complained at intervals of severe spasmodic pain in the abdomen. Physical examination revealed a movable mass as large as a cocoanut located behind the umbilicus, somewhat toward the right iliac fossa and resting on the crest of the pubes and Poupart's ligament. The tumor could be seen distinctly, was dull on percussion, and gave a distinct fluctuating sensation. A diagnosis of probable ovarian cyst was made, although *per vaginam* the mass could not be felt. The patient entered the Nyack Hospital on January 3, 1915, and was operated upon on the following day by Dr. Leitner, assisted by Dr. Blauvelt and Dr. Toms. A free incision from the umbilicus to the crest of the pubes through the median line was made and a dark blue tumor presented itself within the abdominal cavity. The tumor refused to be delivered and a search for the pedicle showed that it was not attached to any organ in the pelvic cavity, but that it was attached to the summit of the mass. By following the pedicle it was found attached to the under surface of the liver. A diagnosis of tumor of the liver, a probable hydatid cyst, was then made. The lower incision was carefully closed and a second incision made from the ensiform cartilage to the umbilicus. By the aid of retractors and the walling off of the stomach and intestine with hot pads, the tumor with its relation to the surrounding organs was clearly seen. The left lobe of the liver was missing and they concluded at once that they were dealing with a tumor of the left lobe. The pedicle was between four and five inches in width, its thickness varying from about one and one-half inches at its right border to a thin narrow strip of peritoneum at the left or splenic border. The length of the pedicle was about five inches. The method of removal was as follows: Two broad ligament clamps above and two below were employed to grasp the pedicle at right angles to its long axis, leaving a space of about two inches between the upper and lower clamps. Sufficient pressure was made to compress this fragile tissue without crushing or lacerating it too violently. The tumor was then removed by cutting close to the lower clamp with scissors, leaving a prominent stump which was cauterized by the Paquelin cautery. The stump with the two clamps still in position was sutured with No. 3 catgut, using two needles and ordinary harnessmaker's suture. The abdominal wall was closed in the usual manner. The two clamps were allowed to remain attached to the stump, the handles being brought out through the upper angle of the wound. No drainage was instituted in this case. The following day there was a slight rise in temperature and pulse rate. At the end of five days the patient had reached a normal condition, when she was again taken to the operating room, ether administered, and preparations made for the rapid opening of the abdomen in case of hemorrhage. The clamps were slowly released and removed. There was no bleeding, and after careful watching for fifteen minutes the openings left by the clamps were closed. The patient left the hospital on February 3 and had since enjoyed excellent health. Dr. John H. Larkin, who made the pathological examination had manifested a keen interest in this specimen and wrote that this type of tumor belonged really in the borderland cases between regeneration on the one hand and tumor formation on the other. However, it was his opinion that it represented a type of extreme regeneration, secondary hemorrhage having occurred in the central part. Practically no liver tissue remained, the whole mass being made up of an indefinite amount of cuboidal epithelial cells, with a tendency to reform.

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THE PROGNOSIS IN CARDIOVASCULAR DISEASES.

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NEW YORK.

PROGNOSIS in its proper sense covers the possibility of recovery, whether complete or partial, temporary, or permanent; the duration of the disease; and the expectation of life. On the broad lines of classification which are generally adopted there is a fair degree of unanimity as to the future of cardiovascular diseases, yet in every variety there are contingencies which can be neither foreseen nor controlled.

For instance, in the valvular forms the state of the vessels has an important bearing on the forecast, which is also influenced by the nature and extent of the lesion, the number of valves implicated, and the patient's age, sex, constitution, and other factors whose name is legion. In the face of such facts a definite prognosis is always difficult and often uncertain. We usually have to be satisfied with conclusions of a general nature and figures that are approximate. It is true that in some affections a prognosis can be made with a fair degree of accuracy, but in the majority it is not so. We are making progress in this matter, however, for we know how under favoring conditions the danger to life may be minimized, or the end hastened by untoward events.

The most important points bearing on the prognosis are the character of the disease, whether acute or chronic, functional or organic, benign or malignant; its location, variety, extent, duration, and complications; the degree to which the myocardium is implicated, and the efficiency of the cardiac muscle; the constitutional disease which has caused it, or with which it is associated; the condition of the vessels; the patient's age, sex, status in life, habits, occupations, and hereditary traits; the degree to which the disorder is amenable to treatment, and the skill or lack of it in its management. We must realize at the outset, as I have intimated, that if recovery takes place it may be complete or only partial. Entire recovery is possible in functional diseases, while only partial recovery can be looked for in organic. But even if an absolute physical cure is impossible, it may be relative. The functions of a heart may be temporarily restored, often for a long time, and this is of very great importance to the individual.

The matter of most concern, however, both to the individual and to society, is a forecast of the probable duration of life under given conditions, and the extent of the field in which one's energies may be applied to the best advantage, coupled with the least danger. Naturally, this matter has always been one of absorbing interest. As every new phase of a disease has become apparent, it has been studied with reference to the final issue, so that we are gradually increasing our knowledge in this direction. The subject has been looked at from many points of view; in the light of etiology, from the clinical side, from post-mortem revelations, and from experimentation on animals. This last method is a field that has yielded little as yet, but is likely to bear much fruit in the near future. The most valuable information available at the present time has been derived from clinical observations confirmed by post-mortem evidence. Unfortunately, many of the observations that have been utilized have been based on clinical signs alone, and are, therefore, of little value. If, however, we study the returns derived from trustworthy sources, based on both clinical histories and autopsical revelations, we have data that are correct as far as they go, and which to that extent are adapted for approximate prognoses. For the reasons above given, prognoses based on percentages can never be mathematically correct. Let us now take up the subject in detail.

In infants under one year the outlook is particularly unfavorable in any form of heart disease. During childhood it is worse than in adult life; children with serious valvular diseases before the age of eight seldom reach puberty, for as they approach that period heart weakness is apt to set in. Holt found that in 225 cases of congenital heart disease 60 per cent. of the patients died before the end of the fifth year, and one-half during the first two months; 16 per cent., however, lived more than sixteen years, and 8 per cent. over thirty years. Serious valvular lesions progress more quickly in children than in adults; owing to their rapid growth, and the corresponding demands made upon their strength, cardiac dilatation occurs early. Acute diseases still further increase the danger.[1]

But it is not immediate. In fact, acute and chronic endocarditis in children are rarely of themselves fatal, death being usually due to associated conditions, particularly pneumonia and pleurisy. In mild forms of acute endorcarditis occurring in children, recovery may be looked for, though recurrences are to be anticipated. First attacks are apt to be overlooked. Rheumatism and the acute infective diseases are the chief sources of danger in the heart diseases of small children. Where cardiac disease develops after puberty, life will usually be prolonged into the fourth decade. After the age of forty, the prognosis in all valvular diseases is affected unfavorably by the tendency to myocardial and arterial degeneration, and the danger of losing compensation that has been developed. In old age, compensation in valvular disease, if once lost, is very rarely regained.[2] Removal of tonsils and adenoids, however, may be helpful in

preventing recurrences. In general, these and decay in teeth are now thought to be sources of infection. If there is doubt as to the presence of an alveolar abscess, an *x*-ray should be taken.

Women, who as a rule, lead a less active and more regular life than men, are considered to have a better expectation of life, aside from the special risk they run during pregnancy and parturition. During pregnancy the greatest danger is from the increased pressure of the abdominal organs, though this is greater in a forward than in an upward direction. The severe expulsive efforts that must be made in parturition are a considerable strain upon the heart. However, the treatment of heart complications in pregnant women is much better understood than formerly, and, while uncompensated endocarditis means danger to both mother and child, a valvular affection with good compensation need not cause any serious apprehension, as the actual danger to life is not very great. The most unfavorable lesion is mitral stenosis. If death does not occur, abortion or placental apoplexy may result. Where valvular disease is present, it may be necessary to induce artificial labor. The safest anesthetics for use in these cases are nitrous oxide and ether. Strychnine is sometimes given to pregnant women and after childbirth, but digitalis is rarely called for.

With regard to men, the prognosis is most unfavorable where the occupation pursued calls for continuous or severe physical strain, or exposure to inclement weather, especially if the patient is addicted to the use of stimulants. Among either men or women, a sudden tax on the system, such as fright or great emotion, overeating or drinking, arrested digestion, or the overuse of tobacco may hasten the fatal issue. Indigestion, or the eating of an immoderate amount of food, is a not uncommon cause of sudden death in the aged.

The outlook is more favorable in mitral insufficiency than in any other form of valvular disease; this affection, when uncomplicated, is not incompatible with a long life. There is a relative form which is common in convalescence, among neurotic individuals, and after severe physical exercise, which usually disappears when the special strain is past. In some patients it may be a permanency, as in laboring men engaged in work involving continuous severe strain. When simple mitral insufficiency is acquired in early life, compensatory hypertrophy seems to occur more readily than in any other form of valvular disease. It is, therefore, to be considered comparatively harmless. There is danger, however, that in practice it may be confused with mitral stenosis, a far more dangerous lesion. My hospital records show that this error is not infrequently made. In a record of 102 fatal cases of heart disease, there is not a single case of death from uncomplicated mitral insufficiency, and I am not sure that it ever causes death of itself, but the organic variety is very likely to be complicated with other valvular lesions. According to my figures, such complication occurs in 86 per cent. of the cases.

As already said, mitral obstruction has a graver outlook than mitral insufficiency. Where it is present, mitral disease is evidently well established. Another danger in these cases is from embolism, which may occur, according to my experience, in 20 per cent. The average age at which death takes place, as given by various authorities, is between 30 and 40 years. In Broadbent's 53 cases of mitral stenosis, it was 33 years for males and 37.38 for females. Hayden's[3] 15 cases averaged 29.26 years. In Fagge's 42 fatal cases, the average was 37.83 years. Other valves were affected, however, in a third of these cases. Samways'[4] found that in 196 cases taken from the Guy's Hospital records the average age at death among patients of both sexes, was 38 1 3 years, the average in severe stenosis being 33.6 and in the milder forms 43.6. In Dyce Duckworth's cases, 264 in all, but not all supported by post-mortem findings, the average age was 35. Sansom found it 32.7. According to my own statistics, in one series numbering 19 cases the average age was 39.2, but death most frequently took place between 37 and 38, while the extremes varied from 23 to 70. In one series of collected cases, 100 in number, I found the average age to be 35, and in another series 33. In another series of 57, ranging from 13 to 67, nearly half died between 30 and 40. Based on post-mortem evidence, therefore, the expectation of death is in the fourth decade, and, according to what we know at present, at about the age of 34. I had under observation some years ago, however, a patient of 73, with the typical signs of mitral stenosis, including the purring thrill. This case, as well as another of which I have a record, was probably congenital. Sudden death is as rare, comparatively, in mitral stenosis as it is frequent in aortic insufficiency. In five of my cases it was said that the disease had lasted from three to thirty years.

The danger in aortic insufficiency depends somewhat upon whether or not arteriosclerosis or angina is present, and whether there is much displacement, or much alteration in the contour of the heart. It has been questioned whether this affection is as much graver than aortic stenosis as has been supposed. The average age at death, in 50 of my cases, was 40, as against 41.7 in aortic stenosis, but only a few of the stenosis cases were uncomplicated by other valvular disorders. Indeed, but few cases of pure aortic stenosis have been recorded. When it does occur, however, it has a comparatively favorable outlook. In my record of 8 cases, the average age at death was 56, while two patients lived to the age of 70 and one to 90. I agree with Fagge, that where aortic stenosis and insufficiency are combined, it is the insufficiency that governs the prognosis. Of Hayden's 26 aortic cases, one-half were combined with insufficiency. I make it 65 per cent. in my cases. According to my figures, a complicated case of aortic obstruction is almost as grave as one of incompetence, while an uncomplicated case is much less so. Arteriosclerosis is always an unfavorable symptom in aortic obstruction. It is, however, the grade of obstruction which governs the prognosis; if it is but slight, the outlook is comparatively good. The average age at death in Broadbent's cases was 40 years, his oldest case being 53. I agree with him that on the whole aortic stenosis is less serious than aortic insufficiency or mitral stenosis, but it has been my experience that sudden death is as common in aortic stenosis as in insufficiency. According to my records, it is 20 per cent. in both affections. Hayden found it 18 per cent., in both forms of aortic disease.

With regard to pulmonary valve disease, it may be said that the prognosis is always grave in congenital insufficiency, and in congenital obstruction (stenosis) most patients die before the fourth year, generally of tuberculosis, though cases have been

known where death did not occur until the age of 40. Acquired disease of either type is less serious as to outlook; I have known of a case of acquired insufficiency where the patient lived to the age of 70, and a patient of Schwalbe's with acquired obstruction lived to be 84. In 15 cases which I collected the average age at death was 42.8, while of 4 cases of my own one lived to be 56. These cases are not, however, sufficiently numerous to be of much value for statistical purposes. Pulmonary obstruction is the point about which all congenital cardiac anomalies are apt to center, and as a rule they are not compatible with a long life. The pulmonary valve is also in a situation which renders it liable to be compressed by external influences, such as adhesions.

Tricuspid affections are rarely congenital. The congenital form of tricuspid obstruction is, however, the most dangerous of all valvular diseases, and patients seldom survive more than a short time. It usually occurs late in the course of general valvular disease, the tricuspid being the latest valve to be affected. The majority of patients die before 40, but occasionally one lives to old age; in one case that I have reported, the age at death was 70, and a patient of Leudet's reached 64. Those in easy circumstances of life may be expected to live longer than those engaged in hard labor or in unfavorable surroundings, and the disease seems to be more dangerous in women than in men. It appears to be less rare than has been supposed; in 196 cases of valvular disease, Samways found 32 of tricuspid stenosis. Tricuspid insufficiency may be a temporary affair, and of small importance, but if it persists the prognosis is bad. It is apt to be a terminal affection, secondary to some other valvular disease or disease of the lungs, and here the outlook is not a favorable one.

The comparative gravity of the various valvular affections is given differently by different authorities. If we are to judge by the average age at death, the figures given above would put the order as follows: (1) Mitral obstruction (stenosis), (2) aortic insufficiency, (3) aortic obstruction (stenosis), (4) mitral insufficiency.

Broadbent has given this order of gravity for childhood and early adolescence, but my statistics are taken almost altogether from adult cases. The order for cases in general, as given by Broadbent and Leyden, is as follows: (1) Aortic incompetence, (2) mitral stenosis, (3) aortic stenosis, (4) mitral regurgitation.

The order given by Wilks, Peacock, Bristowe, Fagge, and Pye-Smith is as follows: (1) Aortic regurgitation, (2) mitral regurgitation, (3) mitral stenosis, (4) aortic obstruction.

Green[5] gives the following order: (1) Aortic regurgitation, (2) mitral stenosis, (3) aortic stenosis, (4) mitral regurgitation.

Walshe has given the order as follows: (1) Tricuspid regurgitation, (2) mitral regurgitation, (3) mitral stenosis, (4) aortic incompetence, (5) pulmonary obstruction, (6) aortic obstruction.

With regard to myocardial diseases, degenerations resulting from the continued fevers, such as typhoid and diphtheria, are apt to disappear after convalescene. Under intelligent treatment, the fat heart of corpulence may be greatly improved. But myocardial disease is a more frequent cause of death than is generally supposed. In cases with arteriosclerosis or degeneration of the heart walls, a persistently weak pulse, especially if there is a difference in the radials, means that danger is never far off. In cases of fatty heart, death sometimes occurs as if from a stroke of apoplexy. The immediate cause of death may be thrombi detached from the chambers of the heart, acute dilatation, or even rupture; or a gastrointestinal disorders, or pneumonia may put a strain upon the heart that is beyond its power of resistance. In many cases the terminal affection is some disease of lungs, liver, or kidneys. Myocardial syphilis is sometimes a cause of death.

In malignant diseases of the heart, either new growths or infective endocarditis or carditis, a fatal result is pretty generally to be expected.

Functional diseases of the heart are not in themselves dangerous to life, but it cannot be denied that they render the organ more liable to disease of a more serious type.

But we must remember with regard to statistics that though they may apply to cases taken in the mass, they may not be true of specific instances When taken from hospital records, they are correct as to figures, and therefore are a proper basis for comparison, but they do not tell of the average duration of the disease, or of many other attendant circumstances. If we require figures, we will have to be content with our present tables until statistics are more complete. That is, if we are willing to rely on this kind of evidence. Any other kind, apart from the post-mortem in conjunction with the clinical history, involves a large amount of the personal equation, and leaves abundant room for theorizing, according to the bent of the individual mind. But such theories should not be accepted unless supported by animal experimentation, of which little has been done as yet.

With regard to the bearing of cardiac murmurs on prognosis, the intensity of the murmur is not a measure of the gravity or extent of the disease process present. Unfavorable signs are well-defined murmurs that come and go, causing one to suspect the presence of loose vegetations, and musical murmurs attended by fever, which indicate the probability of an ulcerated or ruptured valve. Where a loud murmur is present, there is probably a large opening, and when a loud murmur changes to a soft one the power of the heart is likely to be beginning to fail. Systolic murmurs are of less grave significance than diastolic. Cheyne-Stokes breathing, or the Adams-Stoke syndrome, point to probable cerebral implication; in rare cases they may disappear, but they are always a warning of danger from cerebral disease.

The prognosis in valvular disease depends on the question of efficient or non-efficient compensation much more than upon auscultatory signs, provided the apex beat is in approximately a normal position, rhythm regular, the action of the heart good, and the transverse dulness not materially increased. Of course, in any form of endocarditis, recurring attacks of inflammatory rheumatism are very unfavorable, and a sharp attack of pneumonia, or any long illness that causes a severe drain on the vital forces, may result in failure of the heart. But as long as compensation is well maintained there is no immediate cause to apprehend sudden death, except from embolism. This is always a possibility to be kept in mind. Still, the separation of an embolus need not always have a fatal result; the embolus may not lodge in a location where it will do serious damage. Although it will probably cause immediate death if it lodges

in the medulla or pons—and I have personally known this result to follow the lodging of a clot in the latter location—if it only reaches a "silent center" it may do little harm. Lodged in the lungs or liver, little danger need be apprehended from it. Diseases of the right side of the heart are most to be feared, as the venous congestion is greater than in affections of the left heart, and there is, therefore, a more profuse exudation, with its attendant consequences. Congestion of the kidneys is commonly held to be the cause of the dropsical effusions so often present in the terminal stages of heart affections, but the liver and spleen are nearly as frequently implicated.

No matter what the nature, location, and extent of a valvular disease, the prognosis does not depend so much on the valve affection itself as on the condition of the myocardium. This we can now determine by the various tests for cardiac efficiency. According to J. S. Langford[6] the supreme test is by exercise and blood pressure. If there is serious disease, after the patient has climbed two flights of stairs he will come back breathless, in more or less distress, with great irregularity of the heart, and a murmur may be revealed. If the systolic pressure is then taken, it will be found to have fallen, while the diastolic has remained stationary.

Complications must be taken into account. Pericardial attachment unfavorably affects the prognosis because it interferes with the contraction of the chambers, and promotes dilatation. Associated diseases of the lungs, liver, or gastrointestinal tract affect the prognosis unfavorably, as they tend to cause congestion of these organs and the passive engorgement of internal viscera already existing, and interfere with normal metabolism. Chronic indigestion from any cause adds to the gravity of cardiac disease by permitting the development of gas in the stomach or intestines, producing pressure against the laboring heart. Sclerosis of vessels is also unfavorable, as the altered caliber of the arteries, and to some extent of the veins, interferes with the passage of the blood current, thus putting a further burden upon the heart. Any acute disease of internal organs, and especially pneumonia, increases the danger. Many chronic diseases, and more especially gout, rheumatism, and syphilis, which are among the prominent causes of cardiac disease, may add fuel to the flames at any time that an acute exacerbation occurs.

Among the most important considerations are the station in life occupied by the patient, his temperament, his occupation, and his environment. It is fortunate when a cardiac patient has an equable disposition, for it will surely be tried as his disease progresses. His cardiac compensation in valvular diseases or efficiency in myocardial will be better maintained if he will steel himself against worries and all kinds of emotional excitement. And this is one of the difficulties in most cases, disquieting to both patient and physician. The continuous dosing that becomes necessary as the disease advances, and the strict rules laid down as to dietary and mode of life, are annoying to the patient, and he appeals to his physician for personal liberty, even if at the risk of his life. With regard to occupation, an important point to be considered is whether it entails severe physical strain. Persons who develop cardiac insufficiency from time to time are especially liable to attacks of heart failure, and it may be extremely difficult, if not impossible, in instances where the wife or family is dependent on the patient for support, to find him an occupation that will be sufficiently remunerative without causing too great a strain on his heart. The older one gets, the greater the danger. And the difficulty will be increased if there is a history of cardiac disability in his family. There can be no doubt that there is a hereditary tendency in cardiac disease just as there is in cerebral hemorrhage. And if in addition to unsatisfactory surroundings and the pinch of poverty the unfortunate patient has been at any time overindulgent in food or drink, persists in smoking, and drinks strong coffee when it causes cardiac irregularity, or gives rein to loose habits, the outlook will be correspondingly worse.

There is no doubt that heart cases are benefited by a suitable climate and a not too great elevation. It is thought by some that a moderate elevation above the sea level, at no great distance from the sea, is desirable. As a rule, elevations exceeding 1,500 feet should be avoided by patients suffering from chronic cardiac insufficiency.

The method of treatment has an important bearing on the prognosis. Lack of proper rest in the acute cardiac diseases of children and overdosing with drugs of the digitalis group are responsible for deaths which might have been avoided by wider knowledge or experience. The proper indications for the use of any drug of the digitalis group especially are often improperly understood, and various forms of these drugs are used without a knowledge of their therapeutic values and their limitations.

Blood pressure has much to do with the prognosis. A high blood pressure is a bad sign, even in the absence of interstitial nephritis. When the high pressure can be relieved by an appropriate dietary, laxatives, and suitable medication, the danger to life is lessened, but even if the pressure has been reduced to the standard for the individual, it is still not a guarantee against arterial hemorrhage, though the expectation of life is, of course, improved. In all persons subject to high pressure, there is especial danger of cerebral hemorrhage or heart failure; for, even if the coronary arteries are not involved, increased pressure indicates that the heart is doing more than its normal quantum of work.

So far as interstitial nephritis is concerned, it need not necessarily be a bugbear. If metabolism can be regulated, and the flow of urine maintained at a reasonable standard, so that there is no edema, there will be no immediate danger to life. Edema that cannot be controlled, however, is a sign of the rapidly approaching end.

The dietary of heart patients should be carefully regulated. There should be no physical or mental strain, no overeating or overdrinking, and the habits of life should be orderly. But this does not mean abstinence from any kind of work; idleness may lead to the formation of habits that will do more harm than the previous occupation, and a certain amount of activity and even of responsibility will be helpful. Angina is often a good test of the way one's life is to be ordered. Any exertion, mental or physical, or any habit such as the overuse of tobacco or coffee, or anything in the dietary that causes gastrointestinal gas so as to produce angina, should be suspended. The least sign of such attacks should be a warning.

The most important sign of the approaching end

is cardiac weakness that cannot be controlled by ordinary dosage with the group of remedies of which digitalis is the chief. When a patient's irregularities for years have been controlled by these remedies their failure to be effective shows that the end is near. Ascites is always an unfavorable sign; it points to liver disease. When the kidneys begin to be inefficient, treatment may at first be successful, but it will only put off the fatal issue temporarily. And this is the usual manner of death. With the cardiac failure there is necessarily congestion of such internal organs as the lungs, liver, and the organs of the splanchnic area, and death may be due to them secondarily instead of to the condition of the heart itself. If cyanosis fails to yield to appropriate treatment, it shows a very serious condition and the end may be expected shortly. This is also the case where dyspnea is present while the patient is at rest and is unimproved by proper treatment.

If acute aortitis is caused by syphilis, and at least half of the cases that come to our attention are of such origin, the outlook depends upon the use of anti-luetic treatment. If caused by tuberculosis, the prognosis will depend largely on the successful management of the primary disease. Where it is the result of violent physical exertion if this is continued an aneurysm may develop. But this is mere theorizing; for, as far as I have been able to learn, such a condition has never been recognized during life. However, there is a probability that the acute form may, as already said, end in recovery; but it is more likely to take on the chronic form. Associated with malignant endocarditis in purulent deposits, a fatal termination is to be expected.

In the chronic forms of aortitis the expectation of life will depend largely on whether the primary disease, whatever it may be, is amenable to treatment, and whether the patient can avoid any intoxication like lead, alcohol, tobacco, or has been overworked. The chronic aortitis of senility is incurable. In Hodgson's disease, or dilatation of the thoracic aorta there is no immediate danger to life. Simple dilatations of the aorta are not uncommon among men who use violent muscular efforts and may be either permanent or temporary.

The larger aneurysms have not thus far been successfully treated by surgeons. Medical treatment insures a longer lease of life, but the earlier the diagnosis can be made the better the prognosis. Small aneurysms such as occur in cerebral hemorrhage, are common. If there is an extensive rupture with a large clot near the great nerve centers, the end is near. But there are various degrees of rupture. It is seldom that the first apoplectic stroke is fatal. But they are likely to recur in from one to five years. Few survive the third attack. Complete recovery is very rare.

In cardiovascular thrombosis the expectation of life depends largely on the age of the individual, the location of the clot, its benign or malignant character, and whether or not it is associated with embolism. If the pons is affected death may be immediate; if the cerebrum the danger will be less. If at its base the prognosis will be more unfavorable than in its upper portions. But thrombosis has always a better outlook than cerebral hemorrhage; the symptoms may pass away in a few hours or a few days. Heart clots are usually found in the agonal hours immediately preceding death. In thrombosis of the auricles the fatal termination may be deferred as in a case described by Dock. In ordinary thrombosis the prognosis depends largely on whether the thrombus is benign or malignant; in the former case there is a good chance for recovery provided the clot does not seriously interfere with the nerve centers or with the course of the blood current in the more important parts of the body. In the reported cases of venous thrombosis associated with cardiac disease the mortality is about 75 per cent.

The condition of the arterial system must always be taken into account in making a prognosis. Where there are hard arteries, not only is the heart compelled to use more energy in driving the blood through stiffened channels but there is also interference with normal metabolism.

In compensatory hypertrophies the right ventricle fails, as a rule, earlier than the left. Hypertrophy compensates for a variable period, dependent chiefly on the extent of the disease in the valve or valves affected. It was at one time computed that the expectation of life in ordinary cases is from two to four years after compensation has failed. The expectation of life in cardiac diseases has been greatly improved, however, by a closer attention to diagnosis, a more discriminating use of drugs, and a recognition of the successes obtained by mechanical methods. Whether or not the claim of advocates of the Nauheim system that this form of treatment adds an average of ten years to life is well founded is an interesting question.

It is plain that the physician cannot be too careful in framing a prognosis. As has been shown the expectation of life in any particular case of cardiac disease is uncertain, as the governing factors may be unknown or uncontrollable. Patients may recover again and again from alarming attacks of heart failure, while on the other hand, when the cardiac disease is progressing favorably some intercurrent affection may precipitate the fatal issue. The patient may feel like crying with the Psalmist, "Lord, make me to know mine end and the measure of my days, what it is," for only He knows. Mortals can only surmise. In cardiovascular diseases, therefore, the prognosis should always be guarded.

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CLINICAL PSYCHOLOGY IN ITS RELATION TO THE SCHOOL AND TO SOCIAL MEDICINE.

A SUGGESTION FOR AN ACTIVE AFFILIATION.

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"Wer die Jugend hat, der hat die Zukunft."

Let me endeavor to point out briefly and tersely the problems in clinical psychology which belong both to the school and the clinic, and bring up questions to be solved in part by both, questions which, in themselves, suggest measures for an

urgent campaign into the all-important and far-reaching fields of prophylaxis, remedial pedagogics, and preventive medicine.

In the first place, there is the daily problem of the child whose behavior and progress is not just entirely normal. It does not keep pace with the others in its class, or falls behind, or does not progress; or again, cannot get along with the other children, or is just "queer," "odd," or "precocious"; or again, is considered "difficult," one that cannot be managed in the usual way; or the child plays truant, or it is an over-sensitive or over-emotional child, or morbidly introspective, or nervous and fearful. Or again, it may be chronically fatigued or twitchy and restless, etc., etc. Such children have but one foot beyond the threshold of normality, and need not yet be rubricked under the abnormal. Just what may the matter be, and what the cause of it (and often momentous too, the course of it)? It is for the clinical psychologist (who is physician and neurologist as well as psychologist) to determine; and it is for him, likewise, in connection with the pedagogue, to suggest the remedy.

From this stage of the *abnormal normal* child there are all grades into the really abnormal—into neuropathy, psychopathy, and mental defectiveness. The school spots and labels some of these, the outspoken ones. But neither teachers (nor phychologists!) should attempt diagnoses, and it is left for the psychoclinicist to learn whether the root of the trouble is physical, physiological, environmental, pedagogical, or psychological; and, if the latter, to sift the mental processes and discover if there is just functional disharmony or psychopathy, or if the intelligence, as such, is involved.

This latter—this problem of the intelligence examination—is most intricate and difficult, and Binet-testing—which has become a kind of schoolgirl hysteria with us, and the method par excellence of deciding both diagnosis and fate of the abnormals at most of our clinics—does not solve it in the least. In fact, the Binet-Simon tests are of no value whatsoever in estimating mentally the individual slightly abnormal or really abnormal child, in estimating it for diagnostic, prophylactic, prognostic, sanative, or corrective purposes. The important fact is to probe the component parts of intelligence (memory, comprehension, combination, attention, etc.), and considerable outside the sphere of intelligence beside, and learn if there is any pedagogical retardation, "backwardness," "deficiency," or "defect," and whether in all faculties, or only in certain ones, whether the abnormalities lie in the thought tendencies (or tempo), or, finally, in the general or just some special arc of psychotechnic play. Only in this way can the separate intellectual factors and the separate mental abnormalities be sifted and scrutinized for determinants of diagnosis and remedial procedure.

Out of such studies, in Germany, sprang an interesting pedagogical departure. Schulrat Sickinger of Mannheim, namely, thought it to the advantage of that group of children among the normals who were slower in their advance than the majority of their class, and who in consequence were often left back and suffered through the fear of doing poor work, and through having to sit overlong at their home-exercises, through scolding and reproaches, etc., that they be taken care of and developed in *special classes* (Förder-Klassen), whose work and advance was in keeping with their (somewhat subnormal) ability. And such classes were then instituted.

Further study and examination brought out the fact that some students instead of being retarded were advanced along certain lines, that is, had certain faculties abnormally developed. Do they not also suffer in being held back, because of the general class neveau, when in these certain faculties they could, if given the chance, forge ahead? Hence came the idea (suggested by Petzold) to have extra schools not only for the retarded but also for advanced students; and this has crystallized into an actual, practical procedure in the Charlottenburg- (Berlin) Volks-Schule, in which there has been added to every normal class, a subclass (termed "B-Klasse"), and parallel with it an advanced or talent-class (termed "A-Klasse").

In the above arrangement, however, a flaw might be detected inasmuch as I have said that the facultative intelligence examination may show not all the faculties defective, not all advanced, but, namely, that some may be just normal, some below and some above normality. An individual, for instance, may have an exceptional memory and yet very poor combinational ability; or combinational ability in words and speech may be deplorably bad while that for line and color may be of singular excellence (often enough seen in artists). Hence a child ought to be sent to a superclass for certain subjects and to a subclass, possibly, for another, remaining in the normal class for still other subjects. A class procedure with this idea as its underlying principle has indeed been suggested at the Dresden Pedagogical Congress in 1911 (Raschke of Vienna being the first to propose it), but whether put into practical effect as yet I do not know.

At every turn in this pedagogical advance, the need of the clinical psychologist comes up, for not only must the status of the various intellectual faculties be determined, but the causes or reasons for retardation or defectiveness in the various faculties, if present, be elicited (diagnosed) by him, again whether physical, physiological, or psychological, whether environmental or pedagogic, and then, too, the prognosis given, whether easily remedied (and how) or whether only with great difficulty, or, in fact, not at all. A child with nasal or ethmoid disease, for instance, may give a mental picture of intellectual debility or mild imbecility ("aprosexia nasalis"), although it is mentally normal. Congenital syphilis may produce all types of mental disturbances and defect, from mere inability to concentrate, to absolute idiocy.[2] And this latter is remediable, even curable. Various functional mental disturbances in the so-called psychopathic constitution, as well as in the neurasthenic, hysterical, obsessive, etc., may also have the strongest deleterious effect upon the intellectual faculties, and these children, if treated and properly trained, improve or again become normal. Abnormalities in the internal secretions (mono- or polyglandular irregularities) may cause mild or serious retardation, possibly mental infantilism, even precocious advance (hyperpinealism?). In fact, such important strides have been made of late in this field of science, that no one, at this stage of investigation, can aver or deny that the internal secretions are not the constructing, stimulating, and inhibiting factors in the entire upbuild and psychodynamic leverage of the brain and mind. Our therapeutic and experimentally therapeutic ad-

ministration of these gland secretions, so easily carried out, may in time prove of inestimable value in the treatment of mental defects and abnormalities, possibly, too, in the mitigation of fatigue and pathologically affected attention, in the goading of interest, diligence, ambition, even in the stimulation of mental exuberance, physical growth, and general maturity. Very aptly did Woods Hutchinson express himself not long ago when he said, "We are such stuff as ductless glands are made of, and our little life is rounded with a sheep."

But though psychopathic and neuropathic children may easily enough be recognized by the physician, the problem itself of the intelligence examination, the actual probing to ascertain if intellectual defect is present, or if a child is subnormal or supernormal, is very difficult indeed and only just out of its swaddling clothes. To advance in this work much cooperation between the school, which provides the facilities of observing normal and slightly abnormal children, and the clinic with its outspokenly abnormal charges (the abnormalities in pure and concentrated cultures, so to speak) must still be necessary.

There is another decidedly grave problem, the one of most far-reaching significance, to be taken up by the school, in cooperation with the clinical psychologist. Can one, during the school years, discern signs or symptoms in the child which possibly presage nervous or mental trouble or disaster for it in the near or remoter future? And if this is so, could one not institute proceedings which would keep such child from becoming a future neurasthenic or hysterical or obsessed or psychopathic individual, or, indeed, from becoming a delinquent or criminal, or from the fate of insanity itself? And can aught be done for that pathetic class of mortals who are entirely normal up to the eleventh or twelfth year, or to puberty, and then suddenly cease progressing, or begin to deteriorate into one of the deplorable forms of dementia? What an immense proportion of our members are finally disposed of under one or another of these ominous headings!

And yet we know through such studies as those of Ziehen, Stelzner, and others, that a very large number of such individuals show prognostic signs of impending mischief in childhood (or may have a sinister augury even in their heredity) and that ever so many can be saved to themselves and the State if treated and mentally nurtured in time.

Why are society and Medicine asleep to this vastly important problem? With the abundance of talk on preventive medicine, of insanity exhibits, public propagandas and congresses on the part of psychiatrists and eugenic enthusiasts, it is amazing that the matter is not more opportunely taken up at the door of clinical psychology and the schools, here where it can be easily and simply inaugurated, and on a tremendous scale, here in the school years of the child—at that period in the life of these future unfortunates when they could still possibly be succored! It is evident that the gravity of it is not realized by the physician (and it is primarily a matter for the physician, not for the educationalist) or he is too busy with other problems to give much support to this one. It is possible, too, that just as the subject of psychotherapy was first taken note of after Christian Science and other modern healing cults assumed formidable proportions, so clinical psychology will first be legitimatized within the field of medicine after the schools of education and the psychologist have fostered it and made the province their own.

In the school this problem could be practically pursued in the following way: We know of a large series of signs and symptoms, often slight, often outspoken, as occurring in the childhood of such adult patients whom we treat for hysteria, neuro- or psychopathy, and certain psychoses, as well as in the so-called psychopathic constitutions of various types, the simple abnormals, the affect-individuals, the déséquilibrés, and such who evidence ethical and moral defects, and whom we find among the delinquents and many criminals. We must look for such signs and symptoms in all school children, and, when found, subject such child to careful scrutiny. A talk could be given to the mothers or guardians and the teachers concerning these signs and symptoms,* and then a sheet upon which the various facts are printed could be given them to fill out in respect to their own child or children. At our clinic we employ such a "questionaire," our *psychopathy-sheet*, as it is called, and it has served an excellent purpose, both in spotting the child in danger of some future trouble, and as an aid in the diagonsis of adult patients. Sleep-walking, for instance, points to hysteria in an extremely large number of cases. Bed-wetting, on the other hand, may be nothing but a bad habit, yet it may also be a sign of epilepsy, or, again, a mark of neuropathy or psychopathy in a child. Mistakes in writing may not only be due to poor scholarship; they may be due to nerve-fatigue or they may even be a premonitory forerunner in the epileptic, this latter condition having been pointed out by Stadelmann in his study of the school-child,' etc., etc. In an adult who comes because of an unexplainable pain or symptom, the history of his having been a sleepwalker in childhood, or of having had "stiff-attacks" or periods in which he couldn't see, or walk, or talk, etc., would lead us to conclude that he had undoubtedly had hysteria, and that the present symptom, if no cause can be found for it, was very probably hysterical.

These sheets could then be looked over in the school, and such children as showed any abnormalities be referred to the clinical psychologist for further interrogation and examination. A diagnosis made, the physician could then confer with the pedagog, and medical measures, or remedial pedagogics, or both, be advised and instituted in the way of treatment.

Vanderbilt Clinic,

Department of Neurology.

PSYCHOPATHY SHEET.†

(T. D., neurotic, hysterical, psychasthenic, psychopathic, psychotic.)

Underline any of the following symptoms or conditions, if present. State duration.

1. Bedwetting.
2. Walking, talking, or screaming in sleep. Night terrors.
3. Fits of temper, rage, or inability to control feelings. Destructiveness.
4. Attacks of convulsions, stiffness, spasms, faints, vertigo, shaking, "absences," "queer spells."
5. Spells of vomiting, migraine, car-sickness, difficult breathing.
6. Hysterical, agitated, depressed conditions; apathy.

*This could even be given by the principals of the schools, the matter for instruction being prepared by the psycho-clinicist.

†Copies of this sheet may be obtained from the Fetzer Press, 62 Reade Street, City.

7. Sudden, extreme changes of mood, or an entire change in disposition.
8. Being over-timid or fearful, over-bashful, over-scrupulous.
9. Tendency to morbid fears, obsessions, impulsions.
10. Being abnormally cruel, or tender; over-susceptible, over-emotional, over-sensitive, over-irritable.
11. Temporary loss of voice, or power of arms, or of legs, or sensation (of any part).
12. Loss of memory (general, or for certain periods); abnormal lack of attention.
13. Loss of vision (for periods); seeing double.
14. Headaches, sleeplessness, chronic fatigue.
15. Telling lies, playing truant, running away, stealing.
16. Easily led or misled; difficult to train or bring up.
17. Inability to stick to anything (play or work); shiftlessness.
18. Abnormal behavior or acts.
19. Strange fantasies (especially toward or at night), hallucinations, illusions.
20. Abnormal or imperative or fixed ideas; paranoid ideas.
21. Sexual precocity; sexual abnormalities.

Note (underline) if any of the following abnormalities are present:

a. Asymmetry of face, skull, nerve innervation.
b. Abnormality (atypical or misformed) of head, ears, teeth, palate, hands, toes, genitals.
c. Double hair-spiral, growing together of eyebrows, irregular growth of hair into forehead, etc.
d. Irregularity of pupils, difference in color of both irides, pigment or other abnormalities.
e. Left-handedness; speech defect.
f. Infantilism (of stature, general development, etc.)

Knowledge of the heredity of the child is often of greatest importance, especially in the case of those children referred to who progress normally until puberty, and then degenerate. A talk on heredity could, therefore, also be given to the parents (or a heredity "questionaire" or a small brochure be prepared and distributed among them), and it could be pointed out that ever so much can be done for a child to thwart the bad effects of heredity if the facts are known in time, and that, on the other hand, if no counter effort is instituted there is a likely chance of the abnormalities of the ascendants again appearing in the descendants, or if not the same abnormalities, other abnormalities. Thus, many parents could be induced to confide data of this nature to the psychoclinicist in charge.

Finally, other problems, some entirely pedagogical, could probably later be furthered by pedagog and psychoclinicist working conjointly, the problem of fatigue, or of artificially stimulated interest and emotion in instruction—for our studies in psychopathy teach us that happenings associated with affect or emotion are remembered almost permanently—then, the problem of longer or shorter sessions for each subject, whether brief periods of relaxation after recitations aid memory (suggested by the psychologist Gaupp), whether methods of concentration and suggestion similar to that used in hypnotherapy could at times be employed—a certain modulation of voice, a certain subdued light in the room, etc., especially in the giving of ethical instructions, etc., etc.

The various teachers in the school ought to be taught something about these faculties of intelligence and their examination, as well as something about normal and abnormal variations from the rule of behavior and thinking. Some one person in the school, let us say a social worker, ought to familiarize herself with the various factors in clinical psychology and be in constant touch with all the classes, and so with those children singled out for observation (and supervise in the singling out of such children), who also would be there to get the data together for the clinical psychologist when he called, or would bring this to him, together with the children to be examined. In other words, just as there is a visiting school physician, and his assistant, the school-nurse, so the school should have its visiting clinical-psychologist, and, to aid him, an assistant psychologist, or social worker at the school.

At most it would be but a beginning, as only a few paths have as yet been blazed. But this work is rich of promise, and when fully and carefully carried out will prove an indispensable aid to the school in grading and classifying its charges, and of the greatest boon to the growing child in spying out its abnormalities at the earliest possible moment and endeavoring to obviate them, thus saving the adult from aberration, chronic illness, or infirmity, and society ever so many of its variously invalided mortals.

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60 WEST EIGHTY-FIFTH STREET.

THE SIGNIFICANCE OF THE PRESENCE OF ACID-FAST BACILLI IN THE FECES OF THE PATIENTS SUFFERING FROM JOINT DISEASE.*

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IT is our belief as a result of our experimental and clinical investigation lasting over a year (1) that the acid-fast bacillus found in the feces resisting the decolorization with 25 per cent. nitric acid, watery solution, followed by alcohol (80 per cent.), is a tubercle bacillus and nothing else; (2) that the same acid-fast bacillus is viable, able to grow on culture media, and (3) that when those cultures are injected into guinea pigs they produce tuberculosis.

Experimental Proof.—On June 24, 1914, eight healthy guinea pigs were placed in aseptic compartments for one hour daily in order that we might gather their feces and look for the presence of acid-fast bacilli. All of the specimens were negative. On the fourth day all of the animals were injected with a suspension of tubercle bacilli. Three received their injection into the hip joints, three into the knees, and two subcutaneously. Twenty-four hours after the injections, and every

*Read before the Medical Association of the Greater City of New York, May 17, 1915.

twenty-four hours therafter, they were again placed in those compartments and their feces collected. By the eighth day six out of the eight had acid-fast bacilli present in their feces. All of them subsequently developing tuberculosis (as shown by the autopsy report).

The second series of experiments was undertaken for the purpose of investigating whether the acid-fast bacillus is not a smegma bacillus. On August 17, 1914, nine healthy-looking guinea pigs were placed in the aseptic compartments and their feces gathered every twenty-four hours for three successive days and examined for the presence of acid-fast bacilli. In none could any be found. On the fourth day we injected a suspension of tubercle bacilli into their knee-joints, and twenty-four hours after the injection and every twenty-four hours thereafter their feces were again collected and examined for acid-fast bacilli. This time we took the precaution of washing the anus and the surrounding parts with sterile water prior to their being placed in the compartment. By the eighteenth day all of the guinea pigs had shown the presence of acid-fast bacilli in the feces.

The same experiment was repeated on September 19, 1914, with practically the same results. At the autopsy we looked especially for a gastrointestinal lesion to account for the presence of the bacilli in the feces. In none could we detect any ulceration.

On February 24, 1915, we placed two guinea pigs in aseptic compartments and collected their feces for three days. No acid-fast bacilli could be found in any. On February 28 one of them was injected with staphylococci and streptococci and the other with staphylococci alone, and the feces were examined thereafter for the presence of acid-fast bacilli. In none could any be found.

All of those acid-fast bacilli could be grown on glycerin-agar media and attained full growth in from fifteen to seventeen days.

Animal Inoculation.—Ten guinea pigs were injected with glycerin-agar cultures of acid-fast bacilli, gotten from the feces of patients suffering from tuberculosis of the joints. Four were injected in May, 1914, and they died within one week. Six were injected on November 4, 1914, after they had been prepared and their feces studied three days prior to the injection, as on previous occasions. All the six developed tuberculosis. The same acid-fast bacilli were found in their feces.

Deductions from Our Experiments and Animal Inoculations.—(1) That the acid-fast bacillus found in the feces is a tubercle bacillus. (2) That it is a living germ, capable of producing the disease when injected into animals. (3) That no matter how the bacillus is introduced into the system it will make its appearance in the intestinal tract and be discharged in the feces without necessarily producing a pathological lesion in the intestinal mucous membrane.

Staining Technique.—The following method of staining and counterstaining was used in our work in all but the first three cases, and we found that the tubercle bacillus is the only bacillus that will remain red while all others will be decolorized and will subsequently take on the counterstain:

1. Cover smear with carbol-fuchsin for two minutes, heat, and keep moist and wash off excess of stain with water.

2. Apply nitric acid, 25 per cent. solution, for two seconds, then pour off the excess and apply.

3. Alcohol (80 per cent.) on slide and leave it on for at least one minute. Then wash the slide with water and apply.

4. Methylene-blue stain for twenty seconds; wash off with water and dry between filter papers.

One may also substitute gentian violet for the methylene-blue as a counterstain and leave same on for two minutes.

The Clinical and Diagnostic Significance of the Presence of Tubercle Bacilli in the Feces.—In order to study its clinical and diagnostic importance it was necessary to select (*a*) cases suffering from positive joint tuberculosis as seen by the symptoms and signs pathognomonic of the disease, aided by *x*-ray and other laboratory tests, or as shown by the subsequent history, bearing out the early diagnosis. (*b*) Cured cases of sure joint tuberculosis. (*c*) A number of cases suffering from diseases other than tuberculosis as controls, also dubious cases.

The result of this investigation was as follows: Active tuberculosis of joints, 42; tubercle bacilli in feces, 30; tubercle bacilli in urine, 2. Cured cases of joint tuberculosis, 6; tubercle bacilli in feces, 0; tubercle bacilli in urine, 0. Dubious cases of joint tuberculosis, 9; tubercle bacilli in feces, 1; tubercle bacilli in urine, 0. Of the dubious cases 3 turned out to be luetic infections; 1 was found to be suffering from a gonorrheal arthritis; 1 was shown to be an ordinary sprain of the knee-joint; 2 cases are still doubtful; 1 case was lost sight of. The patient in whose feces acid-fast bacilli were found turned out to be suffering from tuberculous (active) arthritis of right hip. Control cases 18; tubercle bacilli in feces, 0; tubercle bacilli in urine, 0.

The above figures show that under normal conditions there are no acid-fast bacilli in the feces, also that only in active cases of joint disease are they present in the alvine discharges, and not in cured cases, and therefore the finding of the acid-fast bacilli in the feces in cases suffering from an active disease of a joint, and no active tuberculosis of any other part of the body, is of great significance in reaching a diagnosis in an obscure case.

Location of disease of those in whose feces acid-fast bacilli were found: Hips, 15; spine, 6; knee, 6; shoulder, 1; sacroiliac, 2; foot, 1; total, 31.

Age of the patients with active joint disease in whose feces acid-fast bacilli were found: Youngest, 2 years; oldest, 40 years.

Duration of disease of active cases with presence of acid-fast bacilli in feces: Shortest, 3 weeks; longest, 5 years.

Method Followed in Obtaining Specimens of Feces.—The patient was given a mild laxative, such as castor oil or magnesium citrate solution, the night before collection, and he was ordered to defecate into a chamber-vessel that had been thoroughly cleaned and then placed in boiled water. The feces were then to be put into a newly purchased fruit preserving jar, which had been thoroughly cleaned and then sterilized in boiling water. The feces from 2 to 3 consecutive days were collected in the same manner and put into separate jars and labeled with name of patient and date of collection.

A small amount of the suspected feces was diluted with an equal amount of sterile distilled water to which a few drops of carbolic acid solution (4 per cent.) had been added. The entire mixture was allowed to stand for 12 hours. The water was then poured off very carefully and a small piece of the mucoid, cheesy-looking sediment picked up with a sterile platinum wire loop, placed upon a clean slide, and stained by the method described above.

From each specimen of feces 10 to 12 slides were prepared and a number of cultures made. The cultures were examined from the 15th to the 21st day and some of these cultures were injected into guinea pigs.

The following illustrative cases are reported:

Case I.—R. R. Seven and a half years. United States. Tuberculosis of right hip, duration three and three-quarter years. Regarded as cured and to be discharged from hospital. Examination of two specimens of feces showed tubercle bacilli present in both smear and culture. Treatment by support continued and patient kept under observation.

Case II.—M. M., eight years, Russia. Tuberculosis of left knee, four years' duration. Apparently cured with marked flexion deformity. Feces examined prior to corrective manipulation. No acid fast-bacilli found. On July 16, 1914, his knee was straightened by the "reverse leverage method," at the Polyclinic Hospital. Four days later his feces were again examined and tubercle bacilli found. Cultures were also made and injected into a guinea pig and the pig developed tuberculosis. The disease of the knee which had been quiescent until the manipulation, again became active and has been running an acute course ever since.

Case III.—B. K., twenty-four years. Female. Russia. Clinical diagnosis: Sciatica. Treated for same for nine months by various physicians and also orthopedic surgeons. Due to obscure symptoms and signs. Examination of feces in April, 1914, tubercle bacilli found in cultures. Subsequent history that of sacroiliac tuberculosis.

Case IV.—H. S., four years; male; United States. Patient at Roosevelt Hospital, May 15, 1914. Clinical diagnosis, tuberculosis of left hip joint(?) of three weeks' duration. Past history: Had measles at age of sixteen months; whooping cough at three years, lasting until six months ago. Present history: Three weeks ago mother observed that the child limps and two days ago the child began to complain of pains in the left knee. Has no night pains. Examination showed left knee normal, motion of left hip limited, due to spasm of muscles, gluteal fold shallow on left side. No atrophy of muscles of thigh. *X*-ray negative. Urinary examination, normal. Feces examination, tubercle bacilli present. Subsequent history, that of tuberculous hip and treated accordingly.

Case I illustrates the prognostic importance of the feces examination in cases suffering from joint tuberculosis prior to their being discharged as cured.

Case II leaves no doubt as to the intimate connection between joint tuberculosis and tubercle bacilli in the feces.

Case III illustrates its value in differential diagnosis.

Case IV shows the value of the examination of the feces for tubercle bacilli in very early cases for diagnostic purposes.

Before proceeding with our further remarks and conclusions it might be interesting to give the conclusions of other investigators in that field.

D. M. Alexander, after having studied a number of specimens of feces taken from normal individuals and having found them all negative, and the feces taken from 74 cases of certain tuberculous cases and found 52 specimens positive, concludes: (*a*) "That all acid-fast bacilli in the feces are tubercle bacilli. Acid-fast oval bodies are found frequently but their nature is unknown. (*b*) That there is an intermittency in the appearance of the tubercle bacilli in the feces which may be connected with the flow of bile. This explanation is supported by the action of the cholagogue calomel."

Whether or not the intermittency in the appearance of the tubercle bacilli in the feces is connected with the flow of bile we are unprepared to say; the fact, however, remains that the presence of the tubercle bacilli in the feces one day does not make it certain that one is going to find them in the feces of the following day. To illustrate:

1. Th. B., nine years. Polyclinic Hospital. Tuberculosis of left hip. First specimen of feces 3/24/14 tubercle bacilli absent; second specimen of feces 7/24/14 tubercle bacilli present.

2. B. K., twenty-four years, female. Polyclinic Hospital Tuberculosis of sacroiliac joint. First specimen of feces 4 6/14 tubercle bacilli present; second specimen of feces 8/22/14 tubercle bacilli present; third specimen of feces 8/23/14 tubercle bacilli absent; fourth specimen of feces 8/24/14 tubercle bacilli present.

3. K. P., three years. Roosevelt Hospital. Tuberculosis of right knee. First specimen of feces 5/22/14 tubercle bacilli present; second specimen of feces, 8/24/14, tubercle bacilli absent; third specimen of feces, 8/25/14, tubercle bacilli present; fourth specimen of feces, 8/26/14, tubercle bacilli present.

Viewing our negative findings in the feces with the presence of active disease of the joint from that angle, we cannot but feel that the percentage of the presence of acid-fast bacilli in the feces is much greater than what we have been able to ascertain. The only reason for its absence may be the fact that we gathered the specimens at an inopportune time.

Laird, Kite, and Stewart as a result of experiments and of examinations of a number of cases come to the conclusion that: (1) Nearly all patients with tubercle bacilli in their sputum also have virulent tubercle bacilli in their feces. (2) Very few persons who do not have tubercle bacilli in their sputum have acid-fast bacilli in their feces.

Our own clinical investigations and experimental work convince us that the conclusions of Laird, Kite, and Stewart are incorrect, for the following reasons: (*a*) All the guinea pigs infected by us with tubercle bacilli, no matter through what channel, discharged tubercle bacilli in their feces. Some as early as the fifth day following the injection. In very few of them could we find pulmonary involvement at autopsy, or the presence of intestinal ulceration. (*b*) Most of our patients whose feces showed the presence of acid-fast bacilli had a thorough physical examination. Dr. O. S. Wightman of the Polyclinic Hospital examined a number of them, some were examined by Dr. A. Bassler, others by Dr. E. Bishop. In only 2 of the cases could an apical involvement be found, and only one had tubercle bacilli present in the sputum. It is also a known fact that very few patients with joint tuberculosis have pulmonary phthisis.

Dr. A. J. Quimby has also been kind enough to *x*-ray the chest of a number of our cases, in order to see whether he could detect any lesion in the pulmonary region. With the exception of a few calcareous glands, which are found in normal chests, the findings were negative.

In view of the above facts we feel confident to assume that it is not at all necessary to swallow the sputum containing tubercle bacilli in order that they should appear in the feces. It seems to us more plausible to say that the presence of the tubercle bacilli in the feces of patients suffering from active tuberculosis is due to the fact that the body, being in good condition with resisting power, is trying to rid itself of the foreign invasion by discharging some into the bowels. This theory is borne out by the fact that we have observed that the feces taken when the animals were very ill were very often negative for tubercle bacilli, and when they began to improve the tubercle bacilli reappeared in the feces.

Some guinea pigs stopped discharging tubercle bacilli in their feces a few days prior to their death.

In human beings we have observed the same peculiarity, viz., that when the patients were very ill the feces were negative for tubercle bacilli, and when they improved in general health the tubercle bacilli again reappeared. Whether or not this theory is correct remains to be seen. It sounds reasonable.

RECORD OF CASES

Active Cases of Tuberculosis

No.	Name	Age Yrs.	Diagnosis	Tub. Bacilli: Urine	Tub. Bacilli: Feces	Source
1	O. B.	28	Third lumbar. Three years' duration.	+	+	Polyclinic Hospital
2	B. K	21	Sacroiliac. Nine months' duration.	–	+	Polyclinic Hospital
3	T. O.	9	Left hip. Two years' duration.	–	+	Polyclinic Hospital
4	Ch. B.	12	Right hip. Three years' duration.	–	+	Polyclinic Hospital
5	W. McL.	4	Left hip. Two months' duration.	–	+	Roosevelt Hospital
6	J. C.	4	Left knee. Twelve months' duration.	–	+	Roosevelt Hospital
7	A. S.	2	Left hip. Two months' duration.	+	+	Polyclinic Hospital
8	G. B	8	Right knee. Two years' duration	–	+	Polyclinic Hospital
9	K. P.	3	Right knee. Six months' duration	–	+	Polyclinic Hospital
10	H. S.	4	Left hip. Three weeks' duration.	–	+	Roosevelt Hospital.
11	F. K.	5½	Right hip. Two years' duration.	–	+	Polyclinic Hospital
12	M. M.	8	Left knee, cured with flexion deformity. Four years' duration.	–	–	Polyclinic Hospital
13	M. M.	8	Left knee, after manipulation to correct deformity.	–	+	Polyclinic Hospital
14	L. O.	4	Left hip. Six months' duration.	–	+	Roosevelt Hospital
15	R. D.	3½	Left hip. Three weeks' duration.	–	–	Roosevelt Hospital
16	J. W.	3½	Right hip. Seven months' duration.	–	+	Polyclinic Hospital
17	M. O.	5	Right hip. Six weeks' duration.	–	+	Polyclinic Hospital.
18	B. M.	28	Infective arthritis of left hip. (Neisserian). One year duration.	–	+	Polyclinic Hospital
19	M. B.	30	Last dorsal and first lumbar. Six months' duration.	–	+	Dr J. A. Bodine
20	A. C.	8	Left hip. Two years' duration.	–	+	Polyclinic Hospital
21	J. M	8	Eleventh and 10th dorsal. (Subacute type from beginning.)	–	–	Roosevelt Hospital
22	W. C.	Child	Left knee. Two years' duration.	–	–	Polyclinic Hospital
23	J. C.	34	Osteoarthritis of spine. Three years' duartion.	–	+	Roosevelt Hospital. Dr. Albee.
24	M. T.	20	Left shoulder. Eighteen months' duration.	–	+	Polyclinic Hospital
25	P. M	23	Left hip. Twelve months' duration.	–	+	Polyclinic Hospital
26	R. P.	15	Left tarsus. Nine months' duration.	–	+	Polyclinic Hospital
27	Th. M.	12	Left knee. Two years' duration.	–	–	Polyclinic Hospital
28	Ch. L.	21	Sacroiliac. Five months' duration.	–	+	Private Hospital
29	S. A	25	Right hip. Two years' duration.	–	+	Polyclinic Hospital
30	R. R.	7½	Right hip. On the verge of being discharged. Three and three-quarters years' duration.	–	+	Polyclinic Hospital
31	A. S.	34	Fourth and 5th lumbar with psoas abscess. One year's duration.	–	–	Roosevelt Hospital
32	N. P.	5½	Mid-dorsal. Two and one-half years' duration.	–	+	Polyclinic Hospital
33	M J.	28	Cured tuberculosis of left hip with exacerbation. Four years' duration.	Not exam.	–	(W. B. Thompson.)
34	E. F. A.	37	Lower dorsal. Six months' duration.	Not exam.	+	Polyclinic Hospital
35	Miss R.	21	Tenth dorsal. Five years' duration. Five months' after Albee operation.	Not exam.	+	Polyclinic Hospital. (Dr. Bonime.)
36	S. G.	19	Various joints in process of healing. Five years' duration.	Not exam	–	Polyclinic Hospital. (Dr. Bonime.)
37	M. M.	9	Left hip. Six weeks' duration.	–	–	Harlem Disp
38	A. B.	38	Left knee. Two years' duration.	Not exam.	+	Polyclinic Hospital (Dr. Bonime.)
39	J. S.	58	Mid-dorsal, six months' duration. Also had tub. kidney and tub. testicle. Both removed. Five years' duration.	Not exam.	–	Polyclinic Hospital
40	F. M.	14	Suppurative arthritis of left knee. Six weeks' duration.	Not exam.	+	Polyclinic Hospital. (Referred to Dr Bonime and by him referred to us.)
41	R. M. S.	32	Sacroiliac. Six months' duration.	Not exam.	–	Polyclinic Hospital. (Dr. Wallace.)
42	Wm. D.	18	Cured tuberculosis of right knee with relapse due to recent fall. Ten years' duration	Not exam.	–	Polyclinic Hospital. (Dr. W. B. Thompson.)

Cured Cases of Tuberculosis

No.	Name	Age Yrs.	Diagnosis	Tub. Bacilli: Urine	Tub. Bacilli: Feces	Source
1	R. B.	33	Right elbow. Duration 3½ years after relapse. Had first attack twelve years ago.	–	–	Roosevelt Hospital
2	Wm. D.	14	Lower dorsal. Albee's operation three years ago. Duration 10 years.	–	–	Roosevelt Hospital (Dr. F. H. Albee.)
3	J. McL.	12	Right knee. Nine years' duration.	–	–	Polyclinic Hospital
4	Miss K.	28	Fallopian tubes. Removed by operation.	–	–	Harlem Disp. (Dr Tovey.)
5	M. M.	8	Left knee. Four years' duration.	–	–	Polyclinic Hospital
6	Ch. B.	12	Right hip. Three and one-half years' duration.	–	–	Polyclinic Hospital

Dubious Cases

No.	Name	Age Yrs.	Diagnosis	Tub. Bacilli: Urine	Tub. Bacilli: Feces	Source
1	C. J	38	Tuberculosis of navicular bone (right) Duration 1 year.	–	–	Roosevelt Hospital
2	G. R.	36	Tuberculous adenitis and spinal involvement? One and one-half years' duration.	–	–	Roosevelt Hospital
3	J. D.	18	Tuberculosis of left tarsus. Six months' duration.	–	–	Polyclinic Hospital (Dr. Wallace.)
4	Mrs. B.	28	Tuberculosis of left hip. One year duration.	–	–	Private
5	Mr. G.	32	Tuberculosis of left knee? Two years' duration.	–	– Smegma bacilli	Polyclinic Hospital
6	H. S.	36	Tuberculosis of left knee? Two months' duration.	–	–	Roosevelt Hospital
7	Mrs. F.	30	Spondylose Rhizomelique by Whitman, Potts—by others. Duration?	Not obtained	–	Polyclinic Hospital
8	T. T.	5	Tuberculosis of knee? Duration?	–	–	Polyclinic Hospital
9	E. M.	10	Tuberculosis of right hip? Has had intermittent pain for 2 or 3 months in succession for past 3 years. Three years' duration.	–	+	Roosevelt Hospital

Control Cases

No.	Name	Age Yrs.	Diagnosis	Tub. Bacilli: Urine	Tub. Bacilli: Feces	Source
1	A. G.	72	Arthritis deformans. Duration?	–	–	Roosevelt Hospital.
2	C. I.	24	Infective arthritis. (Oral infection.)	–	–	Private
3	L. M.	26	Sacroiliac sprain. Duration three months.	–	–	Roosevelt Hospital
4	B. B	25	Infective arthritis. (Salpingitis cause.) Six months' duration.	–	–	Private
5	E. P.	53	Osteoarthritis of right knee. Duration 1 year	–	–	Roosevelt Hospital
6	L. K.	29	Toxemic pains around shoulders. Duration?	Not exam.	–	Roosevelt Hospital
7	M. M.	32	Rheumatism. Duration?	–	–	Private
8	Mrs. L.	35	Painful weak feet. Duration?	Not exam.	–	Private
9	R. D.	42	Arteriosclerosis and intermittent claudication. Duration?	–	–	Roosevelt Hospital
10	B. R	12	Muscular rheumatism (Oral infection.)	–	–	Roosevelt Hospital
11	S. R.	45	Ulceration of plantar surfaces of both feet (diabetic.)	–	–	Roosevelt Hospital
12	N. H	22	Chronic bronchitis with rheumatic pains all over body.	–	–	Private
13	Mrs. B	26	Gonorrheal arthritis of left ankle.	–	–	Roosevelt Hospital
14	V. D	30	Chronic rheumatism.	–	–	Roosevelt Hospital
15	Mrs. L.	45	Intermittent spasm of glottis (Kopetzky).	–	–	Private.
16	Mr. H.	28	Lymphangitis and double weak feet.	–	–	Roosevelt Hospital
17	A. G.	64	Osteoarthritis of right knee.	–	–	Roosevelt Hospital.
18	Mrs. B	?	Painful weak feet (Chronic endometritis.)	–	–	Roosevelt Hospital

and we shall make it our business to test its validity in our future investigations.

Conclusions.—1. The acid-fast bacillus resisting decolorization with 25 per cent. nitric acid watery solution, followed by 80 per cent. alcohol, is a tubercle bacillus.

2. Patients suffering from joint tuberculosis keep on discharging tubercle bacilli for years, so long as the disease is active.

3. Those bacilli are alive and capable of producing tuberculosis in others, as proven by animal inoculation.

4. In obscure joint conditions the finding of tubercle bacilli in the feces may be of great diagnostic importance and should never be neglected.

5. A patient suffering from joint tuberculosis should not be discharged as cured without a thorough search for acid-fast bacilli in the feces, and if they are found, the patient should be kept for further observation, for it shows that there is still some activity of the disease present.

6. The smegma bacillus is conspicuous by its absence in the feces.

7. We fully agree with the remarks of Dr. M. Solis-Cohen that "The feces of tuberculous patients must be regarded as a source of contagion and must always be thoroughly disinfected. The same precautions in regard to disinfection of hands, clothing, bed covers, etc., soiled by fecal evacuations, that are taken in cases of typhoid fever should be observed in the management of patients with tuberculosis." To all those who have taken some part in this work and to those who have helped us elucidate difficult points, we wish to express our gratitude.

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The Action of Aconites.—Alfredo Chistoni has studied the effects of the action of aconite upon the cardiovascular and respiratory systems. In the frog small doses of crystallized aconitine or of the fluid extract of aconite cause a slowing up of the heart beat dependent upon the prolongation of the ventricular systole, while larger doses produce a prolongation of the diastolic period. In the dog the subcutaneous administration of aconitine or of the fluid extract of aconite diminishes the rate of the heart beat and the blood pressure, as the result of the excitation of the cardio-inhibitory center and the inhibition of the vasoconstrictor center.—*Giornale Internazionale delle Scienze Mediche.*

SYMPTOMATIC PSYCHOSIS OF RENAL TYPE, WITH REPORT OF TWO CASES.

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THE contact between psychiatrists and general practitioners is to be found in the field of those mental disorders which are definitely dependent on a specific physical disorder. Among these, infectious and autointoxication psychoses take the first place and represent the greatest part of symptomatic psychoses. It is also becoming more and more clear that we cannot trust entirely to purely clinical pictures for the diagnosis of mental diseases, and a study of symptomatic psychoses will aid in the task of differential diagnosis, proper treatment, and correct prognosis.

The specificity of the symptoms of the symptomatic psychosis is one that is still debated, and it will require extended investigation before we will be able to recognize the various syndromes of the symptomatic psychoses. The object of this paper is to illustrate the association of fear psychoses with functional disturbances of the kidneys.

We know that the functional disturbances associated with uremic conditions are products of an autointoxication, the result of retention in our body of certain elements which are usually eliminated by the kidneys. The cerebrospinal symptoms of uremia, which we observe every day, are delirium, convulsions, coma, headaches, etc. Melancholia and delusional insanity with ideas of persecution due to uremia are rare. There are evidently some other forms of mental disturbance which are also due to a disturbance of the functions of the kidneys. The different pictures of the same autointoxication are probably due to two factors; either the intensity of the fixation of the poison to the nerve cells, or injury of different elements of the nervous system.

From experience it is known that the "selective affinity" between the cells of the nervous system and certain poisons of endogenous as well as exogenous character, is greater than that of the cells of other organs; that the nervous system contains an amount of toxin greater than any other part of the body; that certain toxins increase their virulence when combined with the nerve tissue, for instance, tuberculin when mixed with nerve tissue has its power increased as much as fourfold. The clinical difference of the symptoms in poisoning with parasitary toxins is thus dependent on the intensity of the fixation of the poison to the nerve cells, and the same could be said about other toxic conditions of our nervous system. This can be illustrated by the following observations: Alcoholic intoxication, which produces exhilaration in one person, melancholia in another, induces motor incoordination or staggering in a third, or alcoholic polyneuritis, is in many cases not accompanied by mental disturbances, while in others it produces the so-called polyneuritic psychosis. Influenza produces in one melancholia, in another mania, in a third sensory deliria and in a fourth polyneuritis.

To the psychoses due to autointoxication belong those appearing in uremia, cholemia, hydrops, cachectic processes in pernicious anemia, diabetes, eclampsia, and similar processes.

The symptomatology of these various forms of

symptomatic psychoses is manifested in the form of deliria, epileptiform excitements, dazed and stuporous conditions, hallucinatory and catatonic conditions, and incoherent amentia.

Bonhoeffer calls attention to the fact that epileptiform excitement due to toxic infection need not differ in any way from a real epileptic one. The same may be said of many catatonic and amentia pictures. Referring to the same author, it may be said, that according to the conditions of present-day experience, we must accept autointoxication as the most probable cause of many processes, even when the nature of the diseased organs is as yet quite unclear. A number of such cases passed through the Westport Sanitarium during the year 1914. I have selected two which are representative of this class and the most instructive.

Case I.—Mrs. F. K., fifty-eight years of age, entered this institution July 14, 1914, at 6 p. m. She had been arrested at home in a very excited condition, was destroying everything and aggressive to everybody who approached her. She was first taken to jail, and a few hours later brought handcuffed to this institution by two police officers. Patient was always temperate and had been working as a canvasser up until two o'clock of the same day. The attending physician reported that she had been treated a year and a half ago for Bright's disease. Granular and hyaline casts were found in the urine with traces of albumin, and the ophthalmoscopic examination revealed a retinitis albuminurica. Upon entering the institution she was constantly crying, saying: "Oh, everything is gone." Expression of fear was evident. While in the institution she had visual hallucinations, expression of fear and despondency, was semi-oriented for time and place and partially for person. Thought she saw a naked man with a rope in his hand. Was coherent. At times covered her eyes, thinking she would escape from the terrifying visual hallucinations. When asked if she saw things in her room, she replied "Yes"; but when asked for verification did not give correct answers. When shown keys and asked what they were, she said "Money," and started to cry: "Oh, my money! He took the money!" When asked who, she replied: "The naked man." Complained of headaches, did not sleep, pulse accelerated, blood pressure 170, appetite poor, anemic. Urine, sp. gr. 1,008, acid reaction, traces of albumin, a few hyaline casts, sugar negative. Ophthalmoscopic examination showed retinitis albuminurica. Lateral nystagmus occurred several times periodically when the patient was more restless and excited. (Low diet and warm baths.)

July 17—Same fear condition, nystagmus, crying, partially oriented for time, place, and person, complained of headache, visual disturbances and could not see objects distinctly. Pupils medium size. Blood pressure, 170. Urine pale, sp. gr. 1,008. Urea, 4 grains per ounce; daily quantity of urine, 55 ounces. Lamenting, depressed, and did not remember the day of the week or when she came here.

July 24—Headache, vomiting, visual disturbances, slept better, depressed and lachrymose.

July 25—All the symptoms subsiding, visual hallucinations disappeared and no fear. General condition improved. Urine, sp. gr. 1,016, acid reaction, no casts, no albumin. Urea, 7 grains per ounce. Daily quantity of urine, 55 ounces.

Case II.—Mrs. D. W., thirty-eight years of age, entered this institution November 6, 1914. She had left Mercy Hospital, Springfield, Mass., the same day. Patient had scarlet fever when a child. Six years ago she was "swollen all over the body." Married three years ago, no children. A year and a half ago she had symptoms of a phantom pregnancy, distended abdomen, and prepared everything to meet parturition and the new condition of a mother. Headaches for a long time before the sickness came on. Four weeks ago she became suddenly excited, confused, and did not recognize her surroundings. The diagnosis made in Mercy Hospital reads: "Acute mania." Confused most of the time, irrelevant, did not recognize people, and talked constantly to herself. Patient was always nervous and timid. No mental or nervous diseases in the family.

While in the institution she did not know her age or the date of her birth, was relevant and coherent. Expression of fear, restless, and was afraid somebody was grabbing her. Said she heard children crying and that they were locked in the cellar. She was afraid they would die. Oriented for place and person and partially for time. Did not recall remote events; memory for recent events good. Fear, illusions, and acoustic and visual hallucinations. Could not sleep because she thought loaded guns were under her bed and feared everybody was going to be killed.

Physical status: Pale, poorly nourished, dry lips, coated tongue, pulse 100-110, unequal, soft. Reflexes preserved. Complained of pressure in head. Uranalysis: sp. gr. 1,010, slightly acid, no sugar or albumin.

November 10—Very restless and fearful. Tried to suffocate herself by tying a handkerchief around her neck. Ate only when urged, but took sufficient food. Uranalysis: sp. gr. 1,006, neutral reaction, pale color; urea, 1 grain per ounce; daily quantity of urine, 55-60 ounces; no albumin.

November 18—Mental condition the same. Uranalysis showed the same results.

November 20—Patient restless, at times better, slept only with hypnotics. Tried to suffocate herself again. Fearful acoustic hallucinations.

November 24—Not so restless and less fearful. Sp. gr. of urine 1,018, no albumin; urea, 3 grains per ounce. Daily amount, 50 ounces.

November 28—Mentally and physically better. No evidence of hallucinations.

December 14—Patient constantly improving, fear subsiding, started to sleep well, and no headache. Urine: sp. gr., 1,022, light color, acid reaction; urea, 8 grains per ounce; daily quantity, 50-55 ounces. Discharged December 17, 1914, entirely free from fear and in good physical condition.

I saw this patient again on May 21, 1915, five months after she was discharged as cured. She reported that she had felt cheerful all the time and all right physically. Lately she had had headache and insomnia again, but it was not so bad as before the sickness. Pulse 80, blood-pressure 170-175. Uranalysis again showed pale color, specific gravity 1,009, acid reaction, albumin and sugar negative. Amount of urea 2.5-3 grams per ounce. Daily quantity 45 ounces on liberal diet. Microscopic picture negative. I again ordered strict milk diet and warm baths. One week later patient reported that she slept better and felt better generally.

In both cases Bright's disease occurred long before the onset of the psychoses. In the second case the first attack dated probably from childhood when she had scarlet fever. The onset of the psychosis in both cases was acute with no signs of any current infectious disease or alcoholic intoxication. Family history negative in both cases. The neuropathic constitution in the second case was evident. Neither had ever been affected with any mental disease. The psychoses lasted a short period, two and eight weeks respectively. Rapid improvement and complete recovery took place after a milk diet and warm hydrotherapeutic applications. The improvement of the urinary findings, specific gravity, and amount of urea, occurred simultaneously with the improvement of the mental condition.

The mental condition in the first case presented the picture of a fear psychosis with slight ideas of persecution, aggressiveness and a tendency to destructiveness. In the second also a fear psychosis with a strong tendency to self-destruction. There were no symptoms of cerebrospinal irritation, which we meet in uremia, except headaches, pressure in the forehead, nystagmus, and increased blood-pressure in the first case. The consciousness was not clouded as we see in uremic delirium.

Discussing the uranalysis, we see in the first case the picture of a chronic interstitial nephritis. In the second case we did not find any albumin or casts, but a persistent low specific gravity, 1,006-1,010, and an unusually low amount of urea, 1/5 per cent. in 55-60 ounces of urine in 24 hours.

According to the latest work of Marshal and David in biochemistry, an amount of urea lower

than 1 per cent. indicates a retention of urea in our body. This is a regular occurrence in certain cases of severe nephritis when for any reason the excretion of urea is prevented, and it would appear that the entire amount formed is stored in the body, as there is no evidence of the conversion of urea into other substances. The probable diagnosis in the second case, taking into consideration the history, is also chronic interstitial nephritis.

A fair conclusion from the above consideration is that one deals here with mild physical symptoms, as a result of disturbance of the renal function. The mental picture could be classified as a fear psychosis, which could be considered as a symptomatic psychosis, due to a disturbance of the function of the kidneys. On the diagnosis depends the treatment and prognosis.

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SUBDELTOID BURSITIS*.

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THE stiff and painful shoulder is a very frequent sight in an orthopedic clinic. The diagnosis of its exact etiology, however, is, in a given case, not very common. Of the many types of shoulder disability, that due to subdeltoid bursitis, so ably studied by Allen, Baer, Rugh, Littig, and especially Codman of Boston, has received insufficient attention at the hands of the profession in general. One often sees a stiff and painful shoulder diagnosed as rheumatic, and the patient, suffering intensely from pain which can easily be relieved by proper splinting, is for days and weeks given aspirin or other salicylate compound. Not infrequently subdeltoid bursitis in its chronic stages on account of presenting such symptoms as pain, stiffness, and atrophy of the shoulder, is mistaken for an arthritis, tuberculous arthritis, and consequently inappropriate treatment applied, when a careful examination would definitely demonstrate that there is no intra-articular disturbance. It is with the hope of emphasizing the clinical picture of subdeltoid bursitis producing shoulder disability that I present to you the following series of patients studied during the past three years.

Anatomy.—A word about the anatomy of this bursa will I think not be amiss. It is located over the anteroexternal surface of the shoulder joint, directly under the deltoid muscle, extending up under the acromion process about ¾ inch, and downward half way along to the attachment of the deltoid to the humerus. Its base is intimately attached to, and in fact formed by, the insertions of the supraspinatus, infraspinatus, and teres minor muscles. Roughly speaking the bursa is about two and a half inches in diameter. Like other bursae, it contains normally just enough fluid to allow easy motion of the parts on either side of it.

Etiology.—Situated over a joint that is used so frequently, and in such an exposed position, the subdeltoid bursa is subject to an unusual variety of traumata as a blow on the shoulder, a fall, excessive activity of the shoulder, etc. It is therefore not surprising to find this bursa frequently injured. Also from its position over the external rotators and the supraspinatus and under the deltoid, one realizes that abuse of or injury to these muscles must have a traumatizing influence on the delicate living membrane of this bursa, and vice versa than an inflamed bursa will from its proximity to these muscles limit their activity. In addition to direct injury, the bursa may be affected by such conditions as prolonged fixation following operations, fractures or dislocations in or about the joint and infection, suppurative[1] or non-suppurative, as rheumatic or influenzal.

Pathology.—The pathological changes in this condition affect three structures. First, *the lining membrane of the sac,* which may be only congested (giving us the acute painful stage), or moderately or markedly thickened (as in the chronic stage). In one of Baer's[2] cases, the wall of the bursa was 1 cm. thick. Secondly, *the contents of the bursa:* The sac may contain, especially in the early stages, a small amount of fluid which is rarely recognizable on ordinary examination, or it may be markedly distended, as in several of my own cases. The fluid is usually serous, but may, as in one of my patients, be sanguineous. Synovial villi may become organized into fibrous bands early, connecting the opposing surfaces of the bursa, and these frequently become strong and thick, and a serious hindrance to the normal function of the shoulder. In one of Codman's specimens[3], typical limitation of motion was found after all muscular attachments were cut, due to adhesions. Thirdly, the *bone under the capsule:* Changes (demonstrated by radiograms) seen here occasionally, are due presumably to the causative agent as a trauma, simultaneously affecting the bone. Not infrequently one sees a streak of calcareous deposit along this bursa. Codman and Brickner believe this always to be subbursal. The greatest interest in this connection attaches to calcareous deposits in the region of attachment of the supraspinatus tendon. Codman cites five dissecting-room specimens in which there was a condition leading him to believe that the supraspinatus tendon had been partially torn away from its attachment to the greater humeral tuberosity. He also presents *x*-rays of cases of trauma of the shoulder, showing evidence of a chip of bone from the tuberosity torn off at the insertion of the supraspinatus. The same author reports two cases which gave a history suggestive of detachment of this muscle; in both operation confirmed the diagnosis, and suturing the tendon produced a prompt recovery. Brickner has operated on eight cases of subacromial (subdeltoid) bursitis that showed radiographic shadows of lime deposit, and removed variable quantities of calcereous matter from within or about the tendons of the supra- and infraspinati muscles. The writer has not seen any instances of undoubted uncomplicated ruptured supraspinatus tendon, but has often noted radiograms showing a calcareous deposit at the site of attachment of the supraspinatus, where, however, there was no disturbance of the function of that muscle, nor any history of trauma or severe exertion. In fact most of my cases with radiograms showing a calcareous deposit in the vicinity of the subdeltoid bursa gave no history of any injury.

*Read before the Lebanon Hospital Alumni Society, Jan., 1915.

In a recent article on shoulder disability Brickner[3] states that in his personal experience none of the patients with lime deposits were relieved of pain by any method, except those operated upon. The writer takes exception to this, because he has seen a goodly number of painful acute and subacute cases of subdeltoid bursitis showing shadows of lime deposit, and all the patients recovered under conservative treatment. So that while perhaps operation may be advisable to hasten recovery, it is not indispensable, and in the majority of instances, at any rate, in the writer's experience, the presence of a calcareous deposit in a case of subdeltoid bursitis does not preclude complete relief from pain and recovery from disability under non-operative methods.

The limitation of motion in the early stage is due to reflex spasm because of extreme sensitiveness of the bursa, which holds in check all motions but especially abduction and rotation. Let me emphasize that limitation of motion is never complete, though it may be very marked in abduction and rotation. In the later stages, motion is limited by the fibrous adhesions. Such bands have been demonstrated by Codman, Baer, and others during operative procedures instituted for the relief of the limited motion.

Course.—The usual history one obtains is, that a middle-aged man or woman, mainly of the laboring class, having received an injury, as a blow on the shoulder during a fall or a strain in lifting a heavy weight, or in overreaching for some object, experiences some pain in the shoulder which gradually gets worse and in the course of a few days (sometimes in several hours) becomes excruciating. At about this time the limitation of mobility of the shoulder sets in. The pain, almost always more severe at night, may be confined to the region of the shoulder or may radiate to the fingers or up into the neck. As yet there is no satisfactory explanation for this shooting pain. I would here call attention to the fact that frequently there is no history of any definite injury or strain, the condition beginning suddenly, as on awakening in the morning, or arising insidiously as a discomfort in the shoulder, gradually reaches the acute painful stage above noted, in which pain and disability are the chief symptoms. The pain persists for two or three weeks, after which there is a slow and usually certain progress to recovery. The course may extend over a period of five or six weeks to as many months, rarely two or three years, depending on the severity of the affection and the treatment instituted.

The patient usually presents himself to the physician holding his arm at the side, guarding very anxiously against any jarring or motion of the shoulder. In about 10 to 15 per cent. of the cases one observes a definite swelling in the region of the bursa; this has a circular outline and in the early stages is sensitive to touch. Dawbarn's sign (tenderness over the point of the shoulder disappearing when arm is abducted) is occasionally observed more particularly in the acute stage. It must be evident that actual swelling is present more often than seen, as a slight distension of the bursa in a muscular or obese individual would not be discernible under the large fleshy deltoid. There is never any local fever. All voluntary motions are carefully performed; flexion, extension, and adduction are free, but abduction and rotation are all but completely limited. Passive motion too is definitely limited in abduction and rotation. Again I wish to emphasize that motions are only limited and none completely lost. If the condition has existed for at least several weeks, one invariably finds an atrophy of the muscles on the posterior surface of the scapula. Neurological examinations made in at least half of my cases have resulted in negative findings.

Differential Diagnosis.—The following important conditions must be taken into consideration in making a diagnosis:

(1) Tuberculous Arthritis: This presents a history of many months or even years of disability; atrophy of arm; *limitation of motion in every direction;* *x*-ray shows destruction of bone.

(2) Fracture of Humerus: Here there is definite history of injury; evidence of fracture; *x*-ray shows the break.

(3) Axillary Abscess: A finger applied to the axilla will detect a hot, tender area; there is general constitutional disturbance and fever. I have had one such case where the disability and shoulder pain in a strong young man, lead to the diagnosis of bursitis. The arm was held to the side so tightly that it was impossible to examine the axilla. However, the fever and sensitiveness near the axilla, and absence of any deformation or tenderness over the bursa made the diagnosis evident.

(4) Muscular Rheumatism: This condition affects more than one part of the body at the same time, and is usually referred to the fleshy part of the muscles; there is an absence of the definite limitation of motion present in bursitis.

(5) Acromioclavicular Arthritis shows local swelling and tenderness that render its recognition easy.

(6) Circumflex Paralysis produces a *complete* loss of abduction, with absence of any pain and no loss of the shoulder motions.

(7) Tenosynovitis of the Biceps Muscle produces a swelling that extends along the front of the upper part of the arm; there is a disturbance in the function of the biceps[4] which is absent in bursitis.

(8) Brachial Neuritis: In this condition the pain is more general and accompanied by weakness or paralysis of muscles definitely limited to a certain nerve or group of nerves.

(9) Tumors: These when affecting the bones are not hard to recognize, as the *x*-ray makes the diagnosis simple.

(10) Periarthritis of the shoulder: This term in the past has been a very convenient name for a large number of obscure conditions about the shoulder. Occasionally one sees a shoulder that following a severe exertion or hurt is painful, generally sensitive with inconstant and irregular limitation of motion. Such a condition, all other causes being excluded, may be considered a periarthritis. Subdeltoid bursitis is a localized periarthritis. In the majority of instances, however, close examination will reveal a bursitis, tenosynovitis, myositis, neuritis or some other definite condition.

Treatment.—As previously suggested one may conveniently divide the course of this affection into the first or painful stage, and the second stage when disability is the most prominent symptom and claims our attention. In the first stage, rest is all important. We agree with other observers that the ideal position for the arm is extreme abduction,

in which condition there is least strain on the bursa, and whenever possible this should be carried out. However, for the average patient, and particularly in dispensary practice, this is a most impractical attitude. Moreover we usually find the patient with the arm held tightly against the body, and it would be very painful to abduct the arm except under an anesthetic; hence as a routine procedure we leave the arm in the position it is found, splinting it with adhesive plaster or plaster-of-Paris bandages, until the painless or second stage appears. During this time, a sedative may if necessary be administered.

In the second stage we find that the arm is held down by bursal adhesions of greater or less firmness, and the treatment consists of gradually stretching these under or frequently without an anesthetic, being sure not to stretch the shoulder too vigorously at any one sitting. The patient is carefully instructed in the proper exercises to perform at home to hasten recovery. Such are frequent attempts to reach the back of the head, or clasping hands behind the back, or grasping some object above the head and lowering the body.

When the adhesions are of long standing and confirmed or in order to shorten the period of convalescence, excision of part of the bursa may be done with impunity and rapid relief.

Case I.—Rachel R. (Dr. Nathan's Clinic at Mt. Sinai Disp.) Housewife; age 46. Seen first in the summer of 1912, when she gave the history of gradual onset of pain in the left shoulder two months previously. No history of injury or any illness. Three to four weeks after onset of pain, shoulder became stiff. Examination found the patient holding arm tightly to side of chest, could slowly flex and extend the arm, but could neither raise nor rotate it. Manipulation showed marked restriction of abduction and outward rotation. No swelling over shoulder, marked tenderness over the head of humerus. *X*-ray showed shadow near the great tuberosity.

Treatment: Arm supported by means of adhesive plaster shoulder cap for several weeks. Pain having subsided the arm was stretched three times a week at the clinic, and patient instructed to use the arm frequently at home. Complete recovery in two months.

Case II.—Paul C. (Dr. Nathan's Clinic case No. 1387.) Tailor; age 31. First seen Sept. 14, 1914. Pain and stiffness in right shoulder began one month ago, no history of injury or preceding illness. Examination: Arm held at side, distinct swelling and tenderness over region of bursa. Abduction limited beyond 30°, outward rotation almost completely limited, other motions free to about half of normal extent; *x*-ray negative.

Treatment: Adhesive plaster shoulder cap for five days when pain having greatly subsided stretchings were begun and continued three times a week. One month after first visit, showed absence of any swelling, motions unrestricted and patient back at his work complaining only of an occasional pain in the shoulder.

Case III.—Harry S. (Referred by Dr. Henry Heiman.) Clerk; age 29. First seen Sept. 3, 1914. No history of injury. Onset eight days ago with pain in left shoulder; pain became worse and three days afterward stiffness set in. Examination: Arm held at side, distinct swelling, size of silver dollar, over front of shoulder, tender and fluctuating. Abduction painful and limited beyond 20°; outward rotation almost completely restricted; other motions absolutely free.

Treatment: Adhesive plaster shoulder cap for ten days at end of which time the swelling and sensitiveness were gone. Shoulder massaged and manipulated. Oct. 11, 1914, shoulder normal in appearance and function.

Case IV.—Rose S. (Author's clinic at Lebanon Hospital.) First seen March 23, 1914. Housewife; age 50. Gradual onset during period of several weeks of pain and stiffness in left shoulder. Examination: Distinct swelling over outer part of shoulder; no local heat, slight sensitiveness, abduction and outward rotation limited about half of normal extent; other motions free. *X*-ray shows no bone lesion.

Treatment: Adhesive plaster shoulder cap for several weeks, then massage and manipulation three times a week for two months at end of which time patient was free from all pain, and motions entirely unrestricted.

Case V.—Elizabeth P. (Author's clinic at Lebanon Hospital.) Housewife; age 50. First seen Nov. 11, 1914. Five weeks ago, after a hard day's washing and after lifting a pail of water with the left hand, she experienced a sharp pain in left shoulder; pain worse on attempted motion. She gradually got better but the condition recurred two days ago. Examination: Slight swelling and marked tenderness over outer and upper part of left shoulder, directly under the acromion process. Dawbarn's sign positive. Abduction limited beyond 40 or 50°; external rotation limited to about one half; other motions free.

Treatment: Adhesive plaster shoulder cap applied Nov. 18, 1914. Pain has subsided. Patient can move arm freely in every direction except outward rotation, which is still slightly limited. Swelling gone, tenderness much diminished.

Case VI.—Annie S. (Author's clinic at Lebanon Hospital.) Scrubwoman; age 45. Seen first, Sept. 15, 1914. Three weeks ago after a hard day's work, right shoulder became painful; this grew worse and in the course of a few days, a swelling appeared and shoulder stiffness set in. Examination: There is a large tender fluctuating swelling, over the outer surface of the shoulder. All motions are free excepting outward rotation and abduction, which are painful and restricted to half of their normal extent.

Treatment: This patient being especially anxious for rapid relief, an incision was made, under local anesthesia, into the bursa. A large blood clot and tabs of tissue were removed. The sac was explored and found to be about three inches in diameter and extending under the acromion process, the bursal wall was not thickened. The wound was closed and the patient made a prompt recovery. The contents examined by the Lebanon Hospital Pathologist, Dr. E. P. Bernstein, were reported to consist of red blood cells, many pus cells, and masses of fibrin.

Case VI.—Benjamin S. (Dr. Whitman's clinic.) Jeweler; age 53. Seen first Jan. 6, 1914. No history of injury or previous illness. Present trouble began three weeks ago with pain in the right shoulder which gradually got worse; was able to move arm until three days ago since when he cannot raise his arm, and the pain is so severe that it keeps him awake at night. Examination: Man is evidently in pain; holds arm against his side and guards anxiously against any sudden motions. On being coaxed, he flexes, extends and adducts the arm but the other motions are limited. Passive motion limited only in abduction and outward rotation. Exquisite tenderness over head of humerus. Dr. N. Sharpe reports neurological examination to be negative, *x*-ray negative.

Treatment: Adhesive plaster shoulder cap for about four weeks when pain having subsided, manipulation and massage were instituted. There was a gradual improvement and when seen on Oct. 10, 1914, presented a complete cure.

Case VIII.—Harris Z. (Dr. Whitman's Clinic.) Tailor; age 42. First seen Jan. 22, 1914. Three days ago without discoverable cause, he began having pain in the right shoulder, radiating down the arm; the next day the pain was worse and he had to stop work. Examination; Arm at side; over front of shoulder there is a sensitive swelling. Active and passive motions limited only in abduction and outward rotation.

Treatment: Adhesive plaster shoulder cap for several weeks followed by manipulation and massage. Sept. 26, 1914, complete anatomical and functional recovery.

Conclusions.—1. Subdeltoid bursitis is a frequent cause of shoulder disability.

2. It is most often due to some injury, but many cases give no history of any definite trauma.

3. It is represented clinically by pain in the shoulder, partial limitation of abduction and rotation, especially external rotation, and occasionally localized swelling and tenderness; flexion, extension, and adduction are unrestricted.

4. The treatment consists mainly of protection during the painful stage, and manipulation and careful repeated stretchings of the shoulder during the subacute and chronic stages.

5. The presence of a radiographic shadow in the vicinity of the bursa need not in the majority of instances influence the usual course of treatment, and certainly in most cases does not demand operative interference.

6. Operation is indicated only—

(*a*) To shorten the period of convalescence in those patients where time is an important factor, and

(*b*) In chronic cases where the symptoms have not been relieved by conservative methods.

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INEBRIATE HOSPITALS.

AN HISTORICAL NOTE.

By T. D. CROTHERS, M.D.

HARTFORD, CONN.

The late Dr. Rush of Philadelphia was the first American physician to urge the organization of distinct institutions for the care of alcoholics in 1809.

In 1830 Dr. Todd of Connecticut urged that the State organize such institutions, the same as insane asylums.

In 1857 the first distinct home for the reception of persons of this class was opened in Boston, Mass. Later it became the Washingtonian Home and has continued as such up to the present. It is the oldest institution in the world for the medical care and treatment of inebriates.

In 1864 the New York State Inebriate Asylum at Binghamton, N. Y., was opened and proposed to treat such persons on broad, scientific plans, allied to that of insanity. This was the great pioneer institution of the world and was projected on a large scale.

In 1875 I became Assistant at this institution. At that time there were eight institutions in existence in different parts of the country, some of them semi-scientific, but all having for their object the restoration and cure of the drink obsession.

Public sentiment was at first very violently opposed to the plan of gathering inebriates and dignifying them as sick and diseased, and medical journals echoed these opinions. The Medical Record was the first of all the journals to show a kindly sympathetic spirit and recognition of the disease of these cases. The opposition was so intense that nearly all the older institutions succumbed. A few, like the Washingtonian Home, which treated the indigent inebriates survived.

In 1878 I was placed in charge of an institution in Hartford, Conn., which, notwithstanding the storms and stress, has continued up to the present. In 1890 a great wave of gold cure hospitals reached their highest point of prominence. At that time there were over 150 different homes, hospitals, and sanatoriums where persons were treated by mysterious, specific drugs and remedies that were guaranteed to cure. A large number of physicians who took this treatment opened homes and began to treat patients on the same basis. The zenith had been reached, and from that time to 1890 there was a steady decline in the number of institutions and the enthusiasm of their defenders. At that time not more than 75 or 80 sanatoriums of all grades existed, in name or in reality. As far as the records can be obtained, in 1910 this number had diminished to less than 30. Like the weak medical colleges, they either joined with other institutions or succumbed.

A number of persons who had lost all their property in promoting ventures of this character turned to selling specific prescriptions to doctors for home treatment. This in some sections was quite prominent and still is. Some of the more daring of these have promoted the "three day cure" and are moving about in different parts of the country promising absolute cure in three days and winning a certain number of patrons who pay prices proportional to the rapidity of the cure.

A few institutions advertised boldly the drugs they used and claimed the results are practically specific. When confronted with the fact that their experience was not confirmed by other observers, they explained it as due to the surroundings and faulty use of the means, by incompetent men.

A few years ago, the state of Massachusetts built a farm colony hospital for this class which has been very successful, not only as an experiment, but as showing the possibilities for larger and more exact work. Iowa did the same thing, and has the second State Hospital for inebriates in active operation.

Several legislatures have passed bills for the formation of State institutions, but none of them have yet materialized. Several large cities have colonies where inebriates of the indigent class are cared for, with more or less success.

There are today about eight institutions where persons of this class are taken exclusively and treated. These are scientific, or semi-scientific, in their management. Some of them combine prayer, pledge-taking, and various other religious influences as methods of treatment. A few are exclusively scientific in their use of only exact means and measures. In the meantime, there are over 150 hospitals, surgical, medical, mental, and hygienic sanatoriums, where such persons are received and treated. In small institutions for mental diseases, the alcoholics and drug takers comprise a large number of the inmates.

In the pauper hospitals of large cities, the inebriate and alcoholic patients are very numerous. In all the large insane asylums wards are assigned for this class. Some of them are overflowing with patients. Small private institutions receive such patients as mental cases. It is estimated that there are fully 5000 patients of this class under treatment in the United States. This includes the paupers of the large city hospitals and in all probability the number is a minimum one.

Physicians who have a large practice find such persons in almost every circle of society. Often they appeal to the physician for help, or else they are secretive and present a group of symptoms which the physician readily traces to alcohol or drugs.

When these persons appeal to physicians where to go, and ask his advice as to probable results, there is a great deal of confusion. First, the physician is not quite sure of the advertising sanatorium. Often their pretensions and claims are more or less suspicious and suggest possible failures.

If he recommends them to private hospitals for

mental diseases, the patient feels that he has been stigmatized in some measure, and classed with those of unsound mind. While the treatment may be very rational and reasonable, there are always shadows in the surroundings, which the patient magnifies.

If he has reached a stage of decided mental impairment and is taken to an insane hospital, the same objections follow and his friends share the idea that he has been injured by contact with others mentally impaired.

If the physician is credulous enough to send the patient to some empirical institution where absolute cures are guaranteed by methods unknown and unexplainable, there are uncertainty and anxiety as to the results. Even when these are apparently good and the patient returns greatly restored and later relapses there is doubt in the mind of the physician as to whether this was the best course to follow.

If the physician should buy specific proprietary drugs, advertised for this purpose, and administer them himself, the results will be about the same. At times they will be favorable, and at others the opposite.

If the physician is stimulated to make a study of these cases, and seeks to find out all the general facts relating to the symptomatology, prognosis, and treatment, there are a certain complexity and undefinable range of causes that work out so irregularly that he becomes easily disgusted and finally accepts the theories of the moralist, that there is a moral element which the clergyman is best fitted to treat.

In all this there is an uncertain grouping of facts and an absence of exact scientific study that fails to indicate the first principles of treatment. It is this condition that has made inebriate hospitals unpopular in a great many ways, and has still further prejudiced public sentiment in the belief that they were failures as medical measures, and could only give first aid treatment.

The irregulars have taught the public that a brief time only is necessary for cure; that beyond this the patient is able to take care of himself. They have also taught the public that notwithstanding their secret methods and irregular means of treatment, there is a degree of curability possible that could hardly be expected.

At one time the gold cures boasted of from 95 to 98 per cent. permanent restoration. Later this was much reduced, and finally after various studies of a large number of persons who had tried these methods it was found that less than 20 per cent. lived lives of total abstinence extending over ten years.

This in comparison with the few hundred cases studied who were under the care of reputable medical men, and who remained under treatment from four to twelve months, is a very poor record. It is the general opinion now, of all persons who have had opportunity to observe carefully, that one in about every three who remains under treatment a sufficient length of time is permanently restored. Of course these figures do not apply to the pauper inebriate who has reached the terminal stage of the disease, but even here some remarkable examples of restoration are seen.

The laws governing the commitment and control of patients are more simple and effective in the State of Connecticut than any other. Massachusetts and Iowa have also very practical laws, making it legal to restrain persons of this class without great publicity.

The reform efforts to limit or abolish the sale of alcohol and the Harrison law making restrictions of the sale and distribution of drugs have brought into prominence a very large number of sufferers and given the question a new interest.

It is clearly evident that the empirical stage of this borderland neurosis, particularly its study and treatment, is passing and the demand now is for well-organized, reputable hospitals for the control and treatment of this class. The business and professional man who is able to pay for services of this kind is looking for the proper organized institution, managed by scientific men, to bring this much-needed relief. A very large number of young men could be permanently restored if sent to some institution and educated hygienically as well as treated medically.

The pauper inebriates who have exhausted all their resources, and are dependent on the public for care and protection, should be segregated in farm colonies and made self-supporting for periods of months and years. There is unmistakable evidence showing that this is the next step in public charities that will occupy a great deal of interest in the near future.

The study of inebriety and alcoholism and their cure and prevention has been growing up steadily through the last half century. It has now reached the scientific stage and the work done in all the private hospitals for this class shows that they are filling a want which cannot be supplied in any other way. There is a field for over 100 institutions in this country, large and small, that if properly organized and carefully managed along scientific rational lines would be constantly filled to overflowing.

The general facts of the etiology and pathology of these cases are known, and the principles of treatment are established along general lines sufficiently broad to enable any student, with any kind of original genius and inspiration, to enter this field and make a success of it.

As in all other fields of medicine, the physician who is trained and adapted constitutionally to study and treat these neuroses is the largest factor in the success. Institutions on the mountains or at the seashore, or in the center of large cities, with equipment and appliances of all kinds, can never be successful unless the proper man is found to manage them.

One of the most notorious of the "cure" promoters was successful wherever he went. He could open an office in the slums of the city and have a crowd of patients, or go anywhere in any place and inspire confidence and faith in sufferers of this class. His skill in building up what he called institutions was so phenomenal that when it reached a very high point of financial success he would sell out and move on. His successor was astonished that the business dropped down so quickly, and could never be restored again. This experience of personal influence and adaptability is seen in every circle of life. Why it is not repeated more often, particularly in the treatment of spirit and drug neurotics, is due to the want of persistence and careful study by men who undertake this work. There are so many difficulties and complexities of causes, with equally changing results, as to tax the highest therapeutic skill of the physician.

One fact seems to be well substantiated by all experience, that a large proportion of these neurotics require institutional treatment at first, and then personal care by the family physician, extending over a long period of time. In this way permanent restoration can be secured. Institutions ought to be fitted for brief and emphatic treatment for a certain class and long home treatment for others. Such places are in existence to-day, but they ought to be multiplied over and over again.

In my own experience, covering forty years, I have found an increasing number of active brain workers who resort to places of this kind, as to cities of refuge, where they can receive rest, quiet, and medical treatment for a brief time, much the same as persons go to the mountains and seashore, expecting by the change to recover from their disability and weariness.

Sanatoriums in the mountains and in attractive surroundings find the number of steady visitors increasing year after year. They come for a longer or shorter stay to receive new vigor and strength.

A certain number of persons who are practically inebriates are able to divert the drink obsession by coming to institutions and being cared for and treated for a short time. Such persons anticipate by distinct auras the oncoming drink craze and in this way are able to avert it and continue lives of abstinence.

What I plead for, are more places of this class, more places of refuge, where psychical as well as physical treatment can be given, and where active men and women can recover and be fitted to resume the active duties of life. There is a new army of invalids gathering in this direction which the wise physician can do much to help, but this must be along different lines from those laid down in conventional text-books.

Medicolegal Notes.

Duty as to Removal of Pads.—The Kentucky Court of Appeals holds that, in performing an operation, it is the duty of a surgeon to exercise reasonable care and skill throughout, from the time the incision is made until the opening has been closed in the proper way, and to remove the sponges or pads necessary to a successful operation. The removal of the sponges, the court said, is a part of the operation, and an operation cannot be said to be concluded until such removal takes place. For this reason, it is generally held that a surgeon cannot relieve himself from liability for injury to a patient by leaving the sponge in the wound after the operation, by any custom or rule requiring the attending nurse to count the sponges used and removed, accompanied by the statement of the nurse that the sponges were all properly accounted for, and his reliance on such statements. On the contrary, surgeons are generally held liable for injuries resulting from their leaving a gauze sponge in the abdominal cavity of the patient. But the custom of requiring the attending nurse to count the gauze pads used and removed and the defendant's reliance on the nurse's count were held to be proper circumstances to be considered by the jury, in connection with the other facts attending the operation, in determining whether or not the defendant exercised reasonable skill in the performance of the operation.

Malpractice—Consent to Operation—Reading of Medical Works in Evidence—Expert Evidence.—In an action against a surgeon and an incorporated infirmary where the surgeon operated it was alleged (1) that the defendants wrongfully, intentionally, and without her consent, amputated one of her legs, and (2) that they so negligently and unskillfully treated the leg, which had been accidentally broken, as to make its amputation necessary. The treatment and operation having been prescribed and performed by the surgeon under an independent employment by the plaintiff, it was held that the infirmary corporation was not liable, though the surgeon was one of its shareholders and officers. Although many other courts hold differently the Alabama Supreme Court holds that relevant extracts from medical treatises, recognized and approved by the medical profession as standard, may be read to the jury in evidence. In the present case it was held proper to permit an expert medical witness to be asked on cross-examination whether it was true, as stated in Scudder's Treatment of Fractures, that "It is not very uncommon, even in closed fractures of the femur, to find gangrene of the leg developing because of laceration or pressure upon the great vessels of the limb. Early amputation of the thigh just above the fracture will be necessary in these cases. It should be done early in order to save life." This was a statement of surgical theory and practice, and the gist of the question was whether the witness's expert opinion concurred with that of the author. The defendant surgeon was allowed, after consulting the fever charts that had been kept by the nurses, to state what these charts showed in respect of the patient's temperature. This evidence was held admissible because these references to the temperature charts, read in connection with the rest of the defendant's examination, amounted to nothing more than statements of some of the considerations that influenced his professional judgment from time to time in respect of the proper treatment to be followed. The plaintiff testified that she was ignorant that her leg had been amputated for several days after the operation. A question was asked a nurse as to whether the plaintiff knew her leg had been amputated. It was held that if this question was improper as calling for the witness's cognizance of the state or operation of the plaintiff's mind, it was rendered harmless by her answer that the plaintiff would lie and watch the leg being dressed every time it was dressed, as she stated only cognizable facts. The court refused to conclude, as a matter of law or fact, that an expert medical witness transcended the limits of all possible human attainment when he testified that there was no way known to medical science to prevent thrombosis in a case of this sort, and the doctor was entitled to give his opinion. The plaintiff had been under treatment by an expert physician and surgeon for two months before she came under the defendant's care. Judgment for the defendants was affirmed.—Barfield vs. South Highland Infirmary, Alabama Supreme Court, 68 So. 30.

Liability for Injury from Unsound Oysters Served in Dining Car—Evidence of Experts.—In an action for damages for having been made ill by food (consisting chiefly of eggs and oysters) furnished to him by the defendant railroad company in its dining car, the witnesses whose opinions were admitted by the trial court were expert, some as medical men, others as cooks and persons long accustomed to handling and preparing oysters for the table. The court, on appeal, held this evidence admissible under the rule that a witness may have expert knowledge of some of the ordinary affairs of life. By competent expert opinion of attending physicians the plaintiff sought to show that his illness was the result of ptomaine poison, and, by a process of exclusion, that the putrefactive bacteria producing the poison found their way into his stomach by means of the food served to him on the defendant's dining car. If the evidence to this effect was to be believed the plaintiff's case thus far was quite well established. This put upon the defendant the burden of showing that its servants, in the selection and preparation of the food, had exercised that degree of care which a reasonably prudent person would exercise in the selection and preparation of food for his own table. In this connection it was for the jury to consider, so far as concerned the oysters, the nature of sea foods and their commonly known capacity for rapid deterioration in certain conditions. It is possible that the highest degree of care consistent with the use of such articles as food may not suffice to detect the small beginning of a putrescent decay which by rapid development in the conditions provided by the human stomach may result in disastrous consequences. This the plaintiff must be presumed to have known as well as the servants of the railroad company, and this general risk he took when he chose oysters for his food. But it was for the defendant to show that its servants exercised the proper care in this case, and that such care failed to disclose any reason for suspecting the quality of the food. Whether there was negligence in selecting the particular oysters served to the plaintiff was held to be a question of fact for the jury.—Louisville & N. R. Co. vs. Travis, Alabama Supreme Court, 68 So. 342.

MEDICAL RECORD.

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INDUSTRIAL LEAD POISONING.

IN Great Britain and in some parts of Europe the question of poisoning by metallic and other chemical substances has received the attention which its manifest importance deserves. It is recognized that much of the sickness due to industrial poisoning is preventable, and the health of the employees in factories in which poisons dangerous to well being are used is safeguarded by various devices. The employer is rendered responsible, to a great extent, for the health of those working for him, that is, the law enforces regulations calculated to prevent the occurrence of sickness from poisons employed in the manufacture of some articles of commerce, and if the employer does not live up to these regulations he is liable to fines varying in amount proportionate to the danger incurred.

In this country, the matter of industrial poisoning has been greatly neglected, and indeed the enforcing of regulations is not easy. As Dr. Maria M. Vinton points out in the *Woman's Medical Journal* for October, 1915, the difficulty in the problem of prevention in those industries in which lead is used is because the employees, being ignorant and frequently not understanding English, are not aware that the dust they are inhaling is poisonous, and could not read and comprehend warnings even if posted, while the foremen and employers do not always take the precaution to warn those ignorant ones of their danger. The most common form of metallic poisoning is with lead, since there are 125 or more trades in which this substance is used in some way which makes it dangerous to the operative. Besides poisoning from lead, there occurs poisoning from arsenic, antimony, chromic acid, phosphorus, mercury, hydrofluoric acid, and naphtha.

In the Bulletin of the Bureau of Labor, No. 95, Dr. Alice Hamilton gives a most valuable account of the white lead industry, which is responsible for the largest amount of lead poisoning, and which she investigated for the United States Government. She describes at length all the processes of manufacture of white lead, the causes which produce the dangerous dust, and the improvements that can be made in the process of manufacture, such as have already been put into use in Great Britain and in certain parts of Europe.

Dr. Vinton recounts in detail the manner in which lead enters into the system and the various forms of lead poisoning, as well as the treatment thereof. Prevention, however, is always better than cure, and she points out that the prevention of lead poisoning, as of all metallic poisoning, lies in better ventilation of the works where it is handled, by means of exhaust fans which remove the dust-laden air, the changing of the process of production so that there shall be as little dust as possible, and the use of sprinklers in all dusty processes, the building of factories with hard, smooth floors, and insistence on the point that there shall be no outstanding places on which dust can lodge. In fact, every sanitary measure calculated to minimize the menace of lead poisoning should be adopted in every factory in which the substance is used. Furthermore, an important point in the prevention of paint lead poisoning is the use of a substitute for lead. In paint for inside use the substitution of non-poisonous zinc white or zinc oxide for white lead has been adopted in Europe, and zinc has been found as good as lead for all interior decorations. Lead sulphate, being insoluble, is also not dangerous.

Among printers, one of the principal elements in lead poisoning is the dark, unsanitary places in which the men often work, which predispose them to tuberculosis; and plenty of light and sunshine in the workrooms and the enforcement of sanitary precautions would go far to prevent this disease, so prevalent among printers and typesetters.

There is no doubt that laws and regulations to protect industrial workers in this country are not as strict as they might be, and it is a matter to which the attention of the public should be called. If public opinion is thoroughly aroused to the menace to life and health involved in neglecting precautions which will protect and prevent, the lot of the industrial workers will be greatly improved and the health of the community at large will be measurably increased.

POOR ECONOMY.

THE conversion of the Sea View Hospital into a department of the Poor Farm of Greater New York, has been practically accomplished without consultation, so far as we know, with any authority on tuberculosis. The sole reason given for the consolidation is that the measure is one of economy. It is not the function of a medical journal to scrutinize the latter, but we may note that in Dr. Baruch's protest before the Board of Estimate it was shown that the consolidation, so far from promoting economy, will involve an increase of several thousand dollars over the cost of maintenance of both institutions in their present separate condition. Even if a saving were demonstrated, it would be false economy to place the Sea View Hospital, having perhaps the finest buildings devoted to tuberculosis in the world and now directed by a man who has made this disease a practical study for many years, under the direction of a layman and place it under the medical control of a physician whose duty it is to attend the senile derelicts who constitute the inmates of the Poor Farm (the Almshouse) of this city. That all research work or therapeutic obser-

vations now going on will sooner or later cease under such management is self-evident to any one who has had experience. In fact, this consolidation is in direct contravention of the recognized practice of no longer treating epileptics, the insane, and tuberculous patients in the poorhouses. This is not only the general practice but is actually the law in this State, effective in all counties except New York. The character of an Almshouse differs so materially from that of a tuberculosis hospital that the principle of separation is fundamental and has the entire weight of medical opinion to sustain it. Shall a hospital costing $4,000,000 become part of an almshouse and shall we thus return to the old and abandoned practice of placing the tuberculous under the same management as the senile poor; in other words, place under the same direction the latter, who are not accepted unless able to walk and above 55 years old, and the former who are all sick?

At the present time the poor are well looked after on the poor farm, and the tuberculosis cases in the Sea View Hospital are under the skillful care of a specialist with a large visiting and consulting staff that costs the city nothing. The present medical superintendent gives personal attention to the wards, supervising diet, etc. Under the new combination the poorhouse doctor will be assisted by young men whom he will naturally not be able to direct in the tuberculosis work as skillfully as the specialist. The type of physician who would accept the Almshouse position with the salary proposed may be competent to look after the ailments of the senile, but it is improbable that he would be capable of attending to the 700 actually sick now in the Sea View Hospital and the 1,000 incipient tuberculosis cases which it is proposed to harbor in the contemplated new hospital for incipient cases. It would be far wiser to have the superintendent of the Sea View Hospital direct the Almshouse doctor whose patients will be very few in comparison, and to appoint a lay manager for both without authority to interfere in the medical department.

When the incipient tuberculosis hospital is completed this city will have an institution in which the best research work in pathology and therapeutics will be possible, the result of which must surely redound to the credit of the medical profession and to the great benefit of suffering humanity. But this will be only if the hospital is under expert management. A political or even a civil service appointee who has only the qualifications necessary for a poorhouse doctor can hardly be expected to utilize to the best advantage of science or of the patients the facilities for study and research which this great hospital will offer.

THE RESISTANCE OF ACID-FAST BACILLI TO ANTIFORMIN.

SINCE the publication of Uhlenhuth's first work on antiformin in 1908 this compound has been used very largely as an aid in the search for tubercle bacilli in secretions and excretions. From the beginning there was no question but that it exerted a rapidly destructive action upon all except the acid-fast organisms, but its action upon the latter group has been the subject of a certain amount of discussion. The earlier investigators claimed that all of the members of this group of bacteria were resistant to the action of the solvent, and that therefore it could not be relied upon to identify the tubercle bacillus in the presence of such organisms as the smegma bacillus. Then acid-fast bacilli were discovered to be present in the distilled water of laboratories and in the water used to make the antiformin solutions, and at one time the method was near to being discarded completely. Later researches yielded results that were contradictory, and several authors make the statement that the smegma bacillus is destroyed by antiformin and that only the tubercle bacillus is able to survive its action.

Von Spindler-Engelsen is the most recent contributor to this subject (*Centralbl. f. Bakt.*, 1915, lxxvi, 356). She readily confirmed the results of other writers by finding that the staphylococcus and the *Bacillus mesentericus* were completely dissolved by 12.5 per cent. antiformin in thirty minutes. The smegma, hay, and butter bacilli were dissolved by 15 per cent. antiformin in one-half hour, while the *B. tuberculosis anguis* yielded only to 50 per cent. after twenty-four hours. The human and bovine types of the tubercle bacillus remained apparently unaffected after treatment with 50 per cent. antiformin for four days. The conflict of results is perhaps not so difficult to explain if one recognizes how readily antiformin loses its strength on standing. It is probable that this author used a fresh preparation of high potency while some of the other writers were working with older and weaker solutions. It is to be hoped that such will prove to be the case for the method is undoubtedly of great value. In the examination of urine, feces, and fluids from the pleural cavity it may yield results in much less time than is necessary for animal inoculation, and with the more recent modifications in technique the percentage of positive findings is much higher. The use of antiformin, treated material for cultural examination after the method of Petroff is perhaps even better, when the opportunity affords, since the cultural characteristics of the organism are fairly definite and the time required is less than for animal inoculation.

LACTIC ACID TREATMENT OF TUBERCULOSIS.

A NEW application of chemotherapy in the treatment of pulmonary tuberculosis is reported by F. Jessen of the Forest Sanatorium of Davos (*Zeitschrift für Tuberkulose*, July, 1915). This new method was suggested by the use of partial antigens in the treatment of tuberculosis, which antigens were obtained from tubercle bacilli by subjecting the latter to the action of dilute acids. It was found that weak solutions of lactic acid readily destroy tubercle bacilli growing in culture. The question arose whether this action might not also be exerted in the living body. Accordingly Jessen essayed the use of intravenous injections of one per cent. solutions of lactic acid in the treatment of incipient cases of pulmonary tuberculosis. The results are said to have been brilliant. The amount

of the solution injected at one time is not mentioned though the statement is made that the injections were used from once a month to once or twice weekly, according to the severity of the case. The point is emphasized that this method of treatment is suitable only for early cases of the disease. In advanced cases a considerable part of the tuberculous area is not reached by any medication introduced into the blood stream. Moreover if the disease is extensive the lytic action of the lactic acid may be so great as to overwhelm the body with the toxic decomposition products of the tubercle bacilli.

Blood as Food

Generally speaking, blood through its protein constituents has considerable food value; some parts of it are much better adapted for food purposes than others; some parts of blood may disagree and do not seem to be adapted for food. Here belong the erythrocytes, the nitrogen of which is poorly utilizable. Fibrin, on the other hand, is as utilizable as any other albumin. At a session of the Medical Society of Frankfort last May (*Berliner klinische Wochenschrift*, July 5) Blum reported the results of feeding certain animals with blood. Rats all took it greedily, as did most of the dogs fed. Cats practically refused it, but could be made to eat it. When fed on red corpuscles alone rats developed a fatal diarrhea. Blood pudding or sausage has been known to cause urticaria in human beings. In regard to utilization this is very poor for red corpuscles, not very good for whole blood and defibrinated blood, but excellent for blood fibrin and serum albumin. In discussion von Noorden stated that blood is not well absorbed, and that raw blood is laxative. Cooked blood is much better, but after the absorption of five grams of blood nitrogen each additional fraction is absorbed with increasing difficulty; so that it does not pay to consume it in considerable quantities, and the extra nitrogen should come from other sources. Blood pudding, von Noorden said, is an excellent dietetic article.

News of the Week.

Harvard Surgeons for Work in France.—The second Harvard hospital unit, consisting of thirty surgeons and thirty-six nurses, sailed from New York, on Wednesday of this week on the steamship *Noordam* for service in the war zone. Dr. David Cheever of the Harvard Medical School was in charge of the party.

An American Physician a Russian General.—Dr. Philip Newton of Washington, has been appointed surgeon of the Russian Sixth Army Corps, with the rank of general. Dr. Newton went to Russia in charge of a Red Cross unit.

Misuse of Hospital Ships Denied.—The British Admiralty issued a statement last Sunday, saying: "In a German wireless message sent out on the night of November 12 it was conjectured that British hospital ships are being used for conveying troops, munitions, and other war material. This is absolutely false. British hospital ships always have and always will be used under the conditions prescribed by the Geneva and the Hague Conventions."

American Doctors Prisoners in Serbia.—When the Bulgars recently captured Uskub from the Serbians they made prisoners of Lady Ralph Paget and most of the members of the staff of her hospital. Among those who elected to remain with Lady Paget were Dr. Catherine Travis of Canada and the following American doctors: S. H. Osborne, C. E. Fox, F. E. Cornelius, B. A. Ohr, and Harry Plotz, and five Columbia University men, Elmer Childs, Douglas Dold, Elliot Dold, Arnold Bell, and Mr. Little.

Help for the War's Disfigured.—The American Red Cross, cooperating with a number of influential Americans, has formed a nation-wide organization to raise funds for a hospital in Paris for the treatment of facial wounds. At present there is no place where soldiers who have suffered disfiguring wounds can be treated. The new hospital will be devoted to skin grafting and other work necessary in the rebuilding of parts of the human body.

Civil Service Examinations.—The United States Civil Service Commission announces an open competitive examination for assistant in metabolism investigations, male, at a salary of $1,500 a year. From the register of eligibles resulting from this examination certification will be made to fill vacancies in the United States Public Heath Service in the field, and vacancies as they may occur in positions requiring similar qualifications. Applicants for the examination must be citizens of the United States, less than forty-five years of age, and graduates from a four years' course at a college, university, or medical school of recognized standing, with at least six months' practical experience in work with the respiration apparatus and calorimeter. Persons who meet the requirements and desire to take the examination should apply at once for Form 1312, stating the title of the examination, to the United States Civil Service Commission, Washington, D. C.

The Civil Service Commission of New York State will hold examinations in various cities throughout the State on December 11, 1915, for the purpose of filling the following vacancies:

Woman physician, State hospitals and institutions, $1,000 to $1,500 and maintenance. Candidates must be licensed medical practitioners of the State of New York and must have had at least one year's experience on the medical staff of a hospital or three years' experience in the general practice of medicine. Candidates desired in both regular and Homeopathic schools of medicine.

Research assistant, Kings Park State Hospital, open to men and women, $600 and maintenance. Candidates must have had a full collegiate education with subsequent experience in psychological and biological research, especially in connection with human heredity.

Physician, to attend persons sustaining injury due to work under compressed air, Public Service Commission, First District, $2,250.

Assistant in radio-physics, State Institute for the study of Malignant Disease, Buffalo, N. Y., $1,200.

Applicants for the examinations must be citizens of the United States. Application blanks and special bulletins of information regarding the positions may be obtained from the State Civil Service Commission, Albany, N. Y., before November 29.

Montefiore Home.—The annual meeting of the contributors to the Montefiore Home and Hospital for Chronic Invalids, New York, was held at the home on November 7, when addresses were made by Dr. Abraham Jacobi and Commissioner of Charities Kingsbury. The report of the treasurer

showed that during the past year the contributions totaled $336,000, while the total expenditures were $340,000.

Red Cross Endowment Fund.—An endowment fund of one hundred thousand dollars, a membership comprising every man, woman, and child in the United States, and a merger under its banner of all the war relief societies—these are the aims of the American Red Cross as announced at a meeting in New York on November 9. Ex-President William H. Taft, recently appointed chairman of the Central Committee of the Red Cross, was among the speakers.

For Disease Prevention.—The American Museum of Safety has received a gift of money which will make possible the carrying on of a campaign for the purpose of minimizing disease among the workers in the shops and factories of New York City.

Price of Radium Reduced.—The Director of the United States Bureau of Mines recently announced that the cost of radium had been reduced from $120,000 to $36,000 a gram, through the work of the research bureau. The bureau has been engaged on the problem of the cheaper production of radium for the past year.

Death Rate in Chicago.—The number of deaths reported in Chicago during the week ending October 30, was 581, giving a rate per annum of 12.4, while for the corresponding week of last year the number was 519, and the rate 11.3. The largest increase was in the age group between 60 and 70 years.

During the week ending November 6, the number of deaths in Chicago was 595, as compared with 528 for the same week of last year. The death rate for this week of 1914, computed on an estimated population of 2,393,325 was 11.5 per thousand, while for 1915 the rate, computed on an estimated population of 2,447,045, had risen to 12.7.

New York Death Rates.—During the week ending October 30 there were in New York City 1,194 deaths, a death rate of 10.73 per thousand, while in the same week of last year there were 1,134 deaths, a death rate of 10.60, an increase of 60 deaths and of 0.13 in the rate. The death rate from January 1 to date was 13.18 per thousand of population, as compared with a rate of 13.59 during the corresponding period of 1914, a decrease of 0.41.

The death rate in New York, for the week ending November 6, 10.96 per thousand of population, the total number of deaths being 1,220, as compared with a rate of 11.55 for the same week of last year, when the total number was 1,236. It is pointed out by the Health Department that had the rate of last year held for this, the total number of deaths would have been 1,286, so that the decrease in reality amounted to a saving of 66 lives. The death rate for the first forty-five weeks of the year was 13.13 per thousand, as compared with 13.53 for the same period of last year.

Examinations for Sick Leave.—The New York Department of Health will hereafter examine all city employees who make application for protracted sick leave. This supervision will cover about 10,000 municipal workers, although the members of the police, fire, and street cleaning departments, will not be included, as they already have physicians to perform such inspections.

Nobel Prizes.—Announcement has recently been made of the award of the Nobel prize in chemistry for 1914 to Prof. Theodore William Richards of Harvard University, for his work in fixing the atomic weights of chemical elements, and of the prize in physics for the same year to Prof. Max von Laue of Frankfort, for his discovery of the diffraction of rays in crystals. The prize in medicine for 1914 has been awarded to Dr. Robert Barany, of the University of Vienna, who has made important investigations in the physiology and pathology of the ear.

Bequests to Charities.—The Hospital for Consumptive Children under the will of the late Mrs. Mary M. Johnson of this city receives, subject to the life interest of relatives, a half share in a fund of $106,938.

Columbia University has received from the executors of the estate of Mr. William D. Sloane the sum of $50,000 to be added to the endowment fund of the Sloane Hospital for Women.

By the will of the late Dr. De Benneville K. Ludwig of Philadelphia 10 per cent. of his residuary estate is bequeathed to the Presbyterian Hospital.

By the will of the late Jane H. Harmer of Philadelphia the sum of $5,000 is bequeathed to the Germantown Hospital for the endowment of a free bed in memory of her husband, George Wilson Harmer, and her son, Harry G. Hale Harmer; $5,000 to the Allegheny General Hospital at Pittsburgh, for the endowment of a free bed in honor of her father and mother, Henry G. Hale and Elizabeth Hale, and $2,500 to the Children's Hospital of Pittsburgh for the endowment of a free bed in memory of her sister, Elizabeth Hale Phillips, and her son, Hale Phillips.

The Long Island College Hospital, Brooklyn, has received $75,000, the House of St. Giles the Cripple, Brooklyn, $30,000, the Providence Hospital, Washington, $15,000, and the Hudson City Hospital, Hudson, N. Y., $25,000 under the will of the late Mrs. Katherine S. Leavitt, who died in Washington in September, 1914.

Sterilization of Feeble-Minded.—Operations for sterilization, the first under the new Wisconsin law, were performed recently on ten male inmates whose ages ranged from fifteen to thirty years at the Wisconsin State Home for the Feeble-Minded, Chippewa Falls.

Hygienic Servants Demanded.—As an outgrowth of the plan of standardizing household help in Montclair, N. J., the Montclair health department has announced that for a fee of three dollars it will examine the physical condition of applicants, and when the result is satisfactory will issue certificates of health. Blood tests and examinations for tuberculosis, etc., will be included in the examination. At present the barbers and those engaged in handling food supplies in Montclair are required to pass such an examination. The plan has been endorsed by the Housewives League.

Open Cars in Brooklyn.—The Brooklyn Rapid Transit Company announces that during the coming winter it will run open cars on the surface lines for the convenience of smokers and those desiring fresh air.

Opposed to Sales of Narcotics.—The American Association for the Study and Prevention of Infant Mortality at the sixth annual convention, held in Philadelphia on November 12, adopted a resolution refusing to endorse any law whose effect would be to continue the sale of narcotics in any medicine. The attempt in many States to regulate by legisla-

tion the traffic in narcotics and habit-forming drugs has not been successful, in that there has been exempted preparations containing but a small quantity of such drugs.

Manhattan Census.—The Police Department of New York, at the request of the Department of Health, recently undertook a test census of the Borough of Manhattan, as a result of which the population of the borough is placed at 2,295,671, or 192,465 more than was estimated by the State Census Bureau, which also took a census last spring. As a result of its estimation the State Bureau has contended that the computation of the death rate of the city by the health officials was too low, the falling off in immigration and the increase in emigration on account of the war having somewhat checked the normal growth of the city's population. The Health Department, however, has questioned the accuracy of the State's figures, and the police census upholds its claim and indicates that its estimated death rate of 13.13 per thousand for the first forty-five weeks of this year is correct.

Christian Scientists Convicted.—Two women practitioners of Christian Science in Berlin are reported to have been convicted of criminal carelessness and sentenced to six months' imprisonment for causing the deaths of two actresses in the Royal Theater. Although both of the patients were said to have been suffering from serious and perhaps incurable diseases, it was thought that their lives might under customary treatment have been much prolonged, and for this reason the court found the defendants guilty.

City Baths.—In Manhattan Borough during the past summer the total number of baths taken in the public pools was 1,324,341, or 230,000 more than during the summer of 1914. The cost of each bath was less than a cent and a half.

Goat Milk in Tuberculosis.—A herd of thirty-six goats from the United States Department of Agriculture was received on November 12 at the Sea View Sanitarium, Staten Island, where the experiment of giving the milk of these animals to tuberculous patients is to be tried.

Personals.—Dr. RICHARD MILLS PEARCE, professor of research medicine at the University of Pennsylvania, recently received the degree of doctor of science from Lafayette College.

Dr. ROBERT H. MULLIN, director of the laboratories of the Minnesota State Board of Health, will shortly take charge of hygienic laboratories of the University of Nevada.

Dr. H. G. EARLE has been appointed professor of physiology at the University of Hong Kong.

Medical College Merger.—Arrangements have recently been completed by which the Medico-Chirurgical College of Philadelphia will be merged with the University of Pennsylvania, a step which has been under contemplation for some time. The Medico-Chi will become a graduate school of the university, and the latter will have control of the former's endowment.

The Late Dr. Huddleston.—At the regular meeting of the Willard Parker and Riverside Hospitals, held at the Willard Parker Hospital, on November 9, 1915, it was unanimously

Resolved, That the Medical Board has learned with profound regret of the untimely death on October 30, 1915, of its President, Doctor John H. Huddleston. By his death the Board has been deprived of an ideal presiding officer—a man of judicial temperament, pleasing personality, and broad knowledge of the great work in which these Hospitals are engaged.

Resolved, That the Medical Board feels that the death of Doctor John H. Huddleston is a great loss to modern medical science and sanitation. Not only was he possessed of exceptional attainments but he unselfishly devoted his energies, time, and interest to the furtherance of all practical measures for the advancement of the public good in these fields.

Resolved, That the members of the Medical Board mourn the loss in his death of a dear colleague, ever kind and courteous and sincerely attached to all of them, not only officially but by close ties of personal friendship.

Resolved, That we offer to the family of Doctor Huddleston our deep sympathy and condolence in their affliction and express the hope that they will find some comfort in the consciousness of the profound respect and sincere esteem which Doctor Huddleston inspired in his colleagues and in the remembrance of his great usefulness to his fellow men in the important activities which he so well and so thoroughly performed; and furthermore be it

Resolved, That these Resolutions be spread upon the Minutes of this meeting and that copies be transmitted to the family of the deceased and to the medical press of this city.

For the Medical Board,
DR. JOHN W. BRANNAN,
DR. HENRY W. BERG.

Obituary Notes.—Dr. GRACE WOLCOTT of Boston, Mass., a graduate of the Woman's Medical College of Pennsylvania, Philadelphia, in 1884, one of the founders and physicians in charge of the Vincent Memorial Hospital, and a member of the American Medical Association, the Massachusetts Medical Society, and the District Medical Society, died at her home in Heath, on November 9, aged 57 years.

Dr. GERTRUDE GOODING of Bristol, R. I., a graduate of the Boston University School of Medicine, Boston, in 1884, died at her home after a long illness, on October 24, aged 60 years.

Dr. RAYMOND RUSS of San Francisco, Cal., a graduate of the University of California, Medical Department, in 1900, and a member of the American Medical Association, the Medical Society of the State of California, and the San Francisco County Medical Society, died at his home after a long illness, on October 23, aged 42 years.

Dr. FREDERICK GILLETT BYLES of Denver, Col., a graduate of the Jefferson Medical College, Philadelphia, in 1882, professor of hygiene at the University of Colorado, School of Medicine, and a member of the Physicians and Surgeons Club, died at his home after a short illness, on October 22, aged 62 years.

Dr. EDMUND C. RIVERS of Denver, Col., a graduate of the University of Maryland, School of Medicine, Baltimore, in 1879, and a member of the American Ophthalmological Society and the American Otological Society, was drowned in Barr Lake while on a duck-hunting trip, on October 24, aged 57 years.

Dr. ISAAC L. FIREBAUGH of Robinson, Ill., a graduate of the Miami Medical College, Cincinnati, Ohio, in 1875, and a member of the American Medical Association, the Illinois State Medical Society, and the Crawford County Medical Society, died at his home, following an operation, on October 26, aged 67 years.

Dr. EDWARD PORTER COLBY of Boston, Mass., a graduate of the Long Island College Hospital, Brooklyn, in 1861, professor of nervous diseases in the Boston University School of Medicine, consult-

ing neurologist to the Massachusetts Homeopathic Hospital, the Westboro Insane Hospital, and the Whidden Memorial Hospital, and a member of the Massachusetts Surgical and Gynecological Society, died at his home on November 1, aged 76 years.

Dr. GEORGE WHITEFIELD HILTON of Lowell, Mass., a graduate of the Hahnemann Medical College and Hospital, Chicago, in 1877, died at his home on October 27, aged 76 years.

Dr. ALFRED H. MCCORMACK of Northampton, Mass., a graduate of the Trinity Medical College, Toronto, in 1900, and a member of the Massachusetts Medical Society and the Hampshire District Medical Society, died at his home after a short illness, on October 29, aged 43 years.

Dr. GEORGE M. HITE of Nashville, Tenn., a graduate of the Eclectic Medical College, Cincinnati, Ohio, in 1885, died on October 21 after a short illness, aged 57 years.

Obituary.

EDWARD LIVINGSTON TRUDEAU, M.D., LL.D.

SARANAC LAKE, N. Y.

Dr. EDWARD LIVINGSTON TRUDEAU died at his home in the town which he had made famous on November 15, in the sixty-eighth year of his age. In his death, after a long battle against disease, a fight which brought hope and health to thousands of other sufferers from tuberculosis, the world has suffered a loss, and the community in which he was revered an almost irreparable one, though the spirit which emanated from his frail body will live to carry on his work.

Dr. Trudeau was born in New York City on October 5, 1848, the son of a physician, Dr. James Trudeau of this city, and was graduated from the College of Physicians and Surgeons, New York, in 1871. He began practice in New York in 1872, but two years later he was stricken with tuberculosis and was told that he had but six months to live. Going to the mountains with the hope only of passing a few months more comfortably, he found that the open-air life in the high altitude was of benefit, and lived to found an institution which has become one of the great sanatoria and to see his theories as to the proper treatment of tuberculosis widely accepted. In 1885 the first shack of the Adirondack Cottage Sanatorium was opened, and from this small beginning there has grown a beautifully planned institution, housing more than one hundred patients and devoted to the treatment of the working men and women of America. With his clinical work Dr. Trudeau also carried on scientific investigations, and the burning, through the explosion of a lamp, of his small laboratory many years ago, was the occasion of the widely-quoted message from Dr. William Osler. "Dear Trudeau: I am sorry to hear of your misfortune, but take my word for it there is nothing like a fire to make a man do a Phoenix trick." In 1894 Dr. Trudeau was able to establish the Saranac Lake Laboratory for the Study of Tuberculosis, the first research laboratory for the purpose in this country, which is now adequately housed in a brick building near his home. He had written extensively on the subject of tuberculosis, and was a member of the American Medical Association, the New York State and Franklin County Medical Societies, the Association of American Physicians, and the National Society for the Prevention of Tuberculosis.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

LOCAL GOVERNMENT BOARD—EXCESSIVE MATERNAL AND INFANTILE MORTALITY—ROYAL SOCIETY OF MEDICINE, FRACTURES—MEDICAL SOCIETY OF LONDON, SCIENCE AND WAR—PARATYPHOID IN THE EXPEDITIONARY FORCE—TYPHUS IN SERBIA—WAR STRAIN.

LONDON, Oct. 30, 1915.

THE report of the Local Government Board just out contains the medical officer's statement as to the excessive mortality, both maternal and infantile, in connection with childbearing in different localities, and it is hoped the facts will stimulate local inquiry and encourage measures of prevention. As is shown in a table, there has been a remarkable decline in the national death-rate, but another also in the birth-rate, the total result being a fall in the rate of increase of the population. The balance between emigration and immigration for the last ten years, compared with the previous equal period, involves a similar decrease. The death-rate can still be much reduced. A great proportion of deaths under 70 are really unnecessary deaths. Of the total mortality, 44 per cent. of deaths occur under 40 and 76 per cent. under 70 years of age. But the fall in death-rate cannot indefinitely keep pace with a continuous fall in birth-rate. The average age of the national population is already on the increase, and by consequence its proneness to death. The figures emphasize the importance of preventing further decrease of the balance of births over deaths by such measures as tend to preserve the lives and maintain and improve the health of mothers and their children.

To this end public rather than private action is being advocated by many—by some indeed who have heretofore been content to regard it as "a doctors' affair" but who now say the responsibility falls on the local authorities. As their record is not very encouraging there is a demand for an act of Parliament to compel them to perform their duties efficiently, and if necessary to provide grants toward the cost involved. Here is a chance for the local government board to do something; its president, Mr. Walter Long, at the Guildhall on Tuesday made a stirring speech with special reference to infantile mortality. It was at a large, representative meeting to promote the campaign of the national association for the prevention of this excessive mortality. Cabinet ministers, bishops, noblemen, and others interested were present. Mr. Long held that there is ten times more need for the movement since the outbreak of war. Letters were received from the Queen and from Queen Alexandra. Mr. Long, as president of the local board, assured the meeting of the sympathy of that body. Sympathy is good as a preface to action.

The mortality connected with parturition from conditions other than puerperal fever, as to which there is a general uniformity, is much lower in London than in the provinces, to the extent that more than 800 mothers would be saved in a year if the statistics in the country were equal with those of the metropolis. But in puerperal fever London shows no better figures than the country. If this disease were eliminated as it has practically been in many lying-in hospitals, there would be a further saving of 1100 mothers' lives. Welsh counties have

the highest maternal mortality, some agricultural counties as low or even lower than London. Manchester, Liverpool, and other large cities hold a relatively favorable contrast to many Lancashire and Yorkshire towns. Scotland, Wales, and Ireland have a higher child-bearing mortality than England. A study of the incidence in different localities, especially of the extreme variations, shows that special local factors must be concerned. As to causation a close relationship between factory work for married woman is indicated and the medical officer says the presumption is justified that better ante-natal and midwifery care would go far to reduce maternal mortality. It is said measures should be taken by ante-natal consultations, clinics, visiting, etc., to ascertain and help the cases needing assistance.

At the Royal Society of Medicine we have had an exhibition of fracture apparatus. Sir A. Keogh, who opened it, remarked on the use of such displays in diffusing information and the difficulties of spreading knowledge in such a way as to contribute to uniformity of practice. He commended the French methods of splinting and said much of the technique adopted in the exigencies of war would remain in civil practice. Sir Almroth Wright then gave an address on the employment of bandages for the irrigation of wound-surfaces with therapeutic solutions and the draining of wounds. This he held has the advantage over wet dressings that we can bring our solution continuously into application without altering the concentration—a point of fundamental importance with saline remedies. We can, moreover, with proper arrangements, apply our agents to all internal and external surfaces of wounds while at the same time securing ideally effective drainage. He then described the various arrangements which he thought would satisfy all requirements.

The various methods of splintering fractured limbs naturally took the most prominent place in the exhibition and surgeons who were engaged in such work expressed surprise at the ingenuity shown in many of the appliances submitted to their notice.

At the Medical Society of London, Dr. W. Pasteur, president, delivered the opening address of the session. He referred to the smallness of the last volume of their proceedings which was due, he said, to the war, for that interfered with attendance at their meetings, one-third of their members being on active service either at home or abroad. But the war greatly increased material for investigation and our command of the sea allowed the wounded and sick to be brought home. In spite of the horrors of the war it would add greatly to our medical knowledge. But there was much difficulty in making use of the material available. Taking notes in periods of rush was not easy and the patients were often wafted away before their cases had been completely investigated. Two groups of cases under his own observation were (a) pulmonary tuberculosis and (b) enteric. As to the former in soldiers invalided from the service hemoptysis was prominent and in the majority there was a history of previous pleurisy or lung affection, but the physical signs were indefinite and rapid improvement followed removal to favorable conditions. The enteric group was of great interest and included typhoid, paratyphoid, dysentery, trench diarrhea, and intestinal protozoal diseases. Most came from the Near East, were benign, and generally recovered. In modified typhoid the onset was sudden, pulse low, headache slight, enteric symptoms indefinite or sometimes even wanting, spots uncommon or difficult to distinguish, spleen not often enlarged. The temperature often fell to subnormal a few days before convalescence set in. Of course whether inoculation has been performed is to be considered. It is an open question whether trench diarrhea represents relapses. The suppression of the abdominal symptoms is the chief characteristic of the modified disease.

In connection with the foregoing I may refer to an interesting account of the characteristics of paratyphoid by Captain Henry Robinson, based on 89 patients admitted as enteric suspects from the British Expeditionary Force in 47 per cent. of which a paratyphoid bacillus was isolated. Although marked differences were observed among these cases they are with two or three possible exceptions manifestations of a definite clinical entity. Dr. Robinson concludes from a careful study of the cases that paratyphoid as seen in the British force, is much milder and shorter than typhoid, its onset either gradual or moderately sudden, headache and abdominal pain the most constant symptoms, next to them shivering at onset, cough, pains in limbs and back, diarrhea or constipation, nose-bleeding; all these are met with in from 30 to 60 per cent. of cases. Vomiting at onset followed by sore throat is not rare, definite rose spots in about 60 per cent., abdominal reflex absent in nearly 50 per cent. Brief relapses not uncommon. Complications are more rare and are counterparts of those met in typhoid. The paratyphoid bacillus (A or B) may often be isolated from the feces but in many cases only after subsidence has begun. But one negative finding is not conclusive. Widal reactions may help those experienced in their application if read in conjunction with clinical evidence and previous history, *e.g.* as to inoculation. The prevention of the spread requires the same precautions as true typhoid. Carriers should be closely watched, for bacilli may be found in their excretions after all symptoms have subsided.

The Chadwick Lectures at the Royal Society of Medicine were delivered by Dr. R. O. Moon on "Typhus in Serbia." In the first lecture, on the 20th inst., he said that during the present war the armies of France and England, fighting in numbers never before equaled remained free from typhus. This great result should be attributed largely to the inspiration of Chadwick, whose arduous labors for public health were perhaps more recognized in France during his lifetime than in his own country.

Dr. Leslie Murray, lecturing at the Institute of Hygiene on "War Strain," said the terrorizing policy of Germany was the direct outcome of the study of the psychology of war. Their object was to destroy the morale of their enemies while raising that of their own people, telling them only about victories. Submarine and Zeppelin attacks were to inspire terror, the results not being measured by military effects nor even by the number of civilians killed. Such atrocities excited disgust rather than fear, though they might aggravate the war strain, especially on the aged and on nervous women and children. To prevent the ill effects of the strain they must do everything to maintain the general health—good food, fresh air, exercise, regular habits, above all, sufficient sleep.

Mortality of Communicable Diseases.—Scarlet fever has a fatality rate of 3.1 per cent.; whooping cough, 6.3 per cent.; measles, 1.8 per cent.; and typhoid fever 16 per cent. in New York State.—*Health News.*

Progress of Medical Science.

The Boston Medical and Surgical Journal.

November 4, 1915.

1. Medicine—A Profession or a Trade. Hugh Cabot.
2. Late Results of Operations Upon Hip Joints for Hypertrophic Arthritis. E. G. Brackett and H. W. Marshall.
3. Therapeutic Value of Injections of Whole Blood. J. Spencer Davis.
4. Massage and Remedial Exercises in the Treatment of Children's Paralyses. Their Differentiation in Use. Jennie M. Colby.
5. Joseph François Malgaigne, 1806-1865. Wm. Pearce Coues.
6. A Successful Treatment for Acute Infection of the Air-Ways. Irving Wilson Voorhees.
7. Studies in Speech Disorders. Progressive Muscular Atrophy—Case and Treatment. Walter B. Swift.
8. A Case of Thrombophlebitis of the Veins of the Cord Associated with Colon Bacillus Infection of the Epididymis. E. Granville Crabtree.

1. Medicine—A Profession or a Trade.—Hugh Cabot says that medicine has always been regarded as one of the learned professions, but the tendency of a profession to degenerate into a trade is always present. If Medicine is to avoid the downfall which has overtaken the Law it will be because we are more conscious of the dangers or more alert to check at the beginning undesirable developments. A profession is an occupation requiring an education in science, and which is pursued for its own sake, and must have as its chief end the advancement of science or the benefit of mankind, pecuniary advantage being always a secondary and subordinate consideration. A trade, on the other hand, is an occupation which is pursued chiefly, though not wholly, for the purpose of acquiring wealth. In estimating the importance of any development in medicine we can best do so by comparing present conditions with those of the past, the changes that have taken place and the effect which they have produced upon the prevailing type of practitioner. Dr. Cabot looks back and pictures the type which was looked upon as the highest twenty years ago and compares it with the best that we are producing to-day, and from it gains the impression that the former men were more in touch with affairs other than medicine and more devoted to the ideals of medicine. He also considers the possibilities of the future in the direction of State medicine and of group medicine, and outlines a system of group medicine which seems to him to offer advantages over State medicine.

2. Late Results of Operations Upon the Joints for Hypertrophic Arthritis.—E. G. Brackett and H. W. Marshall make a summary of nine cases whose ages ranged from twenty-nine to fifty-seven, with an average of thirty-five years. Three were women and six were men. Five of the persons were at work at present, on an average time of three years and three months after operation. Four were fairly comfortable and none was completely helpless. The nine reported cases represent four arthrodeses, one decapitation of the femoral head, three cheilotomies, and one arthrotomy for a loose body. The choice of an operation should be made with great care, dependent upon the amount of destruction, the number of joints involved, the social position of the patient and the kind of work which afterward will be demanded of the joint. Efficiencies of patients may be expected to be increased and the pain relieved by surgery. None of these patients was made worse by surgery, and it accomplishes enough to justify itself in those cases which have become seriously disabled by simply relieving continuous pain, or in quickly stiffening some joints to useful positions, or in prolonging their functions and activity. The nine cases are reported.

6. A Successful Treatment for Acute Infections of the Air-Ways.—Irving Wilson Voorhees says that a cold is more than an annoyance; it is a real danger because it may have as a cause the diplococcus of pneumonia or the bacillus of tuberculosis, masked by the micrococcus catarrhalis. A cold is an acute infectious disease and should never be neglected. Most people recover from an acute rhinitis, or laryngitis, or bronchitis, but who can say that these do not furnish the soil and lay the stratum for many other diseases, both acute and chronic? Perpetual warfare ought to be waged against the universal ignorance of those who cough and sneeze in public places without protecting the face with a handkerchief. The course of acute respiratory diseases can be greatly shortened by direct instillations of aromatic drugs, and, of these, a solution of menthol in oil is most effectual. The procedure is absolutely harmless and is of the highest value in treating the throats of singers.

7. Studies in Speech Disorder—Progressive Muscular Atrophy.—Walter B. Swift cites a case of progressive muscular atrophy with involvement of the muscles of the neck to such an extent as to render some sounds impossible and others indistinct, which was relieved at once, and afterward whenever applied, by giving the throat musculature staunch, firm support by the hand, a special high collar being applied to help out the action of the neck muscles.

New York Medical Journal.

November 6, 1915.

1. Value of the *X*-Ray in the Diagnosis of Gastrointestinal Disturbances. Julius Friedenwald and F. H. Baetjer.
2. Chronic Intestinal Stasis. Anthony Bassler.
3. The Sesamoids of the Flexor Brevis Hallucis; Their Importance. Noble Price Barnes.
4. Fibroid of Ligamentum Ovarii Proprium. Alfred M. Hellman.
5. The Clinical Delimitation of Hysteria. Meyer Solomon.
6. Diarrhea in Infancy. C. K. Johnson.
7. Immunization with Autogenous Proteins in Bronchial Asthma. Henri Iskowitz.
8. Vincent's Angina. Adolph G. De Sanctis.

1. Value of the X-Ray in the Diagnosis of Gastrointestinal Disturbances.—Julius Friedenwald and F. H. Baetjer consider the following conditions: Esophageal disturbances; gastric and duodenal ulcers; gastric cancer; gastric dilatation and pyloric obstruction; gastroptosis and enteroptosis; diseases of the gallbladder, and chronic appendicitis; intestinal adhesions and angulations. From their studies of many cases of peptic ulcer, in which *x*-ray examinations were made, they believe they are justified in asserting that the *x*-ray offers most valuable assistance in the diagnosis of various morbid conditions in the stomach. In the early stages of gastric cancer the obstruction is not complete, and it is only by means of the *x*-ray that beginning or partial obstruction can be determined. In the early stages they find active contractions of the stomach with slow elimination of contents. Another very important and significant sign is that a portion of the stomach just within the pylorus on the greater curvature shows a tendency to bulge. The prepyloric bulging is dependent largely upon the duration of the affection. The diagnosis of pyloric stenosis with marked and constant retention of food remains and stagnation is extremely simple; but those cases with a moderate amount of retention, often intermittent, and frequently associated with gastrosuccorrhea chronica, are fraught with great difficulty. From their observations, it seems clear that the *x*-ray is a very valuable aid in the diagnosis of beginning pyloric obstructions, as well as in complete obstructions. It is generally admitted that there is no better means of determining the position of the stomach and bowel than the *x*-ray. It is true that the location of these organs can be obtained by other methods, but the *x*-ray examination is so definite that, whenever possible, it should be employed.

2. **Chronic Intestinal Stasis.**—Anthony Bassler believes that intestinal stasis is a condition seen in varied pictures as so-called cases of the condition present themselves. Stasis is distinctly only a symptom, as cough is a symptom of pulmonary conditions, or edema is a symptom of renal disorders. In chronic intestinal stasis theories of the cause of the condition came out only after methods for its correction were inaugurated; it is plausible to assume that from a surgical standpoint the development of this subject has been unscientifically brought about and often as an apology for the rash mistakes made. The first theory advanced was that of Lane and Jordan, which because of an enthusiasm born of biological ignorance, on the one hand, and readiness for surgical exploitation on the other has brought a grave mortality with few successes. At least the failures have finally brought the over-enthusiast to the point of realizing that human life and health are not solely dependent upon surgical alteration of the direction of the fecal current. The work of this enthusiastic surgeon (Lane) based upon the propagandist's hope of the future reminds us of the unnecessary ovariotomies, nephropexies, indiscriminate appendicectomies, anchoring mobile cecums, and operations for splanchnoptosis that have been performed in times past. The diagnosis of chronic intestinal stasis is made by Lane on the basis of certain clinical phenomena and *x*-ray examination. We know that in these cases the *x*-ray method of examination is fallacious. It has been the experience of the writer within the last year to meet people who have been short-circuited, and who have been benefited thereby for the space of a few months, but who now present the identical symptoms of toxemia they suffered from before they were operated upon, although the connection between the ileum and lower sigmoid or rectum is perfectly at work. The Roentgen-ray method of diagnosing intestinal stasis, in which Jordan has done so much work for Lane, while valuable, is likely to lead to error. To Dr. Bassler intestinal stasis is a medical matter almost entirely. Surgical procedures for conditions that ensue as results or complications may be necessary in individual cases, but never the major surgical procedures of Lane for nonobstructive stasis or toxemia, his form of operation for disease in tissue remote from the abdomen, partial types of resections (such as ileosigmoidostomy) being performed in the absence of marked disease of obstruction. The writer concludes that if we are right in our etiological and diagnostic beliefs that diphtheria bacilli in a sore throat mean diphtheria, typhoid bacilli in stools and general system mean typhoid, tubercle bacilli, tuberculosis, and so on; then it is biologically important on etiological, diagnostic, and therapeutic lines that the intestinal infections should be considered from a similar viewpoint. His researches in the pathogenic types show this to be true, the organism found being in the colon, the pseudodysenteric and true dysenteric forms, the *Aerogenes capsulatus*, *Streptococcus fecalis*, alpha and beta types of parotyphosus, the so-called "slimy bacillus," the proteus, alcaligenes, pyocyaneus, butyricus, entericus, macerans, putrificus, subtilis, and others. It is upon the presence and activity of these organisms that the true cause of intestinal stasis is based, and the time must come when this fact will be generally recognized, even though this kind of work is difficult of quick understanding and application in both diagnosis and treatment.

3. **The Sesamoids of the Flexor Brevis Hallucis; Their Importance.**—Noble Price Barnes says that every excessive pleasurable indulgence wreaks its corresponding retribution of discomfort and distress. Consequently to-day we find expressions of yesterday's intemperate use of the feet in the too frequent and furious terpsichorean festivities, the sequel of the insanely popular hesitations, tangoes, fish walks, angle-worm wiggles, peristaltic waves, and other forms of the dizzy whirl perpetually practised by the devotees of "St. Vitus, that blessed patron of the dance." In these days of constant dancing, hard floors and pavements, high heels and thin shoe soles, the trauma comes on gradually. Sesamoid bones are not uncommonly found in the sole of the foot. Most sesamoids have no particular function. Injury to these bones is the result of direct violence, and the extent of the injury is proportionate to the force of the violence or the length of time of its continuance. Serious conditions have hitherto usually escaped recognition until the pathological changes and corresponding disability make complete removal of the sesamoids justifiable. In recapitulation, however, the author states that the sesamoids of the great metatarsophalangeal articulation are a constant and necessary part of the human anatomy and deserve a name; that they are an intricate part of an important joint, having an articulating surface proportionately greater than the patella; they prevent anterior dislocation of the great toe; they are the pulley of the flexor longus hallucis; they sustain the weight of the body much of the time; they are the pivot of locomotion, and they are the fulcrum of the foot.

Journal of the American Medical Association.

November 6, 1915.

1. The Need of Full Time Health Officers. J. W. Kerr.
2. Variation in the Platelet Count. Its Cause and Clinical Significance. W. W. Duke.
3. The Intestinal Tract. S. J. Mixter.
4. Chenopodium in the Treatment of Uncinariasis. Preliminary Report. William A. Bishop and O. T. Brosius.
5. Creatin and Creatinin Excretion During the Puerperium and Their Relation to the Involution of the Uterus. Arthur Morse.
6. Elementary but Vital Factors in the Efficiency of Smaller Hospitals. L. W. Littig.
7. The Blind Dental Abscess. Henry Ludwig Ulrich.
8. Hemolysis and Agglutination in Transplantation. Charles Goodman.
9. Factitious Dermatoses. Oliver S. Ormsby.
10. Roentgen Studies After Gastric and Intestinal Operations. James T. Case.
11. The Use of Plaster of Paris in Mounting Gross Museum Specimens, with Special Reference to Parasitic Worms and Serial Tissue Slabs. Fred D. Weidman.
12. Juvenile Deforming Osteochondritis of the Hip. George J. McChesney.
13. A Case of Stramonium Poisoning. William D. McNally.
14. The Autolysin Treatment for Cancer. Richard Weil.

1. **The Need of Full-Time Health Officers.** — J. W. Kerr says that the cornerstones on which public health administration rests are wise legislation, adequate appropriation, and efficient health organization; but behind the three must of course lie public sentiment if we are to have enforcement of the measures deemed advisable and make possible their success. Public health organization in the United States has been a plant of slow growth and has been stimulated for the most part by epidemics. The funds provided to carry on public health work have been sufficient for the purpose. There is opportunity for great improvement which may best be brought about by the systematic development of local health organization and the employment of full-time health officers who are properly equipped to undertake the special duties that should be required of them. While local health administration should be the strongest, in reality it is the weakest link in our chain of national defenses for disease prevention. By correlating public health agencies, and requiring them to be performed under the direction of a responsible health authority, the community will benefit, and the health official will have an abundance of work to keep him busy. The employment of full-time officers has been made by several states the keystone of their sanitary policy.

3. **The Intestinal Tract.**—S. J. Mixter says that man's interest in the intestinal tract begins at birth and ends only with death. The surgeon first operated on the

beginning and the end of the intestinal tract, but the peritoneal cavity was supposed to be a dangerous region and few invaded it. Intestinal surgery had its real beginning not more than fifty years ago, and step by step it has advanced, until to-day there is not an inch of the intestinal canal or any of its appendages that has not been attacked. The author reviews the things that have been accomplished and points out that there is still much to be learned. The standard must be raised still higher and surgeons must be trained more thoroughly for their work; graduate schools of surgery, large clinics where men can live and work long enough to acquire some of the art and skill of the master, more operations on lower animals, and greater observation and practice in the after-treatment of surgical cases, all these must be within the reach of the would-be surgeon. Technical skill in the surgeon is important, but of greater importance is surgical judgment.

4. **Chenopodium in the Treatment of Uncinariasis.**—William A. Bishop and O. T. Brosius refer to the investigations of Schneffner and Wervoort and Levy as to the value of chenopodium in comparison with other vermifuges in the treatment of hookworm disease and state that they have had an ideal opportunity for carrying out further researches along these lines in the Santo Tomas Hospital, Panama City, where they have a large number of native West Indian negroes and hookworm is an exceedingly common disease. In order to ascertain approximately the efficiency of chenopodium as a vermifuge in unicanariasis in comparison with thymol, it was decided that as good an indicator as any would be a comparison of the average number of hookworms expelled in the whole stool from equal numbers of unselected and previously untreated cases. The cases in which thymol was given and the first whole stool obtained were 60, and the average number of hookworms expelled was 76. The first 60 cases treated with chenopodium gave an average of 99 hookworms. Among more recent treatments there have been much better results that the average of 99 in the first 60 chenopodium cases has increased to 131 in 90 cases. In one instance there were expelled 1,379 uncinariæ in the first whole stool. In summarizing they state that the method of administration of chenopodium is simple, and is attended with less inconvenience and discomfort to the patient than thymol. This would give the drug an important place in field work in uncinariasis. Chenopodium can be given at shorter intervals than can thymol, and a cure can thereby be more quickly established, which gives it a greater economic value. Chenopodium is non-toxic in therapeutic doses. It is a more efficient vermifuge than thymol in the treatment of uncinariasis.

5. **Creatin and Creatinin Excretion during the Puerperium and Their Relation to the Involution of the Uterus.**—Arthur Morse says that their conclusions are based on the observations of four types of cases, namely, (1) a normal labor; (2) a conservative cesarean section at the end of normal pregnancy; (3) a conservative cesarean section in a case of pre-eclamptic toxemia, and (4) two cases of cesarean section with removal of the uterus. A material so varied has enabled them to learn in the first place that the creatin and creatinin metabolism is practically identical after normal labor and after cesarean section, provided the uterus is not removed, and the pregnancy has not been complicated by a toxemia. From the observations made on four cases in which cesarean section was performed, in two instances without removal of the uterus, and in two instances with hysterectomy, the following conclusions may be drawn: 1. A lower total nitrogen output is observed in case hysterectomy is performed, and the higher output of nitrogen observed when the uterus is left *in situ* is explained by the involution process. 2. A lower creatinin output in case of hysterectomy and at least 2 gm. of this substance excreted during the puerperium arise from the involution of the uterus. 3. Creatin in large amounts regularly appears in the urine following childbirth. The creatinuria is independent of the involution of the uterus, and it is also independent of the creatinin metabolism.

6. **Elementary but Vital Factors in the Efficiency of Smaller Hospitals.**—L. W. Littig believes that a high-grade hospital must have a conscientious, progressive, united, and cooperating attending staff, integrated to educate and improve itself, and to discharge its duty alike to patients and to nurses in training; it must have a nursing staff under the guidance and control of a single, efficient, capable and authoritative head; it must have a general management which, hard pressed though it may be by financial considerations, remains ever sensitive and responsive to the best interests of its patients. In such a hospital, responsibility can always be fixed; untrained and poorly supervised girls are not assigned to special cases; the patients under the care of one nurse "on general" never exceeds a certain fixed minimum; there is not an unending chain of inexperienced girls at the instrument table, and an efficiency expert is rarely needed. This hospital will fulfil its high mission as an educator of the profession and the community in which it is located.

9. **Factitious Dermatoses.**—Oliver S. Ormsby records a group of cases of self-inflicted dermatitis, which have occurred during the last several years in the practice of the late Dr. James Nevins Hyde, the late Dr. Frank Hugh Montgomery, and himself. Of the 34 patients described, 30 were females. Fifty per cent. were under 22 years of age. Trauma preceded the lesions in 12 cases. Of the 34, 13 confessed, and made an immediate recovery; one case was proved under the care of a nurse, and three under fixed dressings; one patient completely recovered after being confronted. Of the 34, it was proved that 14 used phenol, four probably used phenol, one used compound solution of cresol, one phenol and other substances, one croton oil, one lye, one sandpaper, one tobacco, one the electric needle and unknown but liquid applications, six entirely unknown substances, and three unknown liquids. It seems probable that the major portion of the cases described as pemphigus gangrenosus are in reality examples of factitious dermatitis. That the major number of cases reported under the title "zoster gangrenosus atypicus" (Kaposi) are of the same type, and also those more recently described under the title of "dermatitis symmetrica dysmenorrhoica" seems probable. While the disorder is comparatively rare, it probably would appear more common if more generally recognized. On the recognition of the disorder, the admission of the patient as to its cause, and the cessation of the practice responsible for the condition, immediate recovery generally takes place; if not, the application of fixed dressings and surveillance day and night, if followed by the disappearance of the lesions and the non-appearance of new ones, will prove the diagnosis. The only difficulty in any case is to prove the diagnosis.

11. **Mounting of Specimens.**—Fred D. Weidman states that the fact that gross-morbid museum specimens when mounted in the usual way suffer greatly by handling has led him to make some experiments in mounting. Where the material is soft and will not stand pressure it is arranged face downward on a smooth-soaped surface. A wall is built around it en-

closing a space about one cm. larger than the inside dimensions of the face of the container, which must be rectangular for the proper use of this method, and the inside of the walls was also soaped. Plaster of Paris was then poured over the specimen until it was of a depth equal to the narrowest antero-posterior dimensions of the container. As soon as the plaster has hardened, the walls are torn down and the slab of plaster with the contained specimen is lifted from the glass. The whole is, when perfectly dry, slipped into the container and covered by mounting fluid. It should not be sealed for several days until bubbles have ceased to accumulate. This method is particularly adapted to all kinds of worms, except the thicker ones, or to serial slabs of brain. The author describes his technique in detail.

12. **Osteochondritis.**—George J. McChesney calls attention to the condition described by Professor George Perthes of Tübingen as juvenile deforming osteochondritis since it is a condition liable to be confused with tuberculosis, juvenile deforming arthritis, polyarticular acute arthritis, coxa vara, and osteomyelitis. It is characterized by a progressive destruction and crushing, principally of the upper femoral epiphysis. Its symptoms are a slight limp, a fairly constant limitation of abduction and a benign course with complete recovery under little or no treatment. The disease appears when the child is in good health and is not especially concerned with any specific trauma, although in two or three cases mild injuries were associated with the onset. Slight shortening and atrophy were occasional symptoms of lesser note. Pain was an almost negligible factor. Specimen examined microscopically showed a delay in ossification of the cartilage of the epiphysis, and to a lesser extent also in the juxta-epiphyseal cartilage of the neck and isolated areas in the acetabulum. Calcareous nodules or dark spots of the ossific nucleus of the epiphysis have also been noted. As a result flattening or crushing of the epiphysis occurs, because cartilage persists where bone is needed. Perthes, who has studied the condition more thoroughly than any one else, concludes that operation is not needed, that correction of the abduction under anesthesia may be a good procedure, and that plaster spicas do no harm beyond inducing some atrophy, but that extension with massage is probably better. The writer emphasizes the importance of differentiating this condition from tuberculosis as the wearisome course of treatment indicated for tuberculosis is not required in osteochondritis.

14. **Autolysin.**—Richard Weil states that since January 1, 1915, 23 cases of cancer have been treated in the Memorial Hospital by Dr. Beebe with so-called autolysin. The cases were all considered hopeless. Of these 23 patients, 14 have since died and eight were discharged, unimproved. In only one instance could the condition of the patient be described as improved. In view of the fact that patients are coming even from distant States with the hope of securing relief from suffering, and in many instances at serious financial sacrifice, the writer believes it his duty to relate what has come under his observation in reference to the use of autolysin in cancer, and states that it is his personal belief, founded on long observation, that this remedy is useless and adds nothing of value to the methods now generally accepted, and that it often aggravates the sufferings and accelerates the death of the patient.

The Lancet.

October 23, 1915.

1. An Analysis of Cases of Tetanus Treated in Home Military Hospitals from August, 1914, to August, 1915. Sir David Bruce.
2. Presidential Address on Pellagra Considered from the Point of View of a Disease of Insufficient Nutrition. F. M. Sandwith.
3. The Treatment of Cerebrospinal Fever in the Royal Navy. H. D. Rolleston.
4. Traumatic Asphyxia. W. W. Linington.
5. Some Observations on the Condition of the Lungs During Recovery from Chest Wounds. T. G. Brodie, J. J. Mackenzie, W. C. Cullis and E. M. Tribe.
6. Nystagmus and Allied Conditions. James Alexander Wilson.
7. The Effect of Nauheim Baths upon Cardiac Conductivity and Contractility. Leslie Thorne Thorne.
8. Anesthesia (General and Spinal) for Suprapubic Prostatectomy. J. D. Mortimer.
9. Cases of Diarrhea from Gallipoli. Abd-el-Aziz Ismail.
10. Case of Tapeworm Accompanied by Hemoglobinuria. W. E. Masters.
11. A Case of Complete Inversion of the Uterus. C. Lachlan Fraser.

2. **Pellagra Considered from the Point of View of a Disease of Insufficient Nutrition.**—F. M. Sandwith says that pellagra has been known to the world for at least two centuries, and yet we are still in vague doubt about its etiology. There are four prominent theories under consideration to-day. 1. That the disease is in some way associated with maize. 2. That pellagra is a protozoal disease, probably transmitted and propagated by a *simulium* or by some other insect. 3. That pellagra "is contracted in definite zones where the usual drinking water comes from springs arising in argillaceous soil, or from the streams and stagnant pools in a clayey district." 4. That pellagra is due to a streptobacillus found in the blood, cerebrospinal fluid, and feces during life, and in organs after death. After having studied many hundreds of cases he presents his beliefs regarding the etiology of pellagra. With regard to the relation of pellagra to maize he says he imbibed the belief that good maize could not produce pellagra under any circumstances, but that it must be caused by some deterioration in that cereal, due to faulty harvesting, drying, or storage. Soon he began to consider that this disease was not caused by what a man ate, but what he failed to eat. If this view was eventually proved to be incorrect he was prepared to change his belief; but in the meantime he was of the opinion that attention should be drawn to the analogy existing between the historical beliefs concerning beriberi and pellagra. The points of resemblance between the two are as follows: 1. The head-louse and many other insects have been accused of conveying beriberi. 2. Many chemical poisons have been suspected in both diseases, besides intoxication from some germ in the food or in the dwelling. 3. Beriberi was thought to be a protozoal disease and that the causal factor was eliminated by the urine, while other animal parasites have been suspected, including *Ancylostomum duodenale*, which is so common a companion of pellagra. 4. Cocci, bacilli, and fungi have all made a temporary appearance upon both stages. 5. Both diseases in endemic countries affect the laboring classes. 6. The belief that beriberi is communicable from one person to another is still held by some. 7. In beriberi and pellagra infants are seldom attacked. 8. Sceptics still maintain that beriberi cannot be due to a deficiency connected with rice, because beriberi sometimes exists in countries or in individuals when no rice has been eaten. It is also contended that pellagra can have nothing to do with maize, because it has been discovered in non-maize-eating people. The association between beriberi and rice is almost accidental. Beriberi is a deficiency disease and presumably might occur after any diet in which the necessary substance is not present. It is this essential substance that C. Funk has given the name "vitamines." If it can be proved with regard to beriberi and pellagra that the vitamines are absent it does not matter whether the basal cereal diet is rice, maize, or anything else. The earliest descriptions of pellagra associate it with insufficient diet. Experiments make it obvious that the best conditions have been worked out and that it is certain that "bad" maize does not produce

any deleterious results in short periods of a month to six weeks, even under circumstances most favorable for its action. This throws out of court all the short experiments so prevalent in the literature about pellagra.

3. **The Treatment of Cerebrospinal Fever in the Royal Navy.**—H. D. Rolleston says that from the commencement of the war to July 31, 1915, there have been 170 cases of cerebrospinal fever in the Royal Navy. A summary of the results of treatment is abstracted from the notes of 163 cases, eighty-nine, or 54.6 per cent., of which proved fatal. Various forms and combinations of treatment were employed, and the most noticeable point brought out is the failure of the generally approved intrathecal injection of antimeningococcic serum. The failure of this serum to reduce the mortality was not due to its being given too late, for in 66.7 per cent. of the 105 cases (sixty-four, or 61 per cent., died, and forty-one, or 39 per cent., recovered) it was administered within the first three days of the disease. The serum treatment, which was so successful in America (Flexner, Sophian), Belfast (Robb), and elsewhere, was given a thorough trial and has proved most disappointing. In very few instances was there the critical improvement which is said to occur in about 30 per cent. of the cases that recover (Flexner). The use of soamin appeared to give good results. Hexamine given by the mouth did not appear to have any effect clinically and was soon abandoned. Lumbar puncture, which is such an important means of diagnosis, was performed in 149 out of 163 cases, or in 91.4 per cent. In thirty-eight cases lumbar puncture was done once only, but fourteen of these cases died soon after they came under observation; six other cases, tapped once, died. Of twenty-two cases tapped twice eight proved fatal, two being very acute; three tappings were done in twenty cases (nine deaths), four in twenty-four (fifteen deaths), five in fifteen (nine deaths), six in six (three deaths), seven in seven (four deaths), eight in three (two deaths), nine in four (all fatal), eleven in five (two deaths), 13 in one (fatal), fifteen in one (fatal), sixteen in one (fatal), and seventeen in two (both recoveries). Lumbar puncture appears to be a palliative rather than a curative remedy and to relieve for a time symptoms due to increased intrathecal pressure. In thirteen cases, of which four proved fatal, it was the only form of treatment other than the ordinary symptomatic remedies employed. In fourteen cases, ten of which proved fatal, symptomatic remedies only (such as morphine for pain) were given.

6. **Nystagmus and Allied Conditions.**—James Alexander Wilson gives some details of 200 consecutive cases of nystagmus with some deductions. This condition is more prevalent in youth and tends to disappear in adult life. The following cases of abnormal movements of the orbital muscles are allied to nystagmus and may throw some light on its etiology: (1) Associated movements of the eyelids and jaw, or "jaw-winking." (2) A child with one eye wide open while crying. (3) Rhythmic closure of the right eyelids. This occurred about once a minute. He reports another group of cases of so-called cyclic affections of the third nerve. Here the third nerve is paralyzed and yet rhythmic contractions occur in the muscles supplied by the affected nerve. Ten per cent. of the cases were the result of ophthalmia neonatorum. There were other examples of the far-reaching effects of sexual impurity. The writer advises that spectacles to correct errors of refraction and operative measures that might improve vision should be adopted as soon as possible. Atropine applied to the eyes sometimes makes the oscillations worse. Eserine does not do any good.

7. **The Effect of Nauheim Baths upon the Cardiac Conductivity and Contractility.**—Leslie Thorne Thorne emphasizes the fact that the Nauheim baths can be given in London or elsewhere quite as satisfactorily as in Germany. In a large number of cases of cardiac and circulatory impairment the only indication of a defective conductivity is a slight lengthening of the a.c. interval. When sufficient time has passed to allow observers to follow up such cases over long periods, he believes it will be found that this slight impairment is the first indication of a condition which, if untreated, leads ultimately to serious defects in the nervomuscular mechanism of cardiac conductivity.

8. **Anesthesia (General and Spinal) for Suprapubic Prostatectomy.**—J. D. Mortimer says that in recent times it has been more and more evident, both by clinical observations and by investigations in the laboratory, that anesthetics given by inhalation do not annul nervous impressions due to injury, surgical or otherwise, although they more or less diminish or modify them. Some years ago he drew attention to some of the dangers and difficulties arising during prostatectomy under general anesthesia. It must not be supposed that these difficulties and dangers invariably occur. In nearly 300 operations done at St. Peter's Hospital, for which he gave a general anesthetic alone, they were noted as having happened in less than 12 per cent. Still they should always be prepared for them. Spinal analgesia not only prevents reflex disturbances but is less likely to be followed by suppression of urine. As a rule when the patient is weakly or nervous it is advisable to combine it with light general anesthesia to avoid mental distress or "psychic shock." Combined general and spinal anesthesia answers well for many operations, such as the removal of piles, external urethrotomy, and particularly for the radical cure of hernia in infants and young children.

10. **A Case of Tapeworm Accompanied by Hemoglobinuria.**—W. E. Masters reports this case. It was of interest because of a very severe hemoglobinuria that suddenly followed the expulsion of a tapeworm by male fern after the patient had taken "four bottles of beer." In this case it appears as if the alcohol, together with the unexcreted male fern, acting upon a weakened constitution, freed the latency to hemoglobinuria.

British Medical Journal.

October 23, 1915.

1. Analysis of Cases of Tetanus Treated in Home Military Hospitals from August, 1914, to August, 1915. David Bruce.
2. On the Hemolytic Action of the Urine in Certain Conditions. C. S. McKee.
3. Ureteral Calculus: Its Symptoms and Treatment. David Newman.
4. Epidemic Jaundice in War Time. S. Moritz.
5. Malaria Contracted in Flanders. J. McG. H. Reid.

1. **Tetanus Treated in Home Military Hospitals.**—David Bruce discusses the results of various methods of treatment in cases of tetanus in the home military hospitals as shown by the records of 231 cases treated in these hospitals since December, 1914. He finds that in this series of cases the mortality was 57.7 per cent. Cases with a short incubation were more fatal than those of longer incubation. Most cases occurred on the tenth day after the wound. There are few allusions to the use of antitetanic serum as a prophylactic. In regard to the therapeutic effect of antitetanic serum the evidence would go to show that this action was not well marked. If antitetanic serum is used—and in such a fatal disease it would seem wrong not to give the patient the benefit, even if doubtful, of the antitoxin—it ought to be injected in the first place intrathecally, as this method would seem to possess advantages over the intravenous and subcutaneous methods. There was no evidence that any benefit accrued to the cases treated by

carbolic acid or magnesium sulphate injections. This analysis suggests that the treatment of a case of tetanus might be about as follows: 1. Place the patient in a quiet darkened room under the care of a sympathetic and capable nurse. 2. The best surgical treatment of the wound should be carried out to insure the prompt and complete removal of all septic products. 3. An intrathecal injection of at least 3,000 units of antitetanic serum should be given. At the same time 10,000 to 20,000 units may be injected intravenously or subcutaneously. This procedure might be repeated as frequently as the course of the disease seems to demand. 4. In addition to this, the author says, the patient should receive certain sedative drugs, such as chloral or chloretone, in full doses.

2. **Hemolytic Action of Urine.**—C. S. McKee states that this investigation was carried on with the intention of noting if after the red corpuscles had been exposed to the action of urine there was any increase or decrease in the resistance of these to the action of a hemolytic serum, or any other change which could be noted or followed up. After describing his technique the writer states that so far he has never observed hemolytic activity in the urine of healthy persons, but finds that this appearance of a body or bodies in the urine of a more or less hemolytic nature is a fairly frequent accompaniment of grave disturbances of metabolism. In severe anemia the reaction is frequent, but not of daily occurrence. After having tested the cells of several pernicious anemia cases he found that the cells of some patients were more resistant than those of others, but also that all were less resistant than normal cells. The reaction was obtainable in erysipelas, gout, acute rheumatic fever, advanced tuberculosis, and certain cases of syphilis, in all severe burns, and in some cases of skin disease in which a large part of the skin surface had been involved, in carbolic-acid poisoning, cancer with wasting, in diabetes if coma was approaching, and in four cases of pregnancy during the last week, all of which became eclamptic. There is also a group of kidney and heart cases that exhibit urinary hemolysis. The agent causing this hemolysis is left an open question, but there seems no doubt that it is not a normal constituent of urine. Save in the case of strongly hemolytic alkaline urines, of which one drop sometimes causes an instant laking of the blood emulsion at room temperature, the hemolytic process requires incubator temperature of 37° *in vitro*, and possibly when administered to the patient by mouth. A curious and apparently definite grouping of stable and unstable urines so far as change of reaction from acid to alkaline is concerned has been remarked. This group of unstable urines may perhaps be found of prognostic value.

4. **Epidemic Jaundice in War Time.**—S. Moritz makes a study of epidemic jaundice which shows that the largest epidemics have occurred in war time. He thinks there is no doubt that epidemic icterus is a disease *sui generis*, due to some infective agent. The infection seems to be due to a virus or organism which develops in the soil during the decay of organic matter, and hence undoubtedly bad camp conditions were the principal cause of the large epidemic in the American war. In this war, in round numbers, out of 1,087,000 men in the Atlantic army, 22,000 fell ill with icterus; of 1,100,000 men of the Central army 20,500 became infected; while of 30,000 of the Pacific army only 100 became icteric. In regard to the differential diagnosis simple catarrhal jaundice, recurrent fever, and bilious typhoid fever come into the question. Until the microorganism of epidemic jaundice is found it will be impossible to distinguish slight cases of this illness from simple catarrhal jaundice. In some epidemics of recurrent fever many of the cases are affected with jaundice; the presence of spirillæ in the blood will clinch the diagnosis. As icterus is said to interfere with the Widal reaction the differential diagnosis from typhoid may be difficult. In 1886 Weil of Heidelberg described a small number of cases, and since then "epidemic jaundice" has been described under the name of Weil's disease not only in German but also in English textbooks.

Münchener medizinische Wochenschrift.

September 28, 1915.

Relations of Life to Light.—Schanz states that the albumins are photosensitive, and that light changes readily solubly forms to those which dissolve with difficulty. Catalyzers exist in nature which promote this transformation such as chlorophyll. This may readily be demonstrable. A solution of serum albumin when placed in the light begins to change the latter into globulin. If chlorophyll is added this change is accelerated. A very powerful catalyzer of this type is hematoporphyrin, an iron-free derivative of hemoglobin. When some of this coloring matter is injected into the circulation of a white mouse, even the light of a Vienna spring day is sufficient to kill the animal. The form of death has been termed "light-stroke." When acute the animals first develop an intense itching, photophobia, and redness of the ears and within two or three hours die in tetanic spasms. By making the light exposure less intense a more chronic course is pursued. The animals swell out of shape, the ears assume a characteristic contour, the eyelids adhere and perhaps eventually the ears become gangrenous and the hair falls out. A study of this subject of light catalysis tends to throw doubt on the supposed properties of animal coloration and pigmentation. Colors have been held responsible for sex attraction, defense, etc., when there was no proof that the animals in question possess any color sense. This is true, especially of marine life. The claim has recently been made that only animals who dwell in the atmosphere can have color perception. To take up the question of the function of human pigment, the author claims that it is a negative light catalyzer which protects the albumin in the integument from injury. Animal pigment is the reverse of chlorophyll, a positive light catalyzer. A mystery of the ages is the office of the color of flowers. In the lack of a utilitarian motive religious philosophers have claimed that flowers are of teleological significance, in that they assert an esthetic sense in the Deity which is a counterpart and source of our own instinctive love of the beautiful. The author disproves the bee attraction theory because bees are color blind. For him the color in flowers is a photocatalyzer, evidently positive like the chlorophyll of the leaves, and meant to bring about certain transformations of albumin in the fruit germ which lies beneath the flower.

Observations in Typhoid Immunes.—Ziersch has made a close study of individuals who have been vaccinated against typhoid fever. His conclusions which are brief are as follows: After the vaccination leucopenia soon sets in, just as in typhoid itself. This leucopenia can be demonstrated in the blood for months afterwards with complete regularity. There is no "negative and positive phase" to be seen after the inoculation. The percentage blood picture shows analogies with that of the genuine disease save for absence of eosinophilia which does not appear. In the immunized the Gruber-Widal reaction shows no regularity in any respect. After the author's paper was completed he was made aware of another on the same subject by Stieve (*D. Arch. f. klin. Med. Bd.*, 117), whose finds are in harmony with his own.

Insurance Medicine.

The Organs of Special Sense in Life Insurance.—In a paper read before the fifth midyear meeting of the Medical Section of the American Life Convention, Dr. William A. Peterson, Medical Director, Scandia Life Insurance Company, brought out the fact that in examination for life insurance special stress is laid on the careful study of the heart, lungs, and kidneys, while the organs of the special senses are often given a careless review or overlooked altogether.

An artificial eye is sometimes not recognized or noted, thus showing how little attention is paid to the eye. Of the organs of special sense the eye affords more information for diagnostic purposes concerning the condition of other organs than any single part of the body which may be examined. The conjunctiva, crystalline lens, and cornea often give evidence indicating the general systemic condition. Inflammation or redness of the eye may be due to gonorrhea, catarrh, or some other acute or chronic infection. Subconjunctival ecchymosis may indicate epileptic seizure, asthenia, or severe dyspnea. The sclera and cornea are indicative of existing conditions; for example, jaundice by a yellowish hue, an arcus senilis in segments, one above and another below at the sclerocorneal junction, indicating some fatty degeneration of the tissues of the body, arteriosclerosis, atheroma, or chronic nephritis. An old healed ulcer of the cornea may mean some past syphilitic condition. The pupillary reaction to light and accommodation may be observed, and should never be omitted in any physical examination regardless of health or condition of the applicant. The well-known Argyll-Robertson pupil is known to occur in a large percentage of cases of locomotor ataxia, intracranial syphilis, and paresis, and, indeed, it is often an early symptom of these diseases.

The visual field may be readily tested by having the applicant close one eye and look straight ahead and then take his range of vision while observing your moving finger without changing position of the eye from fixation point. Any change in the field may be an important factor in judging the applicant for life insurance. Such condition may be due to toxic substances as in tobacco or alcoholic poisoning, or it may be due to diabetes, multiple sclerosis, or acute degenerative nervous diseases. Sudden blindness of one eye may be due to embolism or thrombosis of the central retinal artery or cerebral hemorrhage involving the central visual path, and may be so marked in degree as to bar the applicant without any further examination or even so much as a determination of its cause.

While the study of the interior of the eye is very important, it cannot be made in the ordinary life insurance examination, unless carried out in a properly equipped office. For this a dark room equipment and an understanding of the use of the ophthalmoscope are necessary. With the light thrown into the eye any changes in the interior may be readily noted. "Choked disk," if present, will give a clue to either a brain tumor, especially in the cerebrum, meningeal inflammation, tuberculous in origin, or possibly to some acute febrile disorder, syphilis, toxemia from lead or alcohol, rheumatism, or anemia. A reddened optic nerve with edges irregular and obscure, and the veins enlarged and tortuous, suggests optic neuritis, indicating some intraorbital or intracranial disease. Again optic atrophy may be present, usually indicative of locomotor ataxia in about thirty per cent. of cases; also in paretic dementia and disseminated sclerosis this condition may be found.

A retinitis may be found, the most common and important form of which is albuminuric, due to Bright's disease or diabetes. Hemorrhage into the retina generally results from septicemia, ulcerative endocarditis, hemophilia, diabetes, gout, and malarial fever of a severe type.

A thorough study of sight and the eye in examination for life insurance often reveals hidden and obscure diseases having no other symptoms. Every examiner should be able to make a thorough examination of the eye muscles and their movements and to make an intelligent interpretation of his ophthalmoscopic findings.

From the life insurance point the sense of taste, situated principally in the tongue, would not be of great importance but for its close relation to the sense of smell. When smell is defective an examination of the nose should be made to ascertain whether the loss of olfaction is due to some nasal obstruction or to more or less serious defect in the nervous mechanism.

Sensations or feeling of the skin may be divided into four parts: tactile, pain, temperature, and pressure sense. Any one of these senses may be perverted or in abeyance without the others being affected in a similar manner. Each part of the skin has a sensitiveness of its own. The two chief manifestations of perverted sensibility in the skin are anesthesia and hyperesthesia. The organic causes of anesthesia of the skin are cerebral hemorrhage, cerebral tumor, hemorrhage or tumor of the pons, hemorrhage or tumor of the cord, myelitis, locomotor ataxia, pressure on the posterior nerve roots, and paralysis of nerve endings. Hyperesthesia of the skin occurs in hysteria and neurasthenia, in peripheral neuritis and locomotor ataxia, brain tumors, alcoholic excesses, and diabetes. Thus it will be seen that no definite diagnosis can well be made from skin sensation alone, but in conjunction with other symptoms it is of great value.

The ear is important from an insurance standpoint. Otitis media is one of the most common and important affections and usually dates back to an acute disease. Pain in the ear may be due to a tooth condition, alveolar abscess, or mastoid disease. It may be one of the stigmata of degeneration, especially when unusually prominent or misplaced with absence of helix, anthelix, or concha. Different types of sounds when continuous or intermittent are indicative of middle or internal ear conditions or meningeal inflammations. Musical sounds are indicative of some central lesion. Deafness is usually due to disease of tympanum, middle ear, or Eustachian tube, or it may be due to disease of the auditory nerve, its muscles, or its cortical center. Chronic deafness, if marked, impairs the risk and suppurating ears speak against acceptance.

This brief paper shows that the condition of the organs of special sense is of great importance in life insurance examinations and should not be overlooked.

Book Reviews.

PRACTICAL MATERIA MEDICA AND PRESCRIPTION WRITING. With Illustrations. By OSCAR W. BETHEA, M.D., Ph.G., F.C.S. Assistant Professor of Materia Medica and Instructor in Prescription Writing, Tulane University of Louisiana. Formerly Professor of Chemistry and Professor of Pharmacology, Mississippi Medical College, etc. Philadelphia: F. A. Davis Company, 1915.

IN this new work the author includes all the official drugs and a few of the non-official preparations. He wisely devotes most space to those drugs which are most frequently used, while those which are seldom prescribed are not discussed in detail. The book has a large number of prescriptions, most of which are taken from well known and standard works on Practice, etc. There is an important section on prescription writing which should prove of value; and the author's criticisms on the several prescriptions are, as a rule, well founded and worth reading. There is one important omission; no reference is made to the Harrison law concerning opium and other narcotics. Two indexes render the contents of the volume readily available. For the busy practitioner this is one of the most serviceable of the many books on Materia Medica at his disposal.

A GUIDE TO THE USE OF TUBERCULIN. By ARCHER W. R. COCHRANE, M.B. London, F.R.C.S. England, and CUTHBERT A. SPRAWSON, M.D., B.S. London, M R.C.P. Price, $2.25. New York: William Wood & Co., 1915.

THIS little volume, consecrated to the discussion of tuberculin, although not bringing forth anything new, covers the ground most thoroughly. Chapter I treats in a general way of the rôle tuberculin plays as a therapeutic agent by stimulating healing in the diseased area and by preventing the spread of the disease. In Chapter II, no less than fourteen varieties of tuberculin are enumerated, which in itself must be somewhat bewildering to the inexperienced practitioner when it is admitted that these culture products differ considerably in their reaction. Of greatest value are perhaps the chapters on technique and dosage for the results depend so much on this. The authors' statement in Chapter X, that of those who come to them for treatment, the majority are suitable—roughly about 75 per cent., is evidence of their enthusiasm. This is a much higher percentage of cases treated by tuberculin than in any of the American institutions or by American practitioners. After the enumeration of the well-known contraindications the reviewer was surprised to read the following: "On the other hand, we hold pregnancy *per se* to be a most strong and compelling reason for the administration of tuberculin and the highest doses should be aimed at toward the end of the period." This opinion is not shared at this time by many phthisiotherapeutists, general clinicians, and obstetricians. It is fortunate that the authors can claim good results from this truly heroic treatment, and when one recalls the utter hopelessness of so many cases of pregnant tuberculous women, one cannot help feeling grateful that the authors have shown a way whereby at least some of these unfortunate women can be saved. The little volume has no less than eighty-four charts showing fever-curvatures as a result of tuberculin treatment which for the student of this difficult therapy are of greatest value. The book certainly deserves a careful study by those who desire to familiarize themselves with tuberculin treatment.

HABITS THAT HANDICAP—The Menace of Opium, Alcohol and Tobacco and the Remedy. By CHARLES B. TOWNS. Price, $1.20 net. New York: The Century Company, 1915.

THE drug habit is widespread and menacing and is said to be unduly prevalent in this country. It is impossible to arrive at the true situation in this respect for reliable statistics dealing with the question are not available. There probably is a certain amount of exaggeration on the point, but that the drug habit exists to a considerable extent in the United States is doubtless beyond cavil. The methods of treating the habit have been many, most of which have failed. Mr. Towns appears to have been successful in this direction and a perusal of his work conveys the impression that his modes of treatment are founded on scientific commonsense principles. The work is interesting and deserves to be read by members of the medical profession.

PRAKTIKUM DER CHIRURGIE. Ein Leitfaden für Ärzte und Studierende. Von Dr. O. NORDMANN, Oberarzt der chirurgischen Abteilung des Auguste Viktoria-Krankenhauses, Berlin-Schöneberg. I. Teil, Allgemeine Chirurgie, seiten 216 mit 90 teils farbigen Abbildungen. II. Teil, Spezielle Chirurgie, seiten 416 mit 161 teils farbigen Abbildungen. Price, I. Teil, 5 Mark; II. Teil, 10 Mark. Berlin and Wien: Urban & Schwarzenberg, 1915. The Rebman Company, New York Agents.

THIS is a very practical work for both the student and practitioner. Nordmann has not followed the rather customary plan of dealing with each surgical disease in schematic fashion—first describing the clinical course of the disease and its pathology, then diagnosis, therapy, special operative measures, etc.—but has brought out rather those points which seemed to him the most important and has drawn upon his own experience in the main rather than making extensive references to the literature. The result is, therefore, an eminently practical surgery where the salient features are emphasized and but little time is wasted over the non-essentials. We find, for example, considerable space given to diagnosis in those cases where there might be difficulty in differentiating from some other affection; to treatment, when there may be a choice of several methods or when the operative technique varies with the progress of the disease.

The first volume is divided into twenty chapters and is concerned with general surgery. Beginning with chapters on the armamentarium, local and general anesthesia, hand disinfection and the preparation of the operative field, the author passes to the consideration of wounds, injuries, and infections of all sorts affecting the soft parts and the various complications that may arise, together with their treatment, acute osteomyelitis, diabetes in surgery, surgical tuberculosis, and various other subjects appropriately grouped under the heading "general" surgery. The final chapter deals with the recognition of the various types of tumors and their treatment in general.

The second volume, comprising thirteen chapters, deals with special or regional surgery, the last seventy-five pages being devoted to fractures and dislocations. This volume, already of great practical value, has been enriched here and there by additional material based upon personal experience during the first five or six months of the present war.

Considering the work as a whole, we find that although, in many instances, German practice differs from ours, the work seems to be based upon sound teaching and experience, and is rather unique in its avoidance of wholesale borrowing from the literature. We believe it would form a worthy addition to any surgeon's library; while it should be even more valuable to the younger man whose knowledge of surgery and surgical problems is mostly theoretical, rather than a product of experience.

DISEASES OF THE NERVOUS SYSTEM, a Textbook of Neurology and Psychiatry. By SMITH ELY JELLIFFE, M.D., Ph.D., Adjunct Professor of Diseases of the Mind and Nervous System, New York Post-Graduate Medical School, and WILLIAM A. WHITE, M.D., Professor of Nervous and Mental Diseases, Georgetown University and George Washington University, lecturer on Psychiatry, U. S. Army and U. S. Navy Medical Schools. Price, $6.00 net. Philadelphia and New York: Lea & Febiger, 1915.

IN the construction of this book, the authors "have kept in mind the concept of the individual as a biological unit tending by development and conduct toward certain broadly defined goals and have considered the nervous system as only a part of that larger whole." To this end the work has been divided into three parts dealing respectively with the vegetative, the sensorimotor, and the psychic levels, the reactions in all of which come to pass through the medium of the nervous system. In adherence to this plan there is included a chapter on the endocrinopathies some of which perhaps do not properly belong in a book on diseases of the nervous system. This is a distinct gain, however, and the work makes one continuous story from start to finish. The whole subject of syphilis is treated in a chapter by itself. The plan is not without difficulties but they have, for the most part, been met satisfactorily. The result is an exceedingly attractive volume which, though brief, is nevertheless complete in all essentials, is thoroughly up-to-date, and is, moreover, very practical.

Society Reports.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

Forty-first Annual Meeting, Held at Lexington, Ky., October 19-21, 1915.

(*Concluded from page 852.*)

THE PRESIDENT, DR. HUGH CABOT OF BOSTON, IN THE CHAIR.

Caudal Anesthesia for Prostatectomy and Other Genitourinary Surgery.—Dr. BRANSFORD LEWIS of St. Louis reported seventy-seven cases in which this method of anesthesia was used with gratifying results. The method was far preferable to the other methods which entailed difficulties and disappointments.

Dr. CHARLES E. BARNETT of Fort Wayne, Ind., said he thought the mortality of prostatectomy was due more to general anesthesia than any other one thing on account of the deficiency of the kidneys in these cases, and the sooner we could get away from general anesthesia, the less the mortality would be following prostatectomy, no matter what route we adopted in removing the prostate.

Dr. JOHN W. DEAL of Springfield, Ill., stated that in speaking of the high mortality, he would like to ask whether reference was made to gas followed by ether or gas with the occasional administration of ether, as given by Crile and Frank.

Dr. RICHARD A. BARR of Nashville said some three years ago, Dr. Brown of Nashville noticed an account in a German medical journal of this method of anesthesia, and he immediately adopted its use and advocated it, and it had been quite generally used in his city by a number of different surgeons for rectal work. He had done a little rectal work and a few perineorrhaphies by the method and had found it entirely satisfactory in the few cases in which he had used it.

Dr. FILIPP KREISSL of Chicago said in regard to local anesthesia and nerve blocking, he wished to recommend that the members of this association, who were interested in this subject, buy the book of Dr. Braun, a German physician, which was published four or five years ago from which most physicians had obtained their information with regard to this method of anesthesia. The methods of local anesthesia for operations on the pelvis, bladder, and prostate were intraspinal, epidural or sacral, and parasacral. The dangers of injecting the epidural canal with novocaine or cocaine, and the dangers of nerve blocking with novocaine, were grossly exaggerated. If one would keep well within established and safe limits of this drug, not using more than a definite quantity of a certain concentration, there was absolutely no danger to be expected from the use of novocaine.

Dr. STANLEY G. ZINKE of Richmond, Ky., said as to caudal anesthesia, the sacral canal was a cavity or sac, and we required from 30 to 90 c.c. of the agent we used before we got the anesthetic effect. Why? Because the capacity of these little sacs differed. The anesthesia was due entirely to pressure and not at all to the novocaine present, one-half of one per cent. It made no difference what quantity was injected, it was the pressure that did the work and not the cocaine or the novocaine.

Dr. LEWIS, in closing, said in answer to Dr. Deal's question concerning gas and ether, the statistics he gave were not analytical. He did not think it was necessary to go into the statistics of mortality of general and local anesthesia.

When Is a Prostatic Fit for Operative Procedure?—Dr. CHARLES E. BARNETT of Fort Wayne, Ind., said after the maximum benefit from thorough preoperative treatment found the patient below par in fitness for operative procedure, the question of the anesthetic given should be the most considered. The less the fitness, the less the general anesthetic. Local anesthesia, when possible, and to the greatest degree, when not possible, was the one to be chosen. It appealed to the speaker that if the general practitioner who was the most deeply interested party toward his patient's welfare, would investigate the results of these simple tests, which were so positive for a favorable or fatal ending, then all parties concerned in the operation would be benefited.

Dr. BEN MORGAN of Chicago said the effect of local anesthesia on the kidneys was less deleterious. Local anesthesia in surgical operations upon the prostate should come first in conjunction with a general but mild anesthetic, and what general anesthetic should be preferred? Chloroform? No. Ether? Doubtful. Nitrous oxide? Yes.

Dr. W. D. HAINES of Cincinnati said we were living under a very high pressure mentally and physically, but the surgeon's duty, especially in this type of cases, was to save life, not to save time. The preoperative management of cases of prostatic disease was infinitely more important than what the surgeon was going to do at the operating table. It was not a hard job to take out the prostate. Almost any general surgeon could do it, but the experienced man who had handled many cases would have a high mortality if he did not heed well the warning this paper carried to us.

Dr. J. B. TAULBEE of Lexington, Ky., stated that he was favorably impressed with nitrous oxide as an anesthetic. His experience with ether in doing prostatectomy had convinced him that in these cases in old men, where the system was run down it was better to forego the operation than to risk a general anesthetic as ordinarily given, whether it was ether or chloroform. The safest method was to do a two-stage operation under local anesthesia.

Dr. BARNETT, in closing, said he was glad to hear Dr. Morgan bring out the point that no general anesthetic was good for a prostatic except nitrous oxide-gas. Dr. Haines brought out the most important point of the whole subject, namely, to take plenty of time in preparing the patient for operation.

Autogenous Vaccines in the Treatment of Bronchitis and Asthma.—Dr. ROBERT H. BABCOCK of Chicago drew the following conclusions: 1. Autogenous vaccines prepared from the sputa had yielded such results in three cases of acute bronchitis, one of chronic bronchitis, and four of chronic bronchitis associated with attacks of spasmodic asthma as to warrant the writer in recommending this mode of therapy as against the old time use of expectorants by mouth. 2. In bronchitis independent of asthma, the organisms have been mainly of *Bacillus mucosus*, the *Diplococcus muscosus*, the *Micrococcus catarrhalis* and an influenza-like bacillus, while in cases of bronchial asthma an anaerobic fusiform bacillus had been added. 3. The asthma had yielded to this vaccine treatment only when this anaerobic fusiform bacillus had been largely present in the vaccine. 4. Great care should be exercised in the use of vaccines that the dosage be not so large or so often given as to cause reaction, since this reaction, whether general or local, indicated a negative phase and aggravated the patient's condition. 5. The main drawback to the use of autogenous vaccines was the necessity of perhaps several cultures and the preparation of new vaccines should the cultures show that some of the originally found germs had disappeared or become subordinate in number to others. 6. New vaccines should be prepared whenever the condition of the patient seemed to have come to a standstill.

Dr. LEON SOLOMON of Louisville said expectorants, both the so-called stimulating and sedative medicines must take a back seat with the advent of vaccine therapy. His experience with vaccines included not only autogenous vaccines, but it included to even a larger extent the socalled stock vaccines. Their employment in properly selected cases was fraught with as many and as positive results as those obtained from the use of autogenous vaccines. The fusiform baccilli to which the essayist referred in the cases reported had been entirely absent in any case under his observation, as well as that of a competent bacteriologist in a thoroughly equipped laboratory. Perhaps the fusiform baccillus was common to Chicago and to the colder districts, from which in all probability Dr. Babcock's cases had come, although he did not refer to a gentleman from the South who came to him suffering from asthma.

Dr. F. M. POTTENGER of Monrovia, Cal., said the most gratifying feature in connection with this paper was that it came from the worthy pen of a teacher to whom we had always turned with great confidence. This fact alone rendered the knowledge presented of great value.

Dr. BABCOCK, in closing, said that with reference to Dr. Solomon's remarks concerning fusiform bacilli, one reason they were not more frequently obtained in the culture was that this bacillus grew very slowly. His laboratory reports showed that frequently after

all other bacilli had put in an appearance the anaerobic bacilli would fail to become manifest until after the third and sometimes the fourth day. He did not think the fusiform bacillus was peculiar to Chicago. In cases of bronchial asthma, when an alveolar abscess was present in any given case, the cultures in that case would show two organisms, the *Streptococcus mucosus* and the anaerobic fusiform bacillus. He was not prepared to say that this was the organism which was responsible for the asthma; nevertheless, it had been a striking experience in every one of his cases of alveolar abscess, with one exception, a fusiform bacillus had been cultivated from an abscess when the procedure had been allowed to extend over a sufficient length of time.

President's Address: Medicine, a Profession or a Trade.—Dr. HUGH CABOT of Boston, Mass., said medicine had always been regarded as one of the learned professions and indeed this was a distinction of which we were particularly proud. But the tendency of a profession to degenerate into a trade was ever present and was a danger from which more than one learned profession had been unable to escape. If medicine was to avoid the downfall which had overtaken the law, it would be because we were more conscious of the dangers or more alert to check at the beginning undesirable developments. To him a profession was an occupation requiring an education in science and which was pursued for its own sake. It must have the advancement of science or the benefit of mankind as its chief end, pecuniary advantage being always a secondary and subordinate consideration. A trade, on the other hand, was an occupation which was pursued chiefly, though not wholly, for the purpose of acquiring wealth; this wealth with its ability to advance the interests of the individual being the chief end. In estimating the importance of any development in medicine we could best do so by comparing present conditions with those of the past. The changes which had taken place and the effect which they had produced upon the prevailing type of practitioner stood out clearly if we looked back and pictured to ourselves the type which was looked upon as the highest twenty years ago and compared it with the best that we were producing to-day. The big men of twenty years ago had, without exception, gone through this school of general practice and had risen to the ranks of eminence by sheer force of character, being largely without assistance of the laboratory, and having fewer instruments of precision than we possessed. They had trained their faculties of observation in the hard school of experience and had come to rely far more than we did to-day upon their individual judgment, unsupported by clearly demonstrable facts. They were more astute judges of men, with a larger comprehension of the strength and weakness of human nature and a wide sympathy. They were characterized by a certain boldness less seen to-day, and bred of the necessity of staking their reputations upon much less certain evidence. They seemed to have been broader-minded and rather more in touch with affairs other than those of medicine. Their devotion to the ideals of medicine he believed to have been more sound. Instead of being required to weigh probabilities we were to-day able to assort facts. Judgments of character had given place to assortments of data, and whereas the practitioner of a generation ago was profoundly influenced in his decisions, by his study of the individual, the consultant of to-day might almost arrive at his opinion without ever seeing the patient. The amount of technical knowledge required of the physician to-day was enormously greater than was required of his predecessor, and it could not successfully be denied that he was far more likely to arrive at a just appreciation of the facts. With this advance had gone the necessary division of medicine into specialties, a division which the rapid accumulation of knowledge had rendered inevitable, and this had sounded the death knell of the general practitioner. His place had been taken, or rather was occupied, by the medical group, an aggregation or conglomeration of specialists who, having pooled the results of their investigations, were able with greater accuracy to come to a diagnosis. These groups had developed either around the hospital as a center or around some individual, who finding that medicine was passing away from him, had surrounded himself with assistants and associates equipped with special knowledge. Almost every internist or surgeon of large practice was in fact the head of a group, only it was unorganized and unnecessarily extensive. Each had an aurist, an oculist, an orthopedist, a dentist, a Roentgenologist, a chemist, a pathologist, a serologist, who examined his patients and on whose selective opinions, his own diagnosis, prognosis, and treatment must rest.

Some Medical Problems.—Dr. F. T. MURPHY of St. Louis directed attention to the hospitals, and advocated the proper training of the medical student, and said the true functions of the hospital were to render aid to patients, to advance science, and to teach students. The record of scientific development was a proud one. Small clouds which at times appeared upon the horizon did not necessarily mean a storm. Conspicuous evidence of selfishness in the profession, be this evidenced by individuals or groups, did not mean that the ideals of the past were being lost, but such clouds might be potential tempests. Even their appearance behooved us to strive for conscience as eagerly as we strove for scientific knowledge.

Typhus Fever.—Dr. RICHARD P. STRONG of Boston said the great epidemic of the black death, which caused the unprecedented mortality of one-fourth of the population of the earth, appeared in Europe about 1348, after devastating Asia and Africa. From a focus in the Crimea it spread by Turkey, Greece, and Italy, northward and westward over the whole of Europe, also attacking it from a second focus by way of Austria. It broke out anew at intervals up to the seventeenth century. Sweeping everything before it, this terrible plague brought panic and confusion in its train, and was said to have broken down all restrictions of morality, decency, and humanity. The epidemic of this disease which recently raged in Serbia, as had been intimated, was the most severe one which had occurred in modern times. A few cases of typhus had occurred in Serbia in October, 1914, but the disease did not make its appearance in epidemic form until January, 1915, and then in the northwestern part of the country, among the Austrian prisoners who were greatly crowded and who necessarily were compelled to live under very insanitary conditions. The disease quickly spread from them to other individuals and as the infected patients and the districts in which they were situated were not quarantined, and the Austrian prisoners and infected individuals were sent or allowed to go to various parts of the country, Serbia was soon afflicted with a terrible and widespread epidemic. The country, weakened by war, was not prepared for an epidemic, and for a time one might say that the typhus raged almost at will. The majority of the small number of Serbian doctors sooner or later became afflicted with the disease. Those who remained well were occupied with treating the sick and also the wounded from the battlefields, and methods for prevention were impracticable or were not undertaken. Wounded soldiers or those afflicted with minor ailments or diseases with relapsing fever, wandered into the hospitals at will and entered the wards filled with cases of typhus, sometimes occupying the same bed, for it was not unusual for two or even three patients to be found lying in the same bed, and the available floor space was also filled with patients with no beds. The epidemic increased through January, rose more rapidly in February and March, and reached its height in April when the number of cases was in the neighborhood of nine thousand per day. These figures were only approximate, for when he reached Serbia in April, there were no available statistics of the number of cases or deaths in the various cities, and only the approximate number of cases present in the military hospitals known. The American Red Cros, in addition to the hospital units it had already sent for Serbian relief work, decided to organize and send a sanitary commission for the purpose of combating the disease. The Rockefeller Foundation, from the first, was interested in this commission and generously supported it in conjunction with our Red Cross. Great Britain, France, and Russia also recognized largely from a military standpoint the extreme gravity of the epidemic and the frightful ravages caused by it and quickly organized, equipped and sent expeditions for checking it. Largely through the combined efforts of all these workers, and with the cooperation of the Serbian physicians and officials, the epidemic rapidly declined and for the last three weeks before his departure from Serbia they could not find a single fresh case of typhus. The sanitary condition of the army and the people was then excellent. He trusted that the sanitary demonstrations in the prevention of typhus, which had been given the Serbian people, and the construction of the various

disinfecting plants throughout the country would prevent the recurrence of another epidemic such as they had just witnessed, and which destroyed in the neighborhood of 150,000 people. All of the Serbian hospitals had been thoroughly disinfected before he left that country, and were ready for the reception of the wounded.

A Consideration of Gastric and Duodenal Ulcer from the Standpoint of the Internist.—Dr. W. F. Boggess of Louisville said he would urge that the internist be more careful and painstaking in his examination of the various digestive disturbances that came to him, to fit himself to recognize these conditions in their earlier stages, and to urge upon him the fact that there was a medical side to the question, and that if the majority of these patients went to the surgeon it was a reflection both upon the internist's diagnostic as well as therapeutic acumen. When did these cases cease to be medical and become surgical? In answer he would say that no time limit could be stated. Each case was an individual one. Not in two weeks, nor in six weeks, nor even in six months, if the patient was holding his own, could one feel that medical means had been entirely exhausted or had proven futile. Certainly not surgical when the patient was symptomatically and comfortably well, nor when the patient showed no signs or symptoms of pyloric stenosis. Nor when nourishment and nutrition had not proved impossible. But when all medical means had been intelligently tried, and patient threatened with a condition of chronic invalidism, and threatened emaciation, then one should call a surgeon with the assurance that he could and would take the case out of chronic invalidism and restore it to a fair, if not perfect, condition of health and happiness.

The Etiological Relationship between Gastric Ulcer and Gastric Cancer.—Dr. Frank Smithies of Chicago said that review was made of certain phases suggested by the study of 921 operatively and pathologically demonstrated cases of gastric ulcer and of 500 similarly proved instances of benign, peptic ulcer. Particular attention had been paid to the search for actual facts demonstrating the existence of an etiological relationship between gastric cancer and gastric ulcer. It seems to have been shown that benign gastric ulcer could be produced in a multitude of ways, the method of production having but relative effect upon the ulcer resulting, pathologically. It seemed that in a given gastric ulcer it was impossible to prognose its course, duration or type of termination. There were no experimental, clinical, or pathological data that absolutely demonstrated the mechanism of the malignant transition of benign gastric ulcer. This problem would apparently remain unsolved until the exact nature of the mechanism of malignant processes in general was determined. Clinically, the histories of instances of gastric cancer strongly suggested that such neoplasm arose most frequently from chronic, calloused gastric ulcer, clinically benign. It would appear that clinically it was impossible to segregate that group of chronic gastric ulcers which would undergo change to cancers from that which would continue as self-limited, benign processes. On account of the uncertainty in this regard, free excision of all chronic gastric ulcers should be performed whenever such procedure was mechanically possible. That this was a most important feature of cancer prophylaxis was proved by the fact that when gastric cancer could be definitely diagnosed, clinically and macroscopically, at laparotomy, hope of radical cure was slight. The knowledge of the foregoing facts imposed a moral responsibility upon internists and surgeons with respect both to the individual patient and the human family.

Dr. Charles G. Lucas of Louisville said as to the time factor, none of us was competent to give a statement as to when an ulcer might become malignant nor how long it would continue. He had in mind a patient who had a tumor of six months standing before seeking consultation. A laparotomy was done and the tumor was found to be inoperable. Patients with ulcer of the stomach should be placed in bed as soon as they came under the care of the internist, and they should then be carefully treated from four to five weeks. They should report often and submit to frequent examination. If, after six or seven weeks of effort of this kind, no results were obtained, then a surgeon should be called. These cases should be treated by both internist and the surgeon working together, and finally they should come back to the internist.

Dr. Willard J. Stone of Toledo, Ohio, said he would like to ask Dr. Smithies what percentage of gastric ulcer and duodenal ulcer in his experience showed a positive Wassermann reaction.

Dr. Chauncey Dowden of Louisville said that so far, we knew practically nothing as to the etiology of gastric and duodenal ulcer; hence it followed that our methods of treatment were more or less imperfect at the present time. If conditions incidental to appendicitis caused ulcer, then obstipation and constipation became important etiological factors. If appendicitis would cause gastric ulcer, why would not chronic obstipation bring about a like condition? In his opinion it might even produce pyloric spasm. We also had a condition which would in time cause gastric ulcer. He would like to impress upon the internist the importance of treating the ulcer patient before the condition became an ulcer. The majority of patients who came to us showing a condition of hyperacidity were in all probability ulcer patients. This was the time when they needed proper attention and, in all probability, the right treatment administered at this time would prevent the developmnt of duodenal or gastric ulcer.

Dr. Smithies, in closing, said in answering Dr. Stone's question, in his proved ulcer cases, the ratio of positive Wassermanns was 1 to 300. One of the first points in the cure of disease was to remove all the foci of infection, not only in the mouth, throat, and nose, but we should look out for an infected appendix or an infected gall-bladder. If we let these organs pass by unnoticed we were simply locking the door after the horse had escaped.

Breast Feeding.—Dr. J. Ross Snyder of Birmingham, Alabama, said he would suggest that medical associations throughout the country start an agitation to have midwives supplied for distribution with concise, accurate, and practical printed instructions to lactating mothers. Such an agitation would result in three-fold good. A large number of mothers would be directly helped; it would on account of their curiosity and their desire for advancement educate many midwives to greater usefulness, and last, but not least, it would bring to a realization of their own deficiencies a considerable number of doctors taking part in the agitation.

The Heart and Bleod Vessels in Tuberculosis.—Dr. Francis M. Pottenger of Monrovia, Cal., stated that tuberculosis might affect the blood vessels either from within or without, and the lesion might be of all degrees of severity from that of very slight trauma to necrosis. Sometimes an infection was followed by an opening in the vessel wall and hemorrhage; at other times an exudation resulted which went on to repair; and again an endarteritis with obliteration of the lumen occurred. It seemed probable that many of the hemorrhages which we had in tuberculosis, particularly those where only small amounts of blood were expectorated, might be due to the injury of the vessels resulting from action of toxins. Bacilli invaded the endothelial cells gave off toxins which attracted leucocytes and thus formed tubercles in the walls of the vessels. Miliary tuberculosis was a tuberculosis of the blood vessels in which many bacilli had escaped into the blood stream and found lodgment in vessels of the same tissue. It was from just such lesions as those here described that the bacilli which produced acute miliary tuberculosis came. The capillaries were most commonly affected, while small veins and arteries were less commonly so. Tubercles might be found in the walls of any vessels of the body, including the aorta. This being true, it was surprising that miliary tuberculosis was not a more common infection than it was. That it was not, was probably due to the fact that the vessel was often occluded by the inflammatory process so that bacilli did not get into the blood stream, and secondarily that protective cell sensitization and antibodies reduced the virulence of or destroyed the bacilli which gained entrance to the blood stream before they found lodgment in the tissues, in those patients in whom infection had been present long enough to build up a specific immunity. For the heart muscle itself he had great confidence in the use of digitalis and citrate of caffeine. If the early symptoms mentioned above were recognized and the patient was put in the recumbent position and given digitalis in proper doses, the crisis could often be averted. Digitalis strengthened the heart's contractions and in this way probably afforded better nutrition to the organ; but, whether this was the explanation or not, he had great confidence in its use. If digitalis was to be

used, it should be used in doses sufficiently large to produce an effect. He used a standardized tincture in doses of 10 to 15 minims three times a day until the pulse improved or the physiological effect was reached. This was generally shown by a nausea or irregularity of the heart. He then discontinued the remedy for three days and then repeated it again, giving the remedy three or four days and then withholding it for a like period. If the case was urgent, he often gave digalen intravenously in 15-minim doses three times a day until the effect was produced. Citrate of caffeine could be given in 3-grain doses every four hours and continued as long as necessary. The patient should be fed nourishing food in concentrated form. The bowels should be kept free to relieve any toxins that could be removed through the alimentary canal. The important thing in the handling of these cases was to recognize them early, and to treat them properly. These degenerative changes in the heart muscle might threaten the patient's life and yet the heart might recover itself as the patient improved.

Cardiac Anatomy and Pathology from the Roentgen Standpoint.—Dr. P. M. HICKEY of Detroit said if the Roentgen tube be placed at only a comparatively slight distance, say eighteen inches from the plate, it would follow that the distortion of the shadow cast by the heart would be considerable. Accordingly, some years ago two methods were proposed: First, orthodiagraphy by which parallel rays were employed, and, second, where the same result was secured by placing the tube at such a distance from the plate that the rays coming from the tube were practically parallel. Such a distance, it was assumed for some time, should be about 80 inches. This procedure, where the distance of the tube from the plate was extreme, was called by Alban Kohler teleoroentgenography. The disadvantages of this latter procedure were, inasmuch as the time of exposure increased with the square of the distance, that the strain upon the tube was considerable. During the past year, the writer had made comparisons of plates made with a tube distance of 36 inches in comparison with the plates of the same patient with a tube distance of 60 inches and found that one could practically see no difference in the size of the heart with the plate made at 36 inches. This statement applied to plates made with the tube behind the patient and the plate placed against the anterior chest wall. Where the tube was placed in front of the patient and the plate was against the back of the patient, slight distortion would be found. However, in general, he would state that plates made with the tube distance of 36 to 40 inches and the plate placed against the anterior wall of the chest were very satisfying for studying the comparative size, contour and position of the heart.

Spasmophilia.—Dr. J. P. SEDGWICK of Minneapolis stated that from 40 tabulated cases from private and consultation practice, in addition to the children in the University Clinics to whom calcium was given, he felt warranted in drawing the following conclusions: (1) In the acute and subacute cases under one year, with high electrical reactions, the results obtained with large doses of calcium chlorid were brilliant. (2) In the more chronic and very severe cases, as well as with the older children, calcium was of definite value. He had also used the magnesium sulphate injection treatment as advised by Behrend. This consisted in the subcutaneous injection of 20 c.c. of a ⅛ per cent. solution of magnesium sulphate. The results with this method had also been satisfactory, but the injections were painful and frightened the older children. The electrical reactions gave us a means of diagnosing this condition, whether active or latent, thus distinguishing it in its various manifestations, such as the convulsions from epilepsy and the laryngospasm from inflammatory croup. Laryngospasm, general convulsions, tetany in children, spasmodic apnea, the Chvostek and Trousseau phenomena were manifestations of the same diathesis or condition. The condition was closely related to some metabolic disturbance, probably of the calcium salts, and was markedly benefited by a carbohydrate, cow's milk free, or a breast milk diet. Phosphorus and cod-liver oil were of value by the effect on the calcium retention. Calcium and magnesium gave quicker and more definite results. The prognosis was usually good in the cases in which treatment was begun early.

Some Features in the Management of Surgical Disorders of Digestion.—Dr. W. D. HAINES of Cincinnati said the last phase in considering the management of the surgical disorders of digestion arising from the stomach itself, comprised the prevention of cancer. One-third of all cancers occurring in man were located in the stomach and the vast majority of these neoplasms originated in the margin of an unhealed gastric ulcer. He who recognized this clinical dictum and dealt radically with gastric ulcer ere malignancy had begun would prevent untold misery and suffering and add much to the sum of human life and happiness.

The Diagnosis of Renal Infections: An Analytical Study of 182 Cases.—Dr. JOHN R. CAULK of St. Louis said that out of 182 cases only 17.7 per cent. appeared with a diagnosis of kidney disease, and this would be much lower if it were not for the high percentage of positives in perinephritic abscess and calculus. It was quite striking that not a single case of pyonephrosis came in with a diagnosis of renal infection, and it was confused with malaria in a high percentage of cases. The average duration of symptoms in this series had been three years and six months, so long in many cases as to deprive the individual of satisfactory chances of recovery. Renal pain was present in 40.9 per cent., was most common in pyonephrosis and nephrolithiasis, about 70 per cent., and least common in tuberculosis, 17.6 per cent. Fever was present in 15.7 per cent. As to faulty diagnosis, appendicitis appeared in 6.6 per cent. of all the cases; most commonly confused with nephrolithiasis, 26.5 per cent.; 6½ per cent. in pyelitis. It was not confused with pyelonephritis, pyonephrosis, or tuberculosis. Bladder trouble was diagnosed in 60 per cent. of all cases, most common in tuberculosis, 93 per cent., and least in nephrolithiasis, 30 per cent. Pus was present in 93 per cent., casts in 7 per cent., most of these in pyelonephritis, 35 per cent. The general average was extremely low. Red blood cells in 25.1 per cent. Only 9.8 per cent. of these had gross bleeding. As to organisms present, the pure colon bacillus was found in 57 per cent. of the cases; 23.5 per cent. staphylococcus; 17½ per cent. mixed. Tuberculosis was present in 9.4 per cent. of all the cases. The functional test was diminished in 68.7 per cent. of the cases. It showed its most marked diminution in pyonephrosis, and its slightest in pyelitis. The *x*-ray was positive in 30.4 per cent. of all cases. Cystoscopic examination showed changes in the bladder wall in 58.9 per cent.

Mechanics of Renal Infection.—Dr. EDWARD L. KEYES of New York City said renal colic was an acute stoppage of the ureter, the cause of which was usually a small stone or a slight kink. Upon being called to such a case, we should immediately administer morphine to the point of relieving pain, not only for the purpose of consoling the sufferer, but also for the purpose of curing the condition, for if we could relieve the pain, and thereby relax the spasm, we actually relieved the retention, and permitted the unfolding of the kink for the passage of urine about the stone, or even the passage of the stone itself. In the second place, we had here a clue to the mystery that surrounded irrigation of the renal pelvis. Much of the benefit attributed to this treatment was undoubtedly due to the passage of the ureteral catheter, for it was to be noted that many cures attributed to this treatment followed the first or the second washing. Such cures were due to mechanical relief of slight obstructions. He had several times relieved acute renal infection by ureteral catheterization, and Dr. Howard Lilienthal some years ago recorded several striking illustrations of the therapeutic effect of ureteral catheterization in acute renal infection.

Orthopedic Treatment during the Period of Spontaneous Improvement after Infantile Paralysis.—Dr. H WINNETT ORR of Lincoln, Neb., stated that infantile paralysis was due to partial or complete destruction of the motor cells and peripheral nerves. This paralysis, so far as the nerve supply of any muscle or set of muscles was concerned, was usually temporary. This was for two reasons, first because the motor cells for any muscle or muscle group lay at different levels of the cord and were rarely all involved, and second, because many of those actually involved recovered. Permanent paralysis of any set of muscles was usually due to the fact that such muscles had been permitted to be overstretched by the contraction of unparalyzed opponents or by weight bearing without protection to such an extent that they would not respond to stimuli when the nerve elements regenerated. Mechanical protection of the muscles in the affected area against overstretching was the factor of first importance in treatment following the acute attack. He formulated the

following conclusions: (1) It was a serious fault to use electricity, exercises, or massage, or in fact almost any other treatment than careful splinting during the inflammatory or painful stage of infantile paralysis. (2) No treatment following the acute attack was complete or adequate unless it was accompanied by splints or apparatus to fully protect and relax the muscles involved. (3) It was a serious mistake to put any patient on his feet during the first year after the acute attack unless he was fully protected by splints or apparatus against deformity on account of paralyzed muscles or muscle groups. (4) The problem of getting the maximum of recovery during the first year after infantile paralysis was about 50 per cent. spontaneous improvement and somewhere between 25 and 50 per cent. more splinting and apparatus. (5) Finally, orthopedic writers had not succeeded in conveying to the profession at large, satisfactory information as to the proper relationship of the different therapeutic agencies appropriate after infantile paralysis.

Tendon Transplantation in Infantile Paralysis.—Dr. ALBERT H. FREIBERG of Cincinnati said operations for infantile paralysis had in the past been too complicated or had been so planned as to violate the laws of muscle mechanics. He found himself in accord with Stoffel in determining that: (1) The transplant must bear a fairly close morphological and functional relationship to the muscle whose function it was to supplant. (2) In order to possess effective contracility the transplant must be fastened to its new point of insertion under physiological tension only. (3) The transplanted muscle must not be used to hold the limb in a corrected position. In consequence of simplifying the operations much more might be expected in functional efficiency and uniformity of results. Emphasis was laid upon the advisability of proceeding to construct plans for operations only after the paralyzed muscles had had adequate mechanical support and local therapy. Most patients came for operation without this. Electricity was condemned because it had not been proved that it was of real therapeutic value and because its use did harm by being made a substitute for measures which were purposeful. If the local condition of the muscles was not thoroughly understood, unnecessary and unsuitable operations were likely to be done.

Prolapse of Bladder and Uterus.—Dr. THOMAS J. WATKINS of Chicago stated that the pathological changes in the part of the bladder wall which was attached to the vaginal wall had not received sufficient attention. These changes were due to stretching of this part of the bladder wall and produced vesical symptoms. The urethra was usually displaced downward and disturbed continence of urine. The pathological changes in the uterus resulted mostly from circulatory disturbances, such as congestion, edema, varices and hyperplasia. The following operations were advised, the choice depending upon the amount of prolapse, and the age of the patient as regards future pregnancies: (1) An advancement operation. (2) Fixation of the round ligaments to the anterior vaginal wall and fascia. (3) The transposition operation, transporting the relative position of the bladder and uterus. This was also called the interposition operation. Partial excision or amputation of the cervix was done with all of these operations as might be indicated and a perineorrhaphy was made. The advancement operation was valuable as it was well adapted for the cure of many cases and was easily and safely performed. The operation consisted chiefly in advancing the vaginal wall, including the submucous connective tissue, upon the cervix. The redundant tissue was excised; the peritoneal cavity was not opened; the bladder was freely separated from the anterior vaginal wall and the cervix; purse-string sutures were passed through the vaginal wall, the fascia, the cervix, and out through the connective tissue and mucous membrane. These sutures were so placed that they restored the urethra to its normal location and closed the ring of the bladder hernia. This operation gave excellent results in cases of a moderate amount of prolapse and did not interfere with subsequent pregnancies. It should displace all anterior elytrorrhapies for reasons that must be obvious to all surgeons. Vaginal attachment of the round ligaments into the vaginal wall was done in conjunction with the advancement operation in cases with a greater amount of prolapse, during the child-bearing period, and in cases of retroposition of the uterus. The chief points in the technique were, in addition to the advancement operation, opening the peritoneal cavity; the purse-string sutures included generous loops of the round ligaments, and might include some of the anterior tissue of the broad ligaments. The transposition operation was the one of election after the menopause. The fundus of the uterus was attached to the connective tissue and vagina sufficiently low to make recurrence of the bladder hernia impossible. He had had no recurrence of cystocele after this operation which he had been doing for seventeen years. The uterus was never in obstruction in the vagina when so sutured. Modifications of the operation were given for cases of very large uterus and for cases of complete prolapse with a very small uterus. The cavities of the uterus and vagina might be completely closed in very extensive cases of prolapse in old women where there was no objection to occlusion of the vaginal canal.

THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Stated Meeting, Wednesday, October 6, 1915.

THE PRESIDENT, DR. JAMES C. WILSON, IN THE CHAIR.

Some Applications of Physical Chemistry to Problems in Medicine.—Dr. HENRY LEFFMANN said that under the term physical chemistry a vast and intricate science of molecular conditions and transformations had grown up beginning to throw light in many directions upon the problems presented by both living and non-living matter. He proposed to set forth in the paper in a plain manner a few of the data of physical chemistry bearing directly upon practical medicine. The science, he said, was abstruse, and the facts could only be treated in an elementary way. For the purposes of the paper he selected the two phenomena—"ionization" and the "colloidal state." The phenomena of ionization, it was explained, were concerned esepecially with the condition ordinarily called solution, the latter term being limited to fluids produced by association of substances, one of which was primarily a liquid. The term solution, the author said, had a much wider significance in physical chemistry, common glass being considered a solution, but this broad meaning was not applied in the paper. While until a few decades ago the liquids obtained in dissolving common sugar and common salt in water were designated "solutions," it was now known that the activity of the salt was materially increased, while the sugar suffered no such change. The sodium atoms of the salt had by the act of solution acquired a positive electrical charge, while the chlorine atoms had acquired a negative charge. The proportion of salt thus modified was dependent largely upon the mass of water present. The modification of a substance by which it acquired these electrical charges were termed "ionization"; the respectively positively and negatively charged elements were termed "ions." The importance of the change lay in the fact that the chemical activity of the substance and the pressure of the solution were much enhanced by it. It was found that the most potent ionizing liquid was water. Generally the degree of ionization was increased by dilution. Interesting explanations of well-known phenomena were now possible under these principles. Boric acid, while of the same type as nitric acid, was far less active, the difference being due to the fact that boric acid was but feebly ionized, while nitric acid was largely ionized. This applied also in the dilution of concentrated acetic and sulphuric acids. The application of the data of ionization to the interpretation of the action of medicines was complicated by the fact that living protoplasm and membranes had specific selective powers, and thus tests *in vitro* might mislead; for example: under given conditions mercuric nitrate ionized to a much greater extent than mercuric chloride, yet the latter was ordinarily more toxic. According to Höber this was due to the fact that the chloride was more soluble in the lipoid substances contained in the membranes, and thus was enabled to get into contact with the protoplasm of the cells. Important also was the influence of salts upon one another. Dr. Leffmann stated that it was far from being generally true that when a mixture of two or more substances showed no appreciable change of conditions such mixture would have the properties of all the ingredients. An instance was that a mixture of mercuric chloride and hydrocyanic acid was not equivalent to mercuric cyanide because the substances reacted in a different manner to the dissolving liquid. Inasmuch, however, as other solvents than water acted but feebly in ionizing it was not unlikely that an alcoholic solution of mercuric chloride

and hydrocyanic acid would have a closer equivalency to mercuric cyanide than a solution in water. The cyanides afforded several striking instances of the anomalous effects of mixtures, and this data would seem to point to the importance of simplification in prescriptions. The files of any drug store, it was said, would show most extraordinary mixtures violating the simple principles of pharmaceutical chemistry, and in this connection he questioned whether the method of the homeopathic school of medicine of administering several potent substances at intervals might not be commended to the regular school. The phenomena of reaction of salts to the solvent and to each other when associated in solution were said to have important applications to the so-called "mineral waters," and in this respect no class of waters showed more untrustworthiness than the so-called "lithia waters." Another point brought into prominence by the progress of physical chemistry was the influence of extremely fine division. From a consideration of this phase it followed that by dividing a material finely the facility of chemical action was greatly increased, and among other qualities conferred were constant self-agitation and easier passage through porous partitions. It was shown that medicines insoluble, or difficultly soluble in the fluids of the body should be administered in as fine powder as possible, and here again, should reason be given to the homeopathic school. Because manufacturing chemists did not always apply the highest principles of physical chemistry in their processes there were sometimes found in drug stores preparations of distinctly inferior quality. The initiative in the field of the physical chemistry of colloids was said to be due largely to Thomas Graham, an English chemist, who in 1861, published the results of experiments upon diffusion through membranes. He had found that when a mixture was made of two substances, one of which was crystallizable and the other not, the former would pass rapidly through the membrane while the other was held back. While Graham had divided substances into "crystalloids" and "colloids" it was now known that such classification of substances was not fundamental, that they were conditions only and that the same substance might assume both states. The crystalline condition was said to probably result when molecular attractions were allowed more opportunity of acting; the colloidal, when less opportunity was afforded. Hence, it was found that crystals were produced by the solidification of a substance from a liquid to a gaseous state; also, that the presence of a minute amount of a crystal of the substance in solution would materially promote the separation in crystalline form, acting as a nucleus for the operation of the molecular forces. Whatever might be the effect of uric acid when in the blood or deposited in the tissues, it formed a serious interference when separated in the crystalline form from the urine. Reference was made to experiments under the supervision of Dr. Martha Tracy at the Woman's Medical College of Pennsylvania which indicated that a full meat diet increased the acidity of the urine. If this were established, it would be an important point, for the principal danger from uric acid was in its separation in the crystalline form in some part of the genitourinary tract. Such separation was promoted by increased acidity, and if a minute crystal were deposited at any point it would act as a nucleus, bringing about further separation of uric acid and of other compounds held in unstable solution in the urine. The administration of alkalies for the prevention of this separation, it was pointed out, might lead to the precipitation of substances not soluble in alkaline urine. It was obvious, therefore, that a full meat diet might cause or aggravate uric acid troubles, although not increasing the output of the acid itself. Knowledge of the nature and properties of colloids, it was remarked, explained many physiological and pathological phenomena. Intimately connected with this field of chemistry was the subject of enzymes, which probably formed the connecting link of living with non-living matter, showing colloidal properties and possessing high powers of absorption. The problem of the cell, the author said, was largely a problem of physical chemistry, which latter might well be characterized by the description of politics which Mr. Pickwick gave to Count Smaltork, "A difficult study of no inconsiderable magnitude."

Dr. Solomon Solis-Cohen said that Dr. Leffmann's paper dealt with a subject of such magnitude that a certain degree of temerity was required on the part of him who would approach it, not being a professional chemist. In so far as the physicochemical reactions in the living body were the same as those of the laboratory the laboratory findings might be applied to the problems of biology, to physiology, to pathology, and to therapeutics. Regarding, however, the great and increasing number of outstanding biological problems of the day, the value of the unknown factor, the x or the x, y, z, was so great that one must hesitate. No stronger illustration in this connection he felt could be given than the researches of Fischer upon edema and nephritis, yet he felt that few clinicians or pathologists would accept without considerable reserve Fischer's far-reaching conclusions. In the treatment of albuminuria and of edema resulting from nephritis Fischer advocated the introduction into the blood of a concentrated (*i.e.* a hyperhemotonic) alkaline saline solution; suggesting one containing from 10 to 20 grams of crystallized sodium carbonate, and 10 to 30 grams of sodium chloride to the liter of water. This was from two to six times the concentration of the ordinary, so-called physiologic saline solutions. Fischer also rejects, it was said, osmosis as an adequate explanation of cytolytic and similar phenomena, and opposes as unscientific, the common practice of restricting the intake of sodium chloride in conditions of edema associated with nephritis. Of his methods many striking instances of success, also many failures, had been reported. No analysis yet made had given data whereby the conditions determining the success or failure could be exactly estimated. Dr. Cohen referred to the investigations of Wolfgang Pauli of the phenomenon of ionization and his deductions that: (1) The effect of salt upon a protein is made up in the main of the algebraic sum of the effects of the individual ions; (2) that anions and kations antagonize each other. He had found that sodium sulphocyanide tended to reduce blood pressure and to prevent deposition of calcium in the arterial walls, so that it could be used with good clinical results in cases of arteriosclerosis. He found also that sulphocyanides were even more active than iodides in favoring the formation of readily soluble protein compounds with the heavy metals, thus favoring elimination in cases of chronic poisoning. The whole subject, Dr. Cohen remarked, came under the head of ion-colloid reactions important to pathologist and therapeutist. Warning should be given that whereas sulphocyanide might be safely administered in doses up to 1 gram daily for sedative and analgesic, as well as for pressure lowering effect, yet any compound of the sulphocyanide ion with an ester would produce almost instant death, owing to the solubility of the cell-lipoids in esters. In further illustration was the theory of narcosis by lipoid solvent substances referred to by Dr. Leffmann. In the application of such studies as those of Dr. Fischer's it was important to bear in mind the modern definitions of acidity, alkalinity, and neutrality. In Pauli's experiments it seemed strange to read that nitrate and acetate were ions inhibitive of precipitation, when nitric acid and acetic acid were used to precipitate albumin out of urine. In acetic and nitric acids, however there were according to the modern view, hydrogen acetate and hydrogen nitrate. Hydrogen was the cation, and if arranged in Pauli's series, should be placed as the strongest of all precipitants when ionized. Thus too, it was found that acetic acid was a more delicate test for albumin than nitric acid, because the acetate ion seemed to have less inhibiting power than the nitrate ion.

Dr. Alfred Stengel regarded the subject of physical chemistry as difficult and abstruse and one which those not technically interested in chemistry and physics could hardly hope to master. The use of saline solutions were too often resorted to with the barest knowledge of the principles involved. The use of solutions of greater concentration than the solutions of the body, in whatever way administered, would not bring about desired results. A solution to be absorbed would better be below the concentration. The introduction of hypertonic solutions into the blood stream, as advised by some French clinicians, he regarded as a questionable procedure. An argument in favor of physicians being familiar with the new science of physical chemistry was seen in the work of bacteriologists in the employment of Fuller's earth in the combat against diphtheria and typhoid carriers. The reports of investigators in this line had opened up large fields for inspection of direct practical interest to physicians.

Dr. Thomas McCrae thought it behooved a clinician to tread warily in the discussion of the points presented by Dr. Leffmann. A danger to which many were exposed was that of picking up terms without having

learned their meaning and this was particularly apt to be done in the subject of physical chemistry in talking of "ions" and "ionization," of "colloids" and "crystalloids." Dr. Leffmann, however, had made the matter perfectly clear. He referred to the marked bearing of ionization upon the bodily activities; all were perhaps familiar with the fact that ionization and electrolysis were closely connected. Reference was made to the work of Rogers of giving hypertonic solutions in the treatment of Asiatic cholera in which the results had justified the treatment. With Dr. Stengel he emphasized the danger of introducing substances under the skin, one example being that of calcium lactate. Much in practical medicine was to be learned from physical chemistry. In speaking of colloids and crystalloids there should be clear conceptions of the matter dealt with and a consideration of the degree of cell activity due to difference in pressure. In clinical medicine this knowledge would in many instances lead to a much more rational therapeusis.

Dr. Joseph Sailer felt that the subject illustrated, first of all, the sympathetic quality of the medical profession in that it must take toll of all the sciences for the understanding of disease and the consequent welfare of the human race. With Dr. McCrae he deprecated the tendency to apply terms in therapeutics with which the worker was not fundamentally familiar. He cautioned against the application too readily of definite experimental findings to living tissue, since the physical chemistry of living tissue was not yet a very clear factor. The fundamental element in physics, in chemistry, possibly in the universe, was the atom, and until a clear idea of the structure of the atom were had, much progress in the solution of the problems under consideration could not be made. Nevertheless, the application of definite facts of physical chemistry was an exceedingly important matter, and these facts were to be tested by empiricism for the determination of their value.

Dr. Leffmann, in closing said the discussion had taken the direction he had hoped, the further development of instances of the application of physical chemistry. Care had been given to the interpretation of phenomena by physicochemical methods and criticisms had been made of the want of definiteness in certain directions. Each one knew how extensive were the amplifications of the sciences and how impossible to keep pace with more than one narrow specialty.

The Efficiency of a System of Clinical Records and Annual Report, Dependent upon a Standardized Nomenclature.—Dr. Joseph M. Spellissy presented this paper which was illustrated with lantern slides.

Pathological Society of Philadelphia.

At a stated meeting held October 28 Dr. Nathaniel Ginsburg exhibited the following specimens: a "Pseudomucinous Cyst of the Appendix." The specimen was obtained in the course of an operation for ruptured ectopic pregnancy. The appendix was greatly enlarged and filled with watery fluid. "*X*-ray Plates Showing Pathological Fracture of a Bone-cyst in the Radius of a Child." The patient was a child two years old suffering from a painful disability of the forearm, the nature of which was discovered only on radioscopic examination. "A Salivary Calculus in the Duct of the Submaxillary Gland." The patient was a young man who complained of pain near the angle of the jaw on one side, especially superinduced by the ingestion of acids, and attended with the appearance of a temporary swelling in the same situation. "Hypertrophic Stenosis of the Pylorus in an Infant." The characteristic type of vomiting made the diagnosis easy and posterior gastrojejunostomy was performed and in its failure to relieve the symptoms anterior gastrojojunostomy was later performed, but the patient was too debilitated and failed to recover. Dr. Ginsburg also made a report of a case in which gastrojejunostomy had been performed in an adult more than a year before for the relief of a duodenal ulcer. Recurrence of the symptoms led to a secondary operation, when it was found that the surgically created channel of communication had closed and become the seat of ulceration, which it was thought was due to irritation caused by buried silk sutures.

Dr. Alfred Gordon presented a specimen of "Pontocerebellar Tumor." The case was characterized by slight loss of power and diminished sensibility on one side of the face, slightly increased knee-jerk and slight impairment of hearing on the same side, with a negative Wassermann reaction. A diagnosis of cerobello-pontine angle being made, and the symptoms increasing in severity, a decompression operation was undertaken, with a great measure of relief. The improvement, however, was only temporary, and a fatal issue ensued. Post-mortem examination confirmed the clinical diagnosis and the new growth proved to be a round-celled sarcoma.

Dr. A. H. Hopkins presented a communication entitled, "Sugar-content of the Spinal Fluid in Meningitis and Other Diseases." It was found that in health the cerebrospinal fluid contains a lesser amount of sugar than the blood, while in cases of meningitis of varied kind the proportion of sugar in the spinal fluid is diminished, as it is also in cases of syphilis of the nervous system and of other forms of diseases as well, while it is increased in cases of diabetes.

Drs. H. H. Austin and S. S. Leopold presented a communication entitled, "Extraordinary Polymorphonuclear Leucocytosis in Typhoid Fever." They reported the case of a young man who came into the hospital on about the sixteenth day of the disease and presenting classical symptoms of typhoid fever, including a positive Widal reaction, together with typhoid bacilli in the blood and the urine. Cytological examination of the blood disclosed a distinct leucopenia, with an extraordinary reduction in the number of circulating polymorphonuclear cells—less than 100, together with an almost equally extraordinary increase in the number of small lymphocytes, namely, more than 7000 in the cubic millimeter. In the further progress of the case the number of polymorphonuclears gradually increased, while the number of lymphocytes gradually diminished. A differential count of the nucleated cells indicated that there was a preponderance of recently generated leucocytes in the blood.

Dr. O. H. Perry Pepper presented a communication entitled "Endothelial Phagocytosis in Pleural Exudate due to *Bacillus Typhosus*." He reported a case of typhoid fever in the course of which a pleural effusion was detected, serum from which contained typhoid bacilli and yielded a positive Widal reaction. The fluid contained also endothelial cells singly and in groups engulfing leucocytes and erythrocytes.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

West Virginia State Board of Health.

ANATOMY.

1. Describe the structures of the index finger and their relation to bone tissue.
2. Give the anatomy of the kidneys.
3. Describe the portal circulation.
4. Describe the spinal cord and give its relation to other tissues.
5. Describe Scarpa's triangle, naming the most important structures nearest it.
6. What is meant by the circle of Willis?
7. Describe fully the stomach.
8. Describe the peritoneum and name structures to which it is attached.
9. Name and give insertions and attachments of the muscles of the forearm.
10. Describe the bones of the foot and give their articulation.

PHYSIOLOGY AND HISTOLOGY.

1. Give the principal forms in which connective tissue occurs.
2. Give the histology of the spleen.
3. Describe in brief the histology of the kidney.
4. Give a brief description of the capillaries.
5. What are the fundamental groups of elementary tissue?
6. Give the function of the lymph glands.
7. What is the effect of respiration upon pulse and blood pressure?
8. Name and give function of the ferments of pancreatic juice.
9. Give function of the liver.
10. Give the conditions affecting body temperature.

CHEMISTRY AND MEDICAL JURISPRUDENCE.

1. Define chemistry, element, and molecular weight.
2. What is an acid, a base, a salt, a radical?

3. From what is iodine derived? Give symbol and atomic weight.
4. State difference between quantitative and qualitative analysis.
5. Describe the chemical changes in olive oil in the alimentary canal.
6. What is your opinion of the physician's legal responsibility?
7. What is an ordinary witness? An expert witness?
8. What is molecular death? Somatic death?
9. Name some of the ways of identifying a dead body.
10. Under what conditions would a physician be justified in producing abortion? What precautions for self protection?

MATERIA MEDICA.

1. Give rules for giving medicine to children.
2. Salol—give composition, dose, and physiological action.
3. Name three hypnotics, give doses, and state which hypnotic is safest and why.
4. Salvarsan—give method of administration and name some of its dangers.
5. Serums and vaccines—name two of each, give doses and method of use.
6. Oleum ricini—give therapy.
7. Hydrotherapy—give indications.
8. Urotropin—give therapy.
9. Mercury—give preparations and therapy.
10. Cocaine—give therapy.

ANSWERS.

ANATOMY.

1. The *index finger consists of the following structures*, beginning with the skin on the palmar surface: Skin, subcutaneous tissue and fat, the sheath of the flexor sublimis digitorum, flexor sublimis digitorum, and flexor profundus digitorum, branches of the digital arteries and nerves (from radial artery and median nerves), and the three phalanges. Behind, will be found the extensor communis digitorum and the extensor indicis, with expansions of the first lumbrical and first dorsal interosseous muscles, branches of the second and third digital nerves (from the radial), subcutaneous tissue, and skin. The tendon of the flexor sublimis digitorum divides into two slips opposite the base of the first phalanx to allow of the passage of the flexor profundus digitorum. The joints between the phalanges are provided with a capsule and anterior and two lateral ligaments; these are found next to the bones.

2. The kidneys are situated in the back of the abdominal cavity, one on each side of the vertebral column, behind the peritoneum, and extending from the eleventh rib to the second or third lumbar vertebra. The right kidney is about half an inch lower than the left one. Each kidney is about four inches long, two inches broad, and one inch thick, and weighs about four and a half ounces. The kidneys are kept in place by their vessels, fatty tissue, and the peritoneum. The shape is characteristic. Each kidney is surmounted by the suprarenal gland, is surrounded by a capsule, and consists of a cortical and medullary portion. In the cortical portion are found the Malpighian corpuscles, which are tufts of capillaries, and are surrounded by a capsule which is continuous with the uriniferous tubule which ends in the renal papilla.

Relations of the right kidney. In front: Right lobe of liver, second part of duodenum, hepatic flexure of colon (of which the last two areas are nonperitoneal). *Behind.* Diaphragm, quadratus lumborum, psoas, fascia covering these muscles, anterior lamella of lumbar aponeurosis, ilio-hypogastric ilio-inguinal, nerves, last dorsal; first lumbar artery, pleura, last intercostal space, and twelfth rib.

Relations of the left kidney. In front: Fundus of stomach, postero-internal surface of spleen, tail of pancreas, descending colon (of which last two are nonperitoneal). *Behind:* As on right, except that left kidney, lying rather higher, lies over 11th rib.

Above each kidney is the suprarenal body.

Below each kidney is the iliac crest.

3. By the *portal circulation* is meant the capillary circulation of venous blood in the liver, between the portal and hepatic veins.

Portal circulation: "The hepatic artery and the portal vein convey blood to the liver. The artery carries arterial blood, and the vein food-laden venous blood from the walls of the alimentary canal, and from the spleen and pancreas. Both vessels enter the liver at the transverse fissure, and they ramify in its interior, breaking up into small terminal branches which run between the lobules and send fine capillary branches into their substance; from these latter branches the blood passes into the capillary tributaries of the intralobular veins, thence to the sublobular veins, and from the sublobular veins to the hepatic veins, which terminate on the posterior surface of the liver in the inferior vena cava." (Bain's *Medical Practice.*)

4. "The *spinal cord* is the elongated portion of the cerebrospinal axis contained in the spinal canal. Its length is about sixteen to eighteen inches, extending from the medulla above to the lower border of the first lumbar vertebra below, where it terminates in the cauda equina by a slender prolongation of gray substance, called the conus medullaris. It presents two enlargements, the upper or cervical, extending from the third cervical to the second dorsal vertebra, and the lower about the position of the second or third dorsal vertebra. It is divided into two lateral halves by the anterior and posterior median fissures, united in the center by the commissure. The lateral portions are again subdivided by the antero-lateral and postero-lateral fissures into the anterior lateral and posterior lateral columns, and posteriorly a narrow fissure separates the posterior median column from the posterior median fissure. The gray substance occupies the center of the cord, and is arranged into two crescentic masses connected together by the gray commissure. The posterior horn forms the apex cornu, from which arises the posterior root of the spinal nerves. The anterior horn is thick and short, and affords origin to the anterior root of the nerves. The gray commissure contains throughout its whole length a minute canal the central canal, or ventricle of the cord, continuous above with the fourth ventricle." (Young's *Handbook of Anatomy*).

The relation of the structures in the vertebral column is (from without inward), the vertebra; venous plexus between the bone and the dura; the dura, arachnoid and pia with ligamenta denticulata; the cerebrospinal fluid; the spinal arteries and veins; the spinal cord.

5. Scarpa's triangle is a triangular area or depression situated just below the fold of the groin. It is bounded *above* by Poupart's ligament, *externally* by the Sartorius, and *internally* by the inner margin of the Adductor longus; its *apex* is formed by the junction of the Adductor longus and Sartorious. The *floor* is formed, from without inward, by the Iliacus, Psoas, Pectineus, Adductor brevis, and Adductor longus. *Contents:* The femoral vessels pass from about the center of the base to the apex, the artery being on the outer side of the vein; the artery gives off the superficial and profunda branches, and the vein receives the deep femoral and internal saphenous; the anterior crural nerve lies to the outer side of the femoral artery; the external cutaneous nerve is still further external, lying in the outer corner of the space; just to the outer side of the femoral artery, and in the sheath with it is the crural branch of the genitocrural nerve. At the apex, the vein (which at the base was internal to the artery) lies behind the artery. The triangle also contains fat and lymphatics.

6. The *circle of Willis* is an arterial anastomosis situated at the base of the brain. It is formed: In front by the two anterior cerebral arteries (branches of the internal carotid), which are connected by the anterior communicating artery; behind, by the two posterior cerebrals (branches of the basilar artery), which are connected to the internal carotid on each side by the posterior communicating artery.

7. The *stomach* is that pouch-like portion of the alimentary canal which is situated between the esophagus and the small intestine. It is conical, with base to left side; the upper border is concave, and is called the *lesser* curvature; the lower border is convex, and is named the *greater* curvature. The left extremity is known as the *fundus*, above and to the right of which is the *cardiac* orifice, and the right or small end is termed the *pyloric* extremity. It occupies left hypochrondriac and epigastric regions. Its *orifices are cardiac*, above, communicating with the esophagus; *pyloric*, at the right extremity, passing into the duodenum. It is 10 to 12 inches long, 4 to 5 inches in diameter at widest part. Its *left* or *cardiac end* is fixed by esophagus and gastrophrenic ligament to diaphragm, lying beneath the

seventh left costal cartilage, one inch from sternum; it is connected with the spleen by the gastrosplenic omentum. The *right* or *pyloric end* reaches the gall-bladder, touching under part of quadrate lobe of liver; is very movable; when stomach is empty is in midline four inches below tip of gladiolus. *Anterior surface*, which also looks upward, is in contact with, from left to right, diaphragm, abdominal parietes (epigastric region), under surface of liver. *Posterior surface* is separated from pancreas, crura of diphragm, aorta, vena cava inferior, and solar plexus, by lesser sac of peritoneum. *Superior border* is attached to liver by small omentum. *Inferior border* gives attachment to great omentum. *Coronary* and *pyloric* arteries run along lesser curvature; *right* and *left gastrocpiploic*, along inferior or greater curvature; *vasa brevia*, from the splenic to fundus. *Right pneumogastric* nerve supplies the posterior surface; *left pneumogastric*, the anterior surface; *sympathetic*, from the solar plexus, both surfaces. —(*Aids to Anatomy.*)

The Mucosa "is a pale, pinkish-ash color, thickened toward the pylorus, where it presents numerous rugæ, or pleats, and at the pyloric end it helps to form the pyloric valve. It is lined throughout with columnar epithelium, and is studded with three kinds of minute tubes, the gastric follicles, and lenticular glands. The gastric follicles consist of two kinds, the pyloric and the peptic glands, the former most abundant at the pyloric end and the latter distributed all over the surface of the stomach. The *pyloric* or *mucous glands* consist each of from two to four blind tubes opening into a common duct, and lined throughout by columnar epithelium. The *peptic glands* are similar in structure, but have a much shorter duct, and contain, in addition, peculiar large, spheroidal, granular *peptic cells*. The *lenticular* or *simple solitary glands* are small masses of lymphoid tissue scattered throughout the connective tissue framework of the stomach between the gastric follicles."—(Young's *Anatomy.*)

8. *Peritoneum. Course of, forming greater sac—in longitudinal section.*—"Passing down from the umbilicus, the peritoneum lines the anterior abdominal wall —covers the urachus and obliterated hypogastric arteries—passes onto the bladder, from its upper aspect to the trigone—is reflected onto the anterior and upper part of the lateral aspects of the rectum, in the male, forming the rectovesical pouch. In the female, the reflection is from the bladder onto the uterus (uterovesical fold)—extending thence over the upper portion of the posterior vaginal wall—and thence to the rectum (recto-vaginal pouch). From the rectum, the sigmoid flexure of the colon is entirely covered (sigmoid mesocolon)—the ascending and descending colons being covered, generally, only anteriorly and laterally—and passing from the spine downward, the peritoneum covers the small intestines, forming the lower leaf of the mesentery—and thence back again, completing the investment of the small bowel, forming the upper leaf of the mesentery—and passes backward over the transverse portion of the duodenum to the pancreas—thence forward to form the inferior layer of the transverse mesocolon—covers the inferior and part of the anterior aspect of the transverse colon—thence runs downward to form the posterior layer of the great omentum—returning to form the anterior layer of the great omentum—thence to the stomach, covering its antero-superior aspect—thence to the under surface of the liver, forming the anterior layer of the lesser or gastrohepatic omentum—thence covers the inferior surface of the liver, from the transverse fissure to its anterior border—whence it is reflected over the anterior border to cover the superior surface of the liver to the posterior peritoneal limit—thence it passes to the inferior concave surface of the diaphragm (superior layer of the coronary ligament)—thence over the anterior portion of the concavity of the diaphragm to the anterior abdominal wall—whence it passes down the anterior abdominal parietes to the umbilicus, to the place of beginning.

Course of the Peritoneum Forming the Lesser Sac—In Longitudinal Section.—"Beginning at the posterior aspect of the stomach, which it covers, the peritoneum of the lesser sac passes upward to the inferior surface of the liver, behind the transverse fissure, forming the posterior layer of the lesser or gastro-hepatic omentum—and having covered the postero-inferior aspect of the liver, it passes on to the under surface of the diaphragm (inferior layer of the coronary ligament)—thence passes downward over the posterior portion of the concavity of the diaphragm to the spine, covering the great vessels—thence to the pancreas—thence forward, forming the upper layer of the transverse mesocolon—covers the supero-anterior aspect of the transverse colon—descends, forming the innermost layer of the great omentum—then ascends to the greater curvature of the stomach—and covers its posterior wall, to the place of beginning. The lesser sac is in relation with the inner aspect of the spleen, forming the inner layer of the gastrosplenic omentum—and also in relation with the superior portion of the left kidney"—(Bickham's *Operative Surgery.*)

9. *Muscles of the forearm:* PRONATOR RADII TERES. *Origin:* Humerus, just above the internal condyle, and inner side of coronoid process of ulna. *Insertion:* Middle of outer surface of shaft of radius.

FLEXOR CARPI RADIALIS. *Origin:* Internal condyle of humerus. *Insertion:* Base of metacarpal bone of index and middle fingers.

PALMARIS LONGUS. *Origin:* Internal condyle of humerus. *Insertion:* Palmar fascia.

FLEXOR CARPI ULNARIS. *Origin:* Internal condyle of humerus, and olecranon and upper and posterior part of ulna. *Insertion:* Pisiform bone and annular ligament.

FLEXOR SUBLIMIS DIGITORUM. *Origin:* Internal condyle of humerus, coronoid process of ulna, and oblique line of radius. *Insertion:* Second phalanges of fingers.

FLEXOR PROFUNDUS DIGITORUM. *Origin:* Upper part of anterior and inner surfaces of shaft of ulna, and from coronoid process. *Insertion:* Last phalanges of fingers.

FLEXOR LONGUS POLLICIS. *Origin:* Anterior surface of shaft of radius, and coronoid process of ulna. *Insertion:* Last phalanx of thumb.

PRONATOR QUADRATUS. *Origin:* Lower part of anterior surface of ulna. *Insertion:* Lower fourth of anterior part of radius.

SUPINATOR LONGUS. *Origin:* Upper part of external supracondylar ridge of humerus. *Insertion:* Styloid process of radius.

EXTENSOR CARPI RADIALIS LONGIOR. *Origin:* Lower part of external supracondylar ridge of humerus. *Insertion:* Metacarpal bone of index finger.

EXTENSOR CARPI RADIALIS BREVIOR. *Origin:* External condyle of humerus, external lateral ligament of elbow-joint. *Insertion:* Metacarpal bone of middle finger.

EXTENSOR COMMUNIS DIGITORUM. *Origin:* External condyle of humerus. *Insertion:* Second and third phalanges of fingers.

EXTENSOR MINIMI DIGITI. *Origin:* External condyle of humerus. *Insertion:* Second and third phalanges of fingers.

EXTENSOR CARPI ULNARIS. *Origin:* External condyle of humerus, and posterior border of ulna. *Insertion:* Metacarpal bone of little finger.

ANCONEUS. *Origin:* External condyle of humerus. *Insertion:* Olecranon and upper and posterior part of shaft of ulna.

SUPINATOR RADII BREVIS. *Origin:* External condyle of humerus, external lateral ligament of elbow-joint, orbicular ligament, and from ridge of ulna. *Insertion:* Bicipital tuberosity and oblique line of radius.

EXTENSOR OSSIS METACARPI POLLICIS. *Origin:* Outer and posterior part of shaft of ulna, and middle of posterior surface of shaft of radius. *Insertion:* Base of metacarpal bone of thumb.

EXTENSOR BREVIS POLLICIS. *Origin:* Posterior surface of shaft of radius. *Insertion:* First phalanx of thumb.

EXTENSOR LONGUS POLLICIS. *Origin:* Outer and posterior part of shaft of ulna. *Insertion:* Last phalanx of thumb.

EXTENSOR INDICIS. *Origin:* Posterior surface of shaft of ulna. *Insertion:* Second and third phalanges of index finger.

10. *Bones of foot.*—Seven tarsal (os calcis, astragalus, cuboid, scaphoid, and internal, middle, and external cuneiform); five metatarsals; and fourteen phalanges.

ARTICULATIONS. *Os calcis:* Astragalus and cuboid.

Astragalus: Tibia, fibula, os calcis and scaphoid.

Cuboid: Os calcis, external cuneiform, fourth and fifth metatarsals, and (sometimes) scaphoid.

Scaphoid: Astragalus, three cuneiform, and (sometimes) cuboid.

Internal cuneiform: Scaphoid, middle cuneiform, first and second metatarsals.

Middle cuneiform: Scaphoid, internal and external cuneiform, and second metatarsal.

External cuneiform: Scaphoid, middle cuneiform, cuboid, and second, third, and fourth metatarsals.

First metatarsal: Internal cuneiform, second metatarsal, and first phalanx of great toe.

Second metatarsal: First metatarsal, internal cuneiform, middle cuneiform, external cuneiform, third metatarsal, and first phalanx of second toe.

Third metatarsal: Second metatarsal, external cuneiform, fourth metatarsal, and first phalanx of third toe.

Fourth metatarsal: Third metatarsal, external cuneiform, cuboid, fifth metatarsal, and first phalanx of fourth toe.

Fifth metatarsal: Fourth metatarsal, cuboid, and first phalanx of little toe.

Phalanges: The first row, with the metatarsals behind, and the second row of phalanges in front; the second row of the four outer toes, with the first and third phalanges; of the great toe, with the first phalanx; the third row of the four outer toes, with the second phalanges.

PHYSIOLOGY AND HISTOLOGY.

1. The *principal varieties of connective tissue* are: Areolar, adipose, elastic, fibrous, retiform, lymphoid, cartilage, and bone. They all serve to connect and support other tissues.

2. "The *spleen* is invested by a thick capsule, consisting of fibroelastic tissue and a large proportion of visceral muscle fibers. The capsule sends trabeculæ into the interior of the organ. These are thick, and the nuclei of the muscle fibers in them stand out conspicuously in stained specimens. The bulk of the organ is deep red in color, and is called the spleen pulp. In the pulp are numerous whitish nodules, about the size of a pin's head. These nodules are composed of lymphoid tissue surrounding small arteries, and are called Malpighian corpuscles. The pulp consists of a network of fine fibers, with a number of flattened and branched cells situated on the fibers and at their crossings. In the spaces between the fibers are numerous red corpuscles, large lymphocytes, and other blood cells. Many of the red corpuscles undergo disintegration in the large lymphocytes, so that pigment, both intracellular and free, is present. An occasional giant cell of bone marrow type is seen in the spleen pulp. The splenic artery breaks up at the hilus, and the branches pass into the interior of the organ along the trabeculæ. Passing away from the trabeculæ, their outer coat becomes surrounded at intervals by nodules of lymphoid tissue—the Malpighian corpuscles. Each corpuscle usually shows a germ center. The arteries open into capillaries, which, in turn, open into the interstices of the pulp. From the pulp spaces there open wide venous sinuses, which are encircled by fibers of the reticulum, and are lined by a very prominent endothelium. These sinuses open into the radicles of the splenic vein." (*Aids to Histology.*)

3. "The kidney is a compound, tubular gland composed of microscopic tubules whose function it is to secrete from the blood those waste products which collectively constitute the urine. If the apex of each pyramid be examined with a lens, it will present a number of small orifices, which are the beginning of the uriniferous tubules. From this point the tubules pass outward in a straight but somewhat divergent manner toward the cortex, giving off at acute angles a number of branches. From the apex to the base of the pyramids they are known as the tubules of Bellini. In the cortical portion of the kidney each tubule becomes enlarged and twisted, and after pursuing an extremely convoluted course, turns backward into the medullary portion for some distance, forming the descending limb of Henle's loop; it then turns upon itself, forming the ascending limb of the loop, reenters the cortex, again expands, and finally terminates in a spheric enlargement known as *Müller's* or *Bowman's capsule*. Within this capsule is contained a small tuft of blood-vessels, constituting the *glomerulus*, or *Malpighian corpuscle*. Each tubule consists of a basement membrane lined by epithelium cells throughout its entire extent. The tubule and its contained epithelium vary in shape and size in different parts of its course. The termination of the convoluted tube consists of a little sac or capsule, which is ovoid in shape and measures about 1/200 of an inch. This capsule is lined by a layer of flattened epithelial cells, which is also reflected over the surface of the glomerulus. During the periods of secretory activity the blood-vessels of the glomerulus become filled with blood, so that the cavity of the sac is almost obliterated; after secretory activity the blood-vessels contract and the sac-cavity becomes enlarged. In that portion of the tubule lying between the capsule and Henle's loop the epithelial cells are cuboid in shape; in Henle's loop they are flattened, while in the remainder of the tubule they are cuboid and columnar." (Brubaker's *Physiology.*)

4. "A *capillary* is a small vessel from 7 to 16 μ in diameter. Its wall consists of a single layer of endothelial cells. The cells are somewhat elongated in the long axis of the vessel. Their edges are serrated and are united by a small amount of intercellular substance which can be demonstrated by the silver nitrate stain. In certain capillaries those of the early embryo, of the kidney glomeruli, of the chorioid coat of the eye, of the liver, no cell boundaries can be made out. In these capillaries the endothelium appears to be of the nature of a syncytium. Capillaries branch without diminution in caliber, and these branches anastomose to form capillary networks, the meshes of which differ in size and shape in different tissues and organs. The largest meshed capillary networks are found in the serous membranes and in the muscles, while the smallest are found in the glands, as *e. g.* the liver. As to caliber, the largest are found in the liver, the smallest in muscles." (Bailey's *Histology.*)

5. The fundamental groups of elementary tissue are: Epithelial, Connective, Muscle and Nerve.

6. The *functions of the lymphatic glands and vessels* are: "(1) Mechanical, protective, or regulatory of the circulation, the serous surfaces, bursæ, tendon sheaths, the cerebrospinal fluid. (2) The absorption of digested products, the intestinal lymphatics or lacteals. (3) The formation of the blood in the thymus, bone marrow, spleen, and lymphatic glands. (4) The destruction of injurious materials in the spleen, lymphatic glands, and the lymphadenoid tissue of the respiratory tract, especially the nasopharyngeal section."—(Spencer and Gask's *Surgery.*)

7. The *pulse* is more frequent during inspiration and less frequent during expiration.

Blood-pressure rises a little with each inspiration and falls during expiration.

8. *Ferments of the pancreatic juice:* (1) *trypsin*, which changes proteids into proteoses and peptones, and afterward decomposes them into leucin and tyrosin; (2) *amylopsin*, which converts starch into maltose; (3) *steapsin*, which emulsifies and saponifies fats; and (4) a milk-curdling ferment. All of these act in an alkaline medium only.

9. The *functions of the liver* are: (1) the secretion of bile; (2) the formation and storage of glycogen; (3) the formation of urea and uric acid; (4) the manufacture of heat; (5) the formation of creatinine; (6) the production of antithrombin; (7) the conversion of poisonous and harmful into inert material; (8) it is also a reservoir for blood on its way to the heart.

10. The normal body temperature is *regulated* and *maintained* by the thermotactic centers in the brain and cord keeping an equilibrium between the heat gained or produced in the body and the heat lost.

Heat is produced in the body by: (1) Muscular action; (2) the action of the glands, chiefly of the liver; (3) the food and drink ingested; (4) the brain; (5) the heart; and (6) the thermogenetic centers in the brain, pons, medulla and spinal cord.

Heat is given off from the body by: (1) The skin, through evaporation, radiation, and conduction; (2) the expired air; (3) the excretions—urine and feces.

CHEMISTRY AND MEDICAL JURISPRUDENCE.

1. *Chemistry* is that branch of science which treats of the composition of bodies, their changes in composition, and the laws governing such changes. An *element* is a substance which cannot, by any known means, be split up into other, dissimilar, substances.

Molecular weight is the weight of a molecule of a substance as compared with the weight of an atom of hydrogen.

2. An *acid* is a compound of an electro-negative element or radical with hydrogen, part or all of which hydrogen it can part with in exchange for an electro-positive element, without the formation of a base.

A *base* is a ternary compound capable of entering into double decomposition with an acid to produce a salt and water.

A *salt* is a substance formed by the substitution of an electro-positive element for part or all of the replaceable hydrogen of an acid.

A *radical* is a group of atoms which can enter or leave a chemical reaction like a single atom.

3. Iodine is derived from sea-weed. Symbol, I; atomic weight, 127.

4. By *qualitative analysis* we determine what elements or groups of elements are present in a substance. By *quantitative analysis* we determine also the exact amounts of these elements or groups of elements.

5. Olive oil is partly emulsified, partly saponified in the intestines, its glycerin being set free and its fatty acids combining with the free alkalies to form soap, which with the emulsion forms the molecular basis of the chyle, entering the blood through the lacteals and being finally oxidized into carbon dioxide and water though an excess will appear unchanged in the urine. —(Potter's *Materia Medica.*)

6. A physician is not at all bound to accept a professional call; but if he accepts, he is bound to continue in attendance until the patient no longer requires his services, or he is discharged. He can leave during the continuance of the condition for which he was called only after giving ample notice of his intention to discontinue his services, and allowing a reasonable time for the patient to obtain the services of another physician.

The physician undertakes to use proper skill, care, and judgment in diagnosing and treating the case, and also to give full instructions as to how the patient may be best cared for. The physician is not allowed to divulge anything that he learned while in professional attendance, provided such knowledge was necessary to the successful conduct of the case.

Malpractice is a failure on the part of a medical practitioner to use such skill, care, and judgment in the treatment of a patient as the law requires; and thereby the patient suffers damage. If due to negligence only, it is *civil* malpractice. But if done deliberately, or wrongfully, or if gross carelessness or neglect have been shown, or if some illegal operation (such as criminal abortion) be performed, it is *criminal malpractice.*

7. An *expert* witness may give his *opinion* on facts or supposed facts as noted by himself or asserted by others. *Theoretically*, this can only be done by one perfectly familiar with the subject in question; but *practically* any (or almost any) physician with a license to practise is accepted as an expert witness. A *non-expert* witness testifies only the *facts* which he has seen, or heard, or with which he has become acquainted by personal observation.

8. *Molecular death* is caries, or death of some cells. *Somatic death* is death of the entire body.

9. "When a body entirely unknown is found, the decision as to identity may be simplified by exclusion, so that such general questions as those of sex, race, age, height, and weight, are first settled; then with the help of the clothing, vocational stigmata, and the circumstances under which the body is found, much may be learned as to the individual and the class of life from which he came. The color, amount, and character of hair, color of eyes, the condition and number of the teeth, and general type of features, the presence of deformities, tattoo marks, and cicatrices, will, in the entire and fresh, unmutilated body, give us a basis on which to rest a thorough and complete identification. It frequently happens, however, that bodies of unknown dead are found after the lapse of days or weeks, or, when found in water or in the woods, may be so disfigured as to make useless most of those means of identification which are most commonly used. In such instances one makes the most of those points which are at his command. When from decomposition, or for other reasons, it becomes necessary to bury or in other ways dispose of the body before identification is complete, proper photographs should be taken, and the contents of the pockets, and other possessions found on or about the body, which may assist in identification, should be retained for future reference."—(Dwight's *Medical Jurisprudence.*)

10. Conditions that justify the induction of premature labor: (1) Certain pelvic deformities; (2) placenta prævia; (3) pernicious anemia; (4) toxemia of pregnancy; (5) habitual death of a fetus toward the end of pregnancy; (6) hydatidiform mole; (7) habitually large fetal head.

The physician should protect himself by calling in consultation another reputable physician of recognized standing.

MATERIA MEDICA.

1. *Rules for giving medicine to children:* "Never prescribe a drug without a good and sufficient reason. Prescribe so that the dose will be small in amount and as agreeable as possible. Pills and capsules are not intended for children who rarely can swallow them. Prescriptions should be simple and if possible contain but one or at most two drugs. Powders made up with sugar of milk are mixed with water and given from the teaspoon. Tablet triturates form an easy and accurate method of giving drugs (except nitroglycerin). If the child is unwilling, the medication on the spoon is quickly slipped on to the tongue and the spoon held in position well back until swallowing takes place. In this way the child cannot regurgitate it. Begin with small doses in early life and increase if the desired effect is not obtained. Heroic doses, however, may be used in emergencies where rapid and active stimulation is required. Hypodermatic injection of the stimulant is often required to produce physiological effects. The rule that an infant up to a year should receive one-twentieth of, and at one year one-tenth of the adult dose, is to be followed in the majority of cases. The stimulants, however, are exceptions to this rule. At the fifth year one-fifth, and about the tenth year one-half the adult dosage is usually to be given."—(Chapin and Pisek's *Diseases of Children.*)

To determine the proper dosage for a child: Let x = the age of the patient; then $\frac{x}{x+12}$ = the fraction of the adult dose which the patient should receive. Thus, a patient four years old should receive $\frac{4}{4+12} = \frac{4}{16} = \frac{1}{4}$ of an adult dose.

2. *Salol* is phenyl salicylate; and is composed of 60 parts of salicylic acid, and 40 of carbolic acid. Dose, gr. vijss. Its *physiological action* is: antiseptic, antipyretic, and germicidal. Care should be exercised in its administration, because in the small intestine it is decomposed into its constituent parts, and symptoms of carbolic acid poisoning may develop.

3. *Three important hypnotics:* (1) Chloral hydrate; dose, gr. xv to xx. (2) Sulphonal; dose, gr. xv to xxv. (3) Trional; dose, gr. xv to xxv.

Indications: They are all used to produce sleep (when no pain is present).

Chloral hydrate produces a natural sleep, acts promptly, but is of no service if pain is present; it also lowers the body temperature. It can be given for a long time without deleterious effect, but it may irritate the tissues and weaken the heart.

Sulphonal produces a natural sleep, but is of slow action, requiring 3 or 4 hours to take effect; it is of no use if pain is present, does not irritate the tissues and weaken the heart, but is probably not so good for continuous use as chloral hydrate, though the two may replace each other for a time.

Trional is very similar to sulphonal but is more soluble, and acts quicker. Both sulphonal and trional are supposed to be safer than chloral.

Sulphonal is said to be safer than trional because it contains fewer ethyl groups than the latter does.

4. SALVARSAN. "It has become the regular custom to administer salvarsan *intravenously*, because in a number of instances its *intramuscular* injection was followed by necrosis and the formation of an abscess, the arsenic remaining unabsorbed. A number of deaths have occurred from its use. The untoward effects are: (1) The Jarisch-Herxheimer reaction, in which the secondary eruption becomes darker and appears to spread for a number of hours. It is believed to be the result of insufficient dosage at the outset. (2) Irritation of the tissues, with lymphangitis, from leakage in the neighborhood of the vein.

After effects.—The usual ones are headache, nausea, malaise, lasting from twelve to twenty-four hours.—(Bastedo's *Materia Medica.*)

5. *Antidiphtheritic serum*, immunizing dose 500 units, curative dose 3,000 units; it is injected subcutaneously.

Antitetanic serum, dose 2½ to 5 drams; it is injected into the spinal cord.

Typhoid vaccine, dose 500 to 1,000 million for first dose, double this amount for second, and third doses; given hypodermatically.

Streptococcus vaccine, dose 10 to 25 million, hypodermatically.

6. COD LIVER OIL is a demulcent and emollient; it is a tissue food. It is used in tuberculosis, rheumatism, strumous diseases, rickets, nervous diseases, and wasting diseases of childhood.

7. HYDROTHERAPY. "*Cold water* or *ice* has many external applications of value in the treatment of dis-

ease. As a wet pack it is used in tonsillitis, diphtheria, and croup. Cold baths are the most effective antipyretic in the high temperature of fevers, and the cold wet pack is used for the same purpose. Ice or cold water is applied to the head in acute cerebral congestion, and to the spine in chorea, etc.; also locally in hemorrhoids, bubo, orchitis, and to the uterus in postpartum hemorrhage. Cold effusion to the body is employed as a preventive of spasmodic croup, as well as to lessen the tendency to taking cold.

"*Hot water* externally as fomentations, hot wet pack, hot baths, etc., is most effective in reducing local congestion and in setting up resolution of local inflammation. Hot fomentations to the renal region are useful in functional inactivity of the kidneys. The hot spinal douche is used in affections of the spinal cord and meninges, and in the backache of women. The hot wet pack is highly esteemed in inflammation of the chest organs, and hot injections are useful in chronic inflammation of the uterus. Hot water dressings for wounds are strongly favored by many surgeons. Vapor and Turkish baths are used as diaphoretics in advanced kidney disease, in acute and chronic rheumatism, in mineral poisoning, and in syphilis. Warm baths, with cold applications to the head, are of value in infantile convulsions and chorea."—(*Cyclopedia of Medicine and Surgery.*)

8. Urotropin, when taken, is decomposed in the body and formaldehyde is liberated and eliminated in the urine; hence it is used as a urinary (and intestinal) antiseptic, dose gr. iv., administered in water.

9.

Official Preparations of Mercury	Chiefly Indicated in:
Ammoniated mercury	Ozæna, psoriasis, tinea, and other skin affections.
Bichloride of mercury	Syphilis, anemia, summer diarrhea
Calomel	Syphilis, biliousness, dropsy, dysentery.
Red oxide of mercury	Syphilitic sores, chronic skin diseases.
Yellow oxide of mercury	Indigestion, syphilitic sores, chronic skin diseases.
Red iodide of mercury	Syphilis, acute tonsilitis
Yellow iodide of mercury	Chronic Bright's disease, syphilis
Solution of mercuric nitrate	Epitheliomata, warts, lupus
Ointment of mercuric nitrate	Chronic skin diseases.

10. Cocaine hydrochloride. *Physiological action:* local anesthetic (externally); internally it is a muscular, cerebral, circulatory, and respiratory stimulant, also a mydriatic. Its *principal uses* are: As a local anesthetic; also in paralysis agitans, chorea, and alcoholic tremors.

(*To be concluded.*)

Vaccine Virus Free from Bacterial Contamination.—Noguchi has succeeded in freeing vaccine virus from all associated bacteria by means of suitable disinfecting agents, and in propagating it thenceforward in a pure state in the testicles of rabbits and of bulls. The virus thus cultivated appears capable of indefinite transfer from one animal to another without loss of its potency. The method of preparation is sufficiently satisfactory to be practicable from the commercial standpoint.—*Journal of Experimental Medicine.*

Pontine Polioencephalitis.—J. Collier reports the case of a boy aged 8 years who was taken suddenly ill on January 18 with headache and fever. During the following two days he had a series of convulsions, vomited repeatedly, and was in a stuporous condition. Subsequently he was noisy and restless for a few days and then seemed quickly to recover, except that he was completely deaf and was very unsteady upon his legs. He was completely deaf when he was examined on February 16. The ears were normal. He talked and obeyed written orders very intelligently. The vibration sense was present. There were nystagmus, bilateral ataxia, titubation, and a cerebellar gait. Lumbar puncture revealed a normal cerebrospinal fluid. The Wassermann reaction was negative. Under observation the cerebellar signs have practically disappeared, leaving complete deafness as the feature of the case.—*Proceedings of the Royal Society of Medicine.*

Miscellany.

A Premium on Live Babies.—In 1904-5 Mr. Benjamin Broadbent was mayor of Huddersfield, and offered to present each child born in Longwood, during his year of office with a sovereign on its attaining the age of twelve months. His offer resulted in his giving out 112 promissory notes, to be redeemed on the child attaining the age of twelve months. Of these 107 were presented for payment. A few days ago he held a garden party at his residence, to the "Mayor's Sovereign Babies," as they had come to be known. His guests numbered 88. A few children could not be present and some could not be traced owing to removals. Mr. Broadbent's offer ten years ago caused increased attention to be given to the health of the local babies, and in the one year the infantile death rate at Longwood was reduced from 122 per 1,000 births to below 50, while in the rest of Huddersfield the figure was 139, about the same as in the previous year, and it was claimed that the experiment demonstrated that a huge saving in infant life could be effected. The infant death rate is now 96.—*The Lancet.*

A Nation-Wide Medical Examination Day.—As one of the pioneers in the inauguration of routine physical examinations of employees, this department welcomes the announcement just made by the National Association for the Study and Prevention of Tuberculosis of a National Medical Examination Day as part of the plans for Tuberculosis Week, December 6 to 12, 1915. In a paper read nearly two years ago Commissioner Goldwater spoke of the inauguration of universal periodic medical examinations as "the next great step in preventive medicine," and pointed out that they constituted "an indispensable means for the control of all diseases, whether arising from injurious personal habits, from congestive or constitutional weakness, or from social and vocational conditions." Medical Examination Day is set for Wednesday, December 8, and will be the first effort on a national scale to urge an annual physical examination for everyone. Plans for the day include an appeal to induce everyone, sick and well, to see a doctor and learn whether he or she is in good physical condition. The scheme includes also the inauguration on the part of factories, stores, and offices of an annual physical examination for all employees. Thousands of antituberculosis associations, other societies, and dispensaries all over the country are expected to cooperate in furnishing free examinations for those not able to pay a physician. Children's Health Crusade Day on Friday, December 10, is planned to interest and instruct school children in healthful living. Special exercises will be held at which lectures, essays, and playlets will be given on the subject of health. This will also be the occasion for launching the Red Cross Christmas Seal sale in the schools. The culmination of the campaign will be the sixth annual celebration of Tuberculosis Sunday. Last year on Tuberculosis Day over 100,000 churches in the United States gave attention to the subject. The governors of all the States will be asked to issue proclamations calling attention to the importance of increasing the knowledge of the public on how to avoid consumption. Clubs, lodges, and societies will also be asked to consider the subject at a meeting either on Tuberculosis Sunday or on some other day of Tuberculosis Week.—Weekly Bulletin of the New York City Department of Health.

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A STUDY OF 59,270 EXPOSURES OF ORDINARY LIFE INSURANCE SHOWING URINARY IMPAIRMENTS AT THE TIME OF ACCEPTANCE.*

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NEW YORK.

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SOME twenty-four years ago the writer, while engaged in research work was forcibly impressed with the fact that many individuals who applied for insurance on their lives were unable to obtain policies because of some abnormality in their urine. No small number of these people went to their physicians or to medical chemists and analysts to find out the real reason for being declined insurance. In this way I came into close touch with those who at the time or at some previous time, had been the subjects of abnormal urine. It was not uncommon to find in these cases evidences of extensive kidney disease, a diabetes mellitus or some disease of the urinary tract which had been unsuspected up to the time application was made. But it also not infrequently happened that some of these unfortunate individuals presented evidence of disturbance in the urinary tract which entirely disappeared within a short period. Subsequent experience with cases of this kind led me to believe that at least some of those who had been declined were entitled to insurance protection because they were not really diseased, but merely temporarily disturbed.

It was not many years ago that insurance was refused any person whose urine contained albumin or sugar, or when the specific gravity was uncommonly high or unusually low, or when the reaction was alkaline. To-day these abnormal, or unusual features of the urine are looked upon by many of us merely with suspicion and, by means of thorough chemical and microscopical investigation and study, a fairly correct translation of their significance can be made.

It is, therefore, with great pleasure that I am today able to present to this Association the results of a study of 59,270 insurance exposures covering a period of about ten years.

It may interest you to know something of the manner of collecting the data which will be presented.

The laboratory of the Metropolitan Life Insurance Company was created in July, 1905. It was deemed advisable at that time to make thorough and systematic chemical and microscopical analyses of the urine, for the purpose of selecting those individuals for insurance risks who presented relatively unimportant disturbances in the urinary tract, and at the same time eliminate those cases which showed well-marked pathological conditions in the urinary system. The *modus operandi* of investigating the urine adopted in 1905 has been in use ever since.

Specimens of urine are sent to the Home Office by first-class mail from all parts of the United States and Canada. The examiners in the field are requested to mail a specimen of urine in every instance where they find either albumin or sugar, where the specific gravity is above 1030 or below 1012, where the history of circumstances suggest the advisability, and when the policy applied for plus that already carried in this company amounts to $10,000 or more. In addition to specimens received under these circumstances, the Home Office frequently requests the examiner to send samples because of a personal history or a suspicion of some trouble in the urinary tract.

The methods of urinary analysis used by the examiner in the field are those adopted by this Association in 1908, and the same methods are in use in our Home Office laboratory, although our laboratory investigation of the urine is much more extensive than that made in the field by the Medical Examiner.

Chart I will serve to show the nature of our laboratory study of the urine, and every specimen coming to our Home Office receives exactly the same analysis.

CHART I

Name — District

No — Date — Dr

Color = — Transp. = — U. = — %

React. = — Sp. Gr. = — Cl. =

Ind. = — Amt. of Sed. = —

Albumin = — Acetone =

Bile Pigments = — Diacetic Acid =

Sugar =

Sediment =

Recommendation:

Accepted — Postponed — Rejected

The color, reaction, and transparency are noted, the relative amounts of uric acid and chlorides determined, the percentage of urea obtained, and the tests for albumin, sugar, bile pigments, acetone, and diacetic acid are made. The sediment is examined in every instance, except in those urines which contain a large quantity of sugar, and in rare instances where the amount of albumin is very large and the case is obviously so bad that we do not deem it necessary to complete the examination.

Since the microscopic examination of the urine constitutes perhaps the most valuable part of a

*Read at the Twenty-sixth Annual Meeting of the Association of Life Insurance Medical Directors of America, Oct. 15, 1915.

urinary analysis, it may be of interest to know just how these examinations are conducted in our laboratory. The urinary sediment is obtained by centrifugalizing 15 c.c. of the urine which has first been thoroughly agitated. If upon examination a satisfactory sediment is not obtained in this way, the urine is allowed to settle for several hours by gravity and the deposit thus obtained is thoroughly centrifugalized. One or more microscopic preparations are then made and examined. No specified time is given to the microscopic examination. Some sediments are examined quickly while others require a much longer time, but since all microscopic examinations are made by trained assistants, much must be left to the judgment of the microscopist as to the time to be spent on any given sediment. Roughly speaking, an average of six or eight sediments per hour is about the number which can be satisfactorily examined by one person.

Of all of the cases in which the urine is sent to the laboratory of the Metropolitan Life Insurance Co., because either the Medical Examiner found at the time of his examination the abnormal features or there was a history or a suspicion of trouble in the urinary tract at some previous time, approximately 68 per cent. are recommended for insurance on the regular plans. If we include those cases in which the examiner sends the urine to the Home Office laboratory because of the amount of insurance—$10,000 or more—and in which his examination of the urine is negative, approximately 71 per cent. are favorably recommended for insurance on the regular plans. The cases under consideration to-day are those that were thus recommended by the writer and finally accepted as suitable risks.

For the purpose of analyzing the 59,270 exposures, we have divided them into ten groups according to the urinary impairments found, at the time of acceptance, by the chemical and microscopical examinations of the urine, and we shall now consider each impairment, giving the figures which have been very carefully prepared by the Actuarial Division of the Metropolitan Life Insurance Company. The impairments are numbered from 1 to 11, omitting number 10 in which no data are yet available. No substandard or special class cases are included in these figures and groups, but only those accepted on some of the regular plans of ordinary policies issued by the company.

The period of time covered by this study is practically ten years. Our records, however, antedate the opening of the laboratory because of a few revival cases which carry the dates of issue back to 1904, and then through the succeeding years to and including 1913. All exposures are taken to their anniversary date in 1914.

We shall take up the different impairments giving the exposures by number and by amount of insurance involved, the probable claims computed on the American Experience and on the Compound Progressive tables, the actual claims by number and amount of insurance, and finally the percentages of actual claims to the probable on both tables. It will be obvious that our final basis of calculation is therefore reduced to percentages.

GROUP. 1. *Slightest possible trace of albumin. Relatively normal solids.* (1.5 *per cent. to* 2.5 *per cent. urea.*) *Rarely a cast (hyaline or granular), renal cell and abnormal blood globule.*

This group of cases represents a very mild renal disturbance which we term a mild renal congestion or active hyperemia, and not true kidney disease. These are the cases which have been the terror of the insurance world and considered by some as extra hazardous; others have believed that they were suitable for policies only on a substandard plan.

Practically all of the cases accepted in this group were comparatively young people, under 40 years of age, with a first-class history in every other respect. The amount of insurance applied for and given was usually small, varying from $1,000 to $2,000 and in very few were blood pressures taken. We have looked upon the kidney disturbances in these cases as a transitory condition likely to last only a few days and then entirely disappear. It is reasonable to believe that temporary derangement is as likely to occur in the kidney as in any other organ of the body, and without affecting longevity. To be sure, the important feature of these cases is to distinguish them from those showing renal disease in its early stages, and this is not always an easy matter with the limited means of investigation at our command.

In this group there are 5,546 exposures involving $8,154,400 insurance. The probable claims amount to 58+ in number and $87,645 in amount calculated on the American Experience table, and 40.7+ in number and $62,135 in amount on the Compound Progressive table. The actual claims were 31 in number and $41,200 in amount, giving us 53 per cent. by number and 47 per cent. by amount on the American, and 76 per cent. by number and 66 per cent. by amount on the Compound Progressive tables.

By referring to Table XVIII, we find that, of the 31 claims, only ten causes of death have a direct or indirect connection with the kidneys. There were two deaths from Paralysis, five from Organic Heart Disease, one from Embolism or Thrombosis, and three from Nephritis or Bright's Disease.

GROUP 2. *Slightest possible trace of albumin. Relatively normal solids. Excess of leucocytes and urethral or neck-of-bladder cells. Some squamous epithelium. Rare or occasional blood globules. No casts found.*

The condition represented by these findings is one of a slight irritation in the urinary tract below the kidneys and ureters. The source of the slight irritation or congestion is shown by the cellular elements found in the microscopic examination of the urinary sediment. The disturbance may be in the bladder, at the neck of the bladder, in the prostatic urethra, the urethra proper, or in the prepuce. In the great majority of instances the irritation is in the urethra and at the neck of the bladder. Occasionally there is a slight disturbance in the bladder and not infrequently a long prepuce with lack of proper cleanliness is the source of the elements found in the sediment. Apparently the most frequent cause of this slight irritation in the urethra and prostatic region is a pre-existing gonorrhea which has left a small area which has never fully recovered. Sometimes fine urethral shreds are found which no doubt come from slightly inflamed folds of the mucous surface of the urethra. Cases of this sort must not be confused with those of urethral stricture in which there is usually a pocket of pus behind the constriction in the urethra.

In this group are also included female risks in which the urine almost always shows a greater or

smaller number of elements from the genital tract and genitalia. Naturally, in the female, there may also be slight disturbances in the bladder and urethra.

We look upon the conditions in this group, as relatively unimportant and in no way affecting longevity. This group is a large one for the condition is very common. The number of exposures is 23,061 involving $76,567,900 of insurance. The probable claims are 227.5+ in number and $823,210 in amount on the American Table and 146+ in number and $541,728 in amount on the Compound Progressive Table. The actual claims were 94 in number and $300,900 in amount, making 41 per cent. by number and 37 per cent. by amount on the American, and 64 per cent. by number and 56 per cent. by amount on the Compound Progressive Tables.

In Table XVIII, it will be seen that of the 94 death claims, only a comparatively few causes of death were directly or indirectly connected with the urinary tract. We find one death from Alcoholism, one from Chronic Lead Poisoning, one from other Chronic Poisoning, three from Cerebral Hemorrhage or Apoplexy, one from Paralysis, one from Pericarditis or Acute Endocarditis, four from Organic Heart Disease, one from Angina Pectoris, one from Embolism or Thrombosis, and four from Nephritis or Bright's Disease.

GROUP 3. *No albumin detected. Relatively normal solids. Rarely a hyaline or granular cast, renal cell, and blood globule.*

In this group the urine was found to be free from albumin, the solids were relatively normal, but in the sediment were found rarely a hyaline or granular cast, renal cell, and blood globule. In other words, there was evidence of a slight disturbance of the kidneys, but without any trace of albumin and without evidence of disturbance in other parts of the urinary tract. There is, in this group, a striking similarity to Group 1 except for the absence of albumin. Practically all of the risks were under 40 years of age, and invariably with a first-class history in every other respect. Because of the care in selection, and the relative infrequency of finding casts in the urine without albumin, the number of cases in this group is small and perhaps too small to give us a good idea of the true mortality, but the figures are submitted for what they are worth. I might add that these risks were taken with the conviction that there was not true renal disease present, but that our findings in the urine represented only a very slight temporary renal irritation or congestion which was not of importance as affecting longevity.

The number of exposures is 503, involving $1,025,400 of insurance. The number of probable claims is calculated as 5.3+ in number and $12,346 in amount on the American Table and 3.7+ in number and $9,155 in amount on the Compound Progressive Table. There was only one $1,000 claim giving 19 per cent. by number and 8 per cent. by amount on the American table and 27 per cent. by number and 11 per cent. by amount on the Compound Progressive Table.

The reported cause of death of the single claim in this group was Pneumonia. (Table XVIII.)

GROUP 4. *No albumin. Low specific gravity (1,012 or less). Relatively low urea (1.5 per cent. or less). No casts or other morphological elements detected.*

One of the most perplexing group of cases in judging of the fitness of applicants for insurance is that showing persistently low specific gravity (below 1,012) and a low percentage of urea (below 1.5 per cent.). In this group we have the low solids without albumin or sugar and without abnormal elements in the sediment. With a specific gravity below 1,012 and a correspondingly low percentage of urea 1.5 per cent. or less, there immediately arises the question of a cause. We know that the nervous excitement attendant on the physical examination of the applicant for insurance is nearly always present and this constitutes a common cause of a low specific gravity of the urine—a nervous hydruria. It is, therefore, always advisable to procure a specimen of urine from the applicant, if possible, before the physical examination is begun rather than to wait until the examination has been completed, as is the rule.

Another common cause of low solids is the ingestion of an unusual amount of water, beer, or other fluid. It is not uncommon for the laboring man to stop at a saloon on his way from the shop to have a glass of beer or to have beer with his meals, and usually the urine collected shortly after will have a low specific gravity.

Still another cause of low solids is a chronic interstitial nephritis, and right here lies the great importance of the condition from an insurance standpoint. We all know how very difficult it is to detect albumin and renal casts in a very dilute urine, and the possibility of dealing with an interstitial nephritis is, therefore, apparent.

It has been our effort to determine in every instance the cause of the low specific gravity if possible. We make repeated examinations of the urine, and ask the help of the Medical Examiner in the field to get at the cause and to obtain further samples of urine after the applicant has abstained from any excess of liquid for several hours.

In this group the risks were taken while the solids were low—persistently low. The number of exposures is 7,401 representing $11,941,100 of insurance. The probable claims calculated on the American Experience Table is 68+ in number and $114,973 in amount, and on the Compound Progressive Table 43.7+ in number and $75,522 in amount. The actual claims were 34 in number and $68,500 in amount, giving us 50 per cent. by number and 60 per cent. by amount on the American, and 78 per cent. by number and 91 per cent. by amount on the Compound Progressive tables.

In Table XVIII, we find that of the 34 actual claims in this group, only four reported causes of death have any direct or indirect relation to the urinary tract. There was one death from Cerebral Hemorrhage or Apoplexy, one from Organic Heart Disease, one from Cirrhosis of the Liver, and one from Nephritis or Bright's Disease.

GROUP 5. *Slightest possible trace of albumin. Low specific gravity. Relatively low urea. Excess of leucocytes and neck of bladder and urethral cells. Some squamous epithelium. Rarely a blood globule. No casts found.*

In this group we have a study of low solids accompanied by evidence of a mild disturbance in the lower part of the urinary tract. Except for the relatively low solids, the condition of the urine is very much like that in Group 2.

The usual causes of low solids have already been considered under Group 4, but here, with the presence of a small amount of albumin, the danger of a chronic interstitial nephritis is, if anything, greater

than in Group 4. It, therefore, remained for us to determine by all available means that a chronic nephritis did *not* exist. The study of a number of specimens obtained under varying conditions and particularly of samples obtained after the applicant has avoided any excess of liquids for a number of hours was essential. A reliable and observing Medical Examiner will generally find out the cause of a low specific gravity especially if due to the ingestion of an excess of liquid. Of infinite help also is the absence of a history or any physical signs pointing to a serious kidney disease.

The insurance risks in this group have, therefore, been the subjects of sufficient study to satisfy us of a reasonable cause for the low solids before issuing a policy, and our experience has thus far been a favorable one. The number of exposures is 4,348, involving $10,103,700 of insurance. The probable claims were calculated as 41.5+ in number and $113,700 in amount on the American, and 26.7+ in number and $77,876 in amount on the Compound Progressive tables. The actual claims were 21 in number and $36,700 in amount, making 51 per cent. by number and 32 per cent. by amount on the American Experience, and 78 per cent. by number and 47 per cent. by amount on the Compound Progressive tables.

Of the 21 actual claims in this group we find, by referring to Table XVIII, that seven causes of death have a direct or indirect connection with the urinary tract. There were three deaths from Organic Heart Disease, one from Cirrhosis of the Liver, one from Simple Peritonitis, one from Nephritis or Bright's Disease, and one from Diseases of Pregnancy.

GROUP 6. *Slightest possible trace of albumin. No sugar found. High specific gravity (1,030 or more). Relatively high urea (2.5 per cent. or more). Occasional blood globule, few leucocytes and cells from urethra or neck of bladder. Excess of mucin. No casts found.*

This group has been introduced into our studies to learn the real significance of a concentrated urine, whether temporary or permanent, as an element in longevity. This class of cases is in many respects like those of Group 2 except that the urine is highly concentrated. The specific gravity is 1,030 or more and the percentage of urea 2.5 or higher. The morphological elements in the sediment are about the same as in Group 2.

In this group we find more particularly the disturbing or irritating action of a concentrated urine on the mucous membrane of the lower part of the urinary tract, as indicated by the elements in the sediment. While this condition is not uncommon in the male, it is very often seen in the female, the probable explanation being that women take less liquid than men.

We also find in this class of cases the lasting effects of an old gonorrhea, without urethral stricture. We all know how commonly this condition exists, but without any effect on the length of life. We have, therefore, looked upon this group as relatively unimportant.

The number of exposures in this group is 10,870 representing $27,765,900 of insurance. The probable claims are 100+ in number and $268,741 in amount on the American, and 62.5+ in number and $169,981 in amount on the Compound Progressive tables. The actual number of claims is 42 in number and $120,700 in amount, giving us 42 per cent. by number and 45 per cent. by amount on the American Experience table, and 67 per cent. by number and 71 per cent. by amount on the Compound Progressive table.

In this group there were 42 actual claims and of these only six causes of death appear to be in any way connected with the urinary system (see Table XVIII). There was one death from Chronic Lead Poisoning, one from Cerebral Hemorrhage or Apoplexy, one from Embolism or Thrombosis, one from Simple Peritonitis, one from Nephritis or Bright's Disease, and one from other Diseases of the Kidneys and Annexa.

GROUP 7. FIRST EXAMINATION: *Slightest possible trace of albumin. Relatively normal solids. Rare or occasional hyaline and granular casts. Occasionally or rarely a blood globule.* SUBSEQUENT EXAMINATIONS: *Slightest possible trace, or no albumin. Relatively normal solids. Rarely a blood globule, excess of leucocytes, and neck of bladder or urethral cells, or sediment negative.*

In this group of cases we found at our first examination in the Home Office Laboratory evidence of a slight renal disturbance similar to what we found in Group 1. These cases were not considered insurable at that time. One or more samples of urine were requested after two, three, or four weeks, and our further study satisfied us that the condition originally found had disappeared and then policies were issued on the regular plans. The greater number of cases in this group were between the ages of 13 and 57 as will be seen by referring to tables XIII, XIV, and XV, but in reality the majority were between the ages of 25 and 45 and very few, indeed, were accepted after the age of 50.

These cases were not considered eligible for Group 1 for a variety of reasons, but principally because of either the age, the occupation, or the history of albuminuria, kidney disturbance or disease at some earlier date. In studying the applications and all of the facts presented, the Medical Director had a desire to know more about the urine before making a decision, and in every instance the further study of the urine demonstrated pretty clearly that the urinary findings at the original examination represented only a temporary renal disturbance of the nature of a mild irritation or congestion of the kidneys and of no serious importance.

The number of exposures in this group is 4,152, representing $11,798,500 of insurance. The probable claims are 42.8+ in number and $131,797 in amount on the American Table, and 28.7+ in number and $89,643 in amount on the Compound Progressive Table. The actual claims were 20 in number and $41,500 in amount, making 47 per cent. by number and 31 per cent. by amount on the American, and 70 per cent. by number and 46 per cent. by amount on the Compound Progressive tables.

By referring again to Table XVIII we find that of the 20 actual claims, only a comparatively few deaths have any direct or remote connection with the urinary tract. There was one death from Diabetes, one from Pericarditis or Acute Endocarditis, two from Organic Heart Disease, and one from Nephritis or Bright's Disease.

GROUP 8. FIRST EXAMINATION: *Very slight trace of albumin. Relatively normal or high solids. Few hyaline and granular casts, with renal cells and blood adherent.* SUBSEQUENT EXAMINATIONS (*After three months*): *Slightest possible trace or absent albumin, relatively normal solids. No casts found. Rarely or absent blood globules and leucocytes.*

Here we have a marked renal disturbance as is shown by the decided trace of albumin and a good number of casts, some of which have blood and renal cells adherent. This condition of the kidneys might well be a rather severe irritation, or, perhaps, a chronic disease of the kidneys with a mild active or acute condition superimposed. With the solids of the urine relatively normal and a negative clinical history in a person under 40 years of age, it is fairly safe to decide that the kidney condition probably belongs to the class of renal congestion or irritation secondary to some disturbance outside the urinary tract. It has been our custom to treat these cases as probably temporary derangements of the kidneys and postpone action for a number of months and then reconsider them. If, after the lapse of two or three months, examinations of a number of specimens of urine showed an absence of casts and either a perfectly normal urine, or only a slight local disturbance below the kidneys, the risks were accepted. In other words, the marked disturbance of the kidneys had to the best of our knowledge been only temporary and had entirely cleared up at the time the risks were assumed.

The number of exposures in this impairment is 818 with $1,160,900 of insurance involved. The probable claims were calculated to be 7.1+ in number and $11,820 in amount on the American table, and 4.4+ in number and $7,694 in amount on the Compound Progressive table. The actual number amounted to one $1,000 claim, giving 14 per cent. by number and 8 per cent. by amount on the American Experience table, and 23 per cent. by number and 13 per cent. by amount on the Compound Progressive table.

Notwithstanding this favorable showing in a ten-year period, I must confess a feeling of some anxiety as to the results we shall obtain in from 15 to 20 years for the reason that, in this particular group of cases, the character of the urine varies greatly from week to week. There is, therefore, a likelihood of accepting risks who have an important kidney disease. This danger is increased because of our limited means of getting at the true condition through the urine or by physical examination.

After a long study of the cases such as we encounter in this group, I am unable to explain satisfactorily why the urine to-day will show a decidedly unfavorable appearance and a week or so later will be practically normal, but still another week later will be as unfavorable as the original specimen of urine. But such is the fact, and it is needless for me to say that where the improved condition of the urine was not found constant, the cases were not accepted for insurance. Although our figures for this impairment are comparatively small, yet they are satisfactory for about ten years, but it is at the same time clear that these risks must be selected with great care.

The reported cause of death in the single claim in this group was Disease of the Intestines.

GROUP 9. FIRST EXAMINATION: *No albumin. Relatively low solids. No casts or blood or other morphological elements.* SUBSEQUENT EXAMINATIONS: *No albumin. Relatively normal solids. No casts or blood or other morphological elements found.*

We have here a group of insurance risks in which the urine, at the first examination, showed nothing of importance except relatively low solids—a specific gravity below 1,012, and less than 1.5 per cent. of urea. At subsequent examinations of the urine after one, two, or even four weeks, the solids were found to return to the normal and the urine was in other respects found to be perfectly normal. Most of these cases were less than 45 years of age at the time they applied for insurance, and the greater number of them were between the ages of 25 and 40 years.

These risks were not considered eligible for Group 4, at the first examination, and subsequent analyses of the urine were deemed advisable to ascertain whether the solids were persistently or only temporarily low. Usually we were able to learn through the Medical Examiner in the field the most probable cause of the low specific gravity of the first specimen of urine, and the policy was then issued.

The number of exposures in this group is not very large, there being only 1,177, involving $3,813,400 of insurance. The probable claims were calculated to be 12.4+ in number and $38,200 in amount on the American Experience, and 8.7+ in number and $26,214 in amount on the Compound Progressive tables. The actual claims amounted to 9 in number and $13,000 in amount, giving us 72 per cent. of the expected by number and 34 per cent. by amount on the American, and 103 per cent. by number and 50 per cent. by amount on the Compound Progressive tables.

The percentages in this group are exceptionally high and probably due to the comparatively small number at risk. We should expect a low percentage in this group because of the fact that the urine was perfectly normal at the time the risks were taken, and I believe that as the number of cases at risk increases we shall see a substantial drop in these figures.

In this group there were nine actual claims and of these only three deaths appear to be in any way connected with the urinary tract *i. e.* three deaths from Organic Heart Disease. (Table XVIII.)

GROUP 11. FIRST EXAMINATION: *Slightest possible trace, or absent albumin. Relatively normal solids. Sugar present varying from very slight trace to a large trace. Occasionally or rarely a blood globule and excess of leucocytes, and neck of bladder or urethral cells. Rarely a hyaline and granular cast, or, no casts found.* SUBSEQUENT EXAMINATIONS: *Slightest possible trace, or absent albumin. Relatively normal solids. No sugar found by copper or phenylhydrazine tests. Occasional or rare blood globule. Excess of leucocytes and neck of bladder and urethral cells. No casts found.*

This is a study of glycosurias where the amount of sugar in the urine at the time of the original examination varied from a very slight trace to a large trace. At this first urinary examination there may have been also evidence of renal disturbance as shown by the presence of renal casts and renal cells, or there may have been evidence of a disturbance in the lower part of the urinary tract; in other words, there was usually some indication of a disturbance of some part of the urinary tract due to the irritating action of the sugar. Such cases were never granted insurance while the urine showed the presence of sugar, but they were postponed for a number of weeks or months with the belief that we were dealing with a temporary glycosuria. When, after a number of analyses of the urine obtained under varying conditions and at different times of day, the sugar was found to have disappeared and during the period of ob-

servation had not reappeared, policies of insurance were given on the regular plans. Very few, if any, of these cases were given insurance if they were heavy weights or if they were in any other way impaired, and particular attention was given to the age, very few being accepted below the age of 25.

As a class these cases have shown an unusually high mortality up to the eighth or ninth year of exposure, and just why this should be so I am unable to explain. As will be seen by Table XVIII very few have died of Diabetes Mellitus, but a possible explanation is that there was a lowered resistance to the action of acute diseases caused by the failure to convert sugars and starches into glycogen.

This number of exposures is not large, there being 1,394 involving $3,364,100 of insurance. The probable claims were figured to be 13.5+ in number and $34,866 in amount on the American Experience Table, and 8.79+ in number and $22,923 in amount on the Compound Progressive Table. The actual claims were 8 in number and $94,000 in amount, making 59 per cent. of the expected by number and 270 per cent. by amount on the American, and 91 per cent. by number and 410 per cent. by amount on the Compound Progressive tables.

Our figures by amount are very high, but by referring to Tables III and V it will be seen that we had one $25,000 claim in the first year of exposure and one $50,000 claim in the third year of exposure. These account for a large part of the $94,000 of claims and for our high percentages by amount on both the American and the Compound tables.

Of the eight actual claims in this group there were only two causes of death which appeared to be in any way connected with the urinary system (see Table XVIII). There was one death from Paralysis, and one from Organic Heart Disease. There were no deaths reported as the result of Diabetes.

To summarize our figures in these eleven groups, excepting Group 10 (see Table I), we have a total of 59,270 exposures, representing $155,695,300 of insurance. The probable claims in all groups were calculated as 576+ in number and $1,637,298 in amount on the American Experience Table, and 374+ in number and $1,082,871 in amount on the Compound Progressive Table. The actual claims were 261 in number and $718,500 in amount, giving us 45 per cent. of the expected by number and 44 per cent. by amount on the American Table, and 70 per cent. by number and 66 per cent. by amount on the Compound Progressive Table.

For a better understanding of the figures which have been presented, you are referred to Table III. Here we find a total of 19,564 cases at risk involving $57,563,800 of insurance. By adding these figures to the risks of the second year, the third year, the fourth year, etc., we have the total figures given in Table I. For example: A policy for $1,000 issued at age 30, if it remains in force three years, gives one year of experience during the first year at age 30, one year during the second year at age 31, and one year during the third year at age 32. We, therefore, have a total exposure of three years and $3,000.

In making up the probable claims our Actuary has used the same method of calculation as was employed in the Medico-Actuarial Investigation, the results of which have recently been published.

Table I—Grand Total in All Groups

Group	Exposures		Probable Claims				Actual Claims		Per Cent. of Probable			
			American Exp.		Compound Pro.				American Exp.		Compound Pro.	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount
1	5,546	$1,154,400	38,007	$7,645	40,746	62,135	31	41,200	53	47	76	66
2	23,061	76,567,900	227,577	823,210	146,220	541,728	94	300,900	41	37	64	56
3	503	1,025,400	5,302	12,346	3,740	9,155	1	1,000	19	8	27	11
4	7,401	11,941,100	68,198	114,973	43,768	75,522	34	68,500	50	60	78	91
5	4,348	10,103,700	41,543	113,700	26,757	77,876	21	36,700	51	32	78	47
6	10,870	27,765,900	100,188	268,741	62,545	169,981	42	120,700	42	45	67	71
7	4,152	11,798,500	42,819	131,797	28 728	89,643	20	41,500	47	31	70	46
8	818	1,160,900	7 136	11,820	4 417	7,694	1	1,000	14	8	23	13
9	1,177	3,813,400	12 442	38,200	8,706	26,214	9	13,000	72	34	103	50
10												
11	1,394	3,364,100	13.537	34,866	8 795	22,923	8	94,000	59	270	91	410
Total	59,270	$155,695,300	576 749	$1,637,298	374 422	$1,082,871	261	$718,500	45	44	70	66

For comparison we have the figures in all of the Ordinary business, irrespective of whether analyses of urine were made or not made, for the years of 1905 to 1913 inclusive. The probable claims were calculated as 17,167 and the actual claims amounted to 8,627, giving 50.26 per cent. of the expected on the American table.

Table II.—Total Ordinary Business.

Issues of 1905-1913.

Experience of 1905 to 1914

Probable Claims	Actual Claims
17,165	8,627

Percentage of probable = 50.26.

It will be seen, therefore, that the figures for the risks having urinary impairments (Table I) are more than 5 per cent. under the average for all ordinary risks for the corresponding period of time.

These figures are rather astounding. Just why they are more than 5 per cent. under the average, I do not know. These cases were not treated in our Home Office any differently from those which showed no urinary impairments. We should expect a percentage a trifle above the average, and it is probable that, in 15 or 20 years of experience, a percentage somewhat above the average will obtain.

We have also given for your consideration an analysis of the issues of 1904 to 1913 inclusive in their different years of exposure.

TABLE III—FIRST YEAR

Group	Exposures		Probable Claims: American Exp.		Probable Claims: Compound Pro.		Actual Claims		Per Cent. of Probable: American Exp.		Per Cent. of Probable: Compound Pro.	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount
1	1,018	1,550,600	9.719	15,266	5 746	9,157	3	3,000	31	20	52	33
2	8,590	30,801,900	82.009	317,825	18 576	194,321	23	104,200	28	33	47	54
3	89	174,000	0 870	1,862	0 519	1,159						
4	2,087	3,327,800	18 218	30,250	10 334	17,531	8	19,200	44	63	77	110
5	1,457	3,576,500	13 265	36,547	7 697	22,404	6	10,000	45	27	78	45
6	4,155	11,692,300	37 457	110,890	21 622	65,624	11	55,200	29	50	51	84
7	1,229	4,115,800	12 085	43,761	7 251	27,144	2	16,000	17	37	28	59
8	235	339,200	2 029	3,440	1 143	2,059						
9	247	768,300	2 389	7,343	1 423	4,361	1	1,000	42	14	70	23
10												
11	457	1,217,400	4 307	12,318	2 540	7,480	1	25,000	23	203	39	334
Total	19,564	$57,563,800	182 348	$579,502	106 851	$351,240	55	$233,600	30	40	51	67

TABLE IV—SECOND YEAR

Group	Exposures		Probable Claims: American Exp.		Probable Claims: Compound Pro.		Actual Claims		Per Cent. of Probable: American Exp.		Per Cent. of Probable: Compound Pro.	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount
1	900	1,370,900	8 857	13,930	5 594	8,924	9	9,000	102	65	161	101
2	6,566	23,135,200	64 498	248,281	40 806	162,556	35	87,200	54	35	86	54
3	82	165,000	0 828	1,845	0 530	1,229						
4	1,672	2,670,100	14 872	24,768	8 986	15,291	9	10,500	61	42	100	69
5	1,080	2,651,400	10 055	28,549	6 223	18,843	5	15,000	50	53	80	80
6	2,867	7,872,600	26.361	76,626	16,205	48,890	9	16,000	34	21	56	33
7	1,001	3,330,700	10.134	37,060	6 492	24,624	4	4,000	39	11	62	16
8	206	293,500	1 802	3,134	1 077	2,011	1	1,000	55	32	93	50
9	219	735,900	2 192	7,221	1 398	4,577	2	2,000	91	28	143	44
10												
11	360	948,200	3 483	9,912	2 191	6,425	4	17,000	115	172	183	265
Total.	14,953	$43,173,500	143 082	$451,326	89 502	$292,870	78	$161,700	55	36	87	55

TABLE V—THIRD YEAR

Group	Exposures		Probable Claims: American Exp.		Probable Claims: Compound Pro.		Actual Claims		Per Cent. of Probable: American Exp.		Per Cent. of Probable: Compound Pro.	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount
1	818	1,217,000	8.275	12,484	5 565	8,451	4	6,000	48	48	72	71
2	4,133	13,805,800	41.711	156,478	28 086	109,718	18	82,500	43	53	64	75
3	76	150,500	0.780	1,717	0 531	1,211	1	1,000	128	58	188	83
4	1,349	2,206,600	12.290	21,098	7 917	13,921	1	2,000	08	09	13	14
5	753	1,710,900	7 152	19,837	4 707	14,116	3	3,700	42	19	64	26
6	1,881	4,774,400	17 534	46,986	11 422	31,423	6	14,000	34	30	53	45
7	671	1,846,800	7.004	21,446	4 774	15,203	2	2,000	29	09	42	13
8	139	208,500	1 211	2,373	0 764	1,636						
9	175	591,600	1 814	5,856	1 233	3,956						
10												
11	238	604,200	2 341	6,587	1 564	4,560	2	51,000	85	774	128	1118
Total	10,233	$27,116,300	100 112	$294,892	66 563	$204,195	37	$162,200	37	55	56	79

TABLE VI—FOURTH YEAR

Group	Exposures		Probable Claims: American Exp.		Probable Claims: Compound Pro.		Actual Claims		Per Cent. of Probable: American Exp.		Per Cent. of Probable: Compound Pro.	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount
1	753	1,085,700	7.893	11,587	5 558	8,218	4	10,000	51	86	72	122
2	2,003	5,694,600	20 677	65,580	14 600	48,134	9	16,000	44	24	62	33
3	72	144,500	0 764	1,722	0 546	1,280						
4	947	1,517,100	8 945	15,087	6 095	10,537	3	4,000	34	27	49	38
5	491	1,091,400	4 857	14,404	3 365	10,996	1	1,000	21	07	30	09
6	988	1,954,700	9 343	19,361	6 364	13,484	7	12,000	75	62	110	89
7	455	1,088,600	4 835	13,057	3 443	9,710	6	12,000	124	92	174	124
8	104	142,500	0.897	1,251	0 584	819						
9	141	447,900	1.522	4,422	1 088	3,078						
10												
11	134	267,300	1 308	2,654	0 909	1,861						
Total.	6,088	$13,434,300	61.041	$149,125	42.552	$108,117	30	$55,000	49	37	71	51

Table VII—Fifth Year

Group	Exposures		Probable Claims				Actual Claims		Per Cent. of Probable			
			American Exp.		Compound Pro.				American Exp.		Compound Pro.	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount
1	693	986,900	7 526	10,891	5 602	8,163	3	4,000	40	37	54	49
2	1,004	1,985,400	10 395	22,571	7 621	17,133	4	5,000	38	22	52	29
3	69	139,400	0 759	1,743	0 570	1,360						
4	645	1,047,200	6 370	10,977	4 563	8,068	6	6,900	94	63	131	86
5	309	743,500	3 167	10,551	2 316	8,464	5	5,000	158	47	216	59
6	598	975,600	5 701	9,752	4 047	7,079	6	20,500	105	210	148	290
7	342	638,400	3 659	7,157	2 710	5,410	4	4,000	109	56	148	74
8	68	87,800	0 597	781	0.409	538						
9	129	417,600	1 427	4,190	1.066	3,042	2	2,000	140	48	188	66
10												
11	93	141,800	0 925	1,416	0 667	1,029	1	1,000	108	71	150	97
Total	3,950	$7,163,600	40 526	$80,029	29,571	$60,286	31	$48,400	76	60	105	80

Table VIII—Sixth Year

Group	Exposures		Probable Claims				Actual Claims		Per Cent. of Probable			
			American Exp.		Compound Pro.				American Exp.		Compound Pro.	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount
1	619	842,300	6.961	9,710	5 442	7,654	1	1,000	14	10	18	13
2	467	695,600	4 889	7,425	3,747	5,741	5	6,000	102	81	133	105
3	57	114,500	0.647	1,486	0 511	1,213						
4	403	651,100	4 130	6,820	3.135	5,253	5	22,900	121	336	159	436
5	167	224,200	1.823	2,421	1.414	1,879	1	2,000	55	83	71	106
6	257	322,600	2.514	3,205	1 875	2,412	3	3,000	119	94	160	124
7	251	415,700	2.752	4,805	2.135	3,792	1	2,500	36	52	47	66
8	36	47,400	0.324	435	0 232	315						
9	118	397,600	1.351	4,103	1 061	3,126	2	6,000	148	146	189	192
10												
11	64	112,700	0 649	1,155	0 495	883						
Total	2,439	$3,823,700	26 040	$41,565	20 047	$32,268	18	$13,400	69	104	90	134

Table IX—Seventh Year

Group	Exposures		Probable Claims				Actual Claims		Per Cent. of Probable			
			American Exp.		Compound Pro.				American Exp.		Compound Pro.	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount
1	459	644,800	5 355	7,689	4 342	6,282	4	4,200	75	55	92	67
2	183	261,500	2.030	2,870	1.624	2,292						
3	37	82,000	0.429	1,142	0.348	970						
4	230	403,300	2.493	4,468	1 982	3,615	2	3,000	80	67	101	83
5	73	82,800	0.895	1,006	0.735	826						
6	81	101,200	0.818	1,059	0 632	834						
7	151	274,500	1 670	3,284	1 334	2,689						
8	21	28,000	0 191	265	0 141	201						
9	87	335,600	1 057	3,532	0 863	2,780	2	2,000	189	57	232	72
10												
11	31	44,000	0.335	496	0 268	404						
Total	1,353	$2,257,700	15 273	$25,811	12 269	$20,893	8	$9,200	52	36	65	44

Table X—Eighth Year

Group	Exposures		Probable Claims				Actual Claims		Per Cent. of Probable			
			American Exp.		Compound Pro.				American Exp.		Compound Pro.	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount
1	229	366,700	2.702	4,650	2 268	3,974	2	3,000	74	65	88	75
2	78	119,100	0.910	1,365	0 760	1,133						
3	18	52,500	0.192	796	0.157	705						
4	53	85,900	0 672	1,095	0 571	941						
5	14	19,000	0.252	308	0 229	277						
6	32	49,500	0.336	563	0 273	471						
7	42	74,500	0 529	1,000	0 452	863						
8	9	14,000	0.085	141	0 067	115						
9	47	95,700	0 521	1,190	0.429	1,019						
10												
11	11	21,500	0 122	248	0 103	212						
Total	533	$898,400	6.321	$11,356	5 309	$9,710	2	$3,000	32	26	38	31

Table XI—Ninth Year

Group	Exposures		Probable Claims				Actual Claims		Per Cent. of Probable			
			American Exp.		Compound Pro.				American Exp.		Compound Pro.	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount
1	53	85,500	0 676	1,395	0 562	1,275	1	1,000	148	72	169	78
2	33	62,800	0 417	752	0 365	646						
3	3	3,000	0 033	33	0 028	28						
4	14	31,000	0 199	401	0 178	358						
5	4	4,000	0 077	77	0 071	71						
6	11	23,000	0 124	299	0 105	264						
7	9	12,500	0 142	218	0 130	201	1	1,000	704	459	769	498
8												
9	14	23,200	0 169	313	0 145	275						
10												
11	6	7,000	0 067	80	0 058	69						
Total	147	$252,000	1 904	$3,568	1 672	$3,187	2	$2,000	105	56	120	63

Table XII—Tenth Year

Group	Exposures		Probable Claims				Actual Claims		Per Cent. of Probable			
			American Exp.		Compound Pro.				American Exp.		Compound Pro.	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount
1	4	4,000	0 043	43	0 037	37						
2	4	6,000	0 041	63	0 035	54						
3												
4	1	1,000	0 009	9	0 007	7						
5												
6												
7	1	1,000	0 009	9	0 007	7						
8												
9												
10												
11												
Total	10	$12,000	0 102	$124	0 086	$105						

Certain groups make an unfavorable showing when considered by years of exposure. For example, Group 11 (glycosurias) shows the effect of unusually large claims *by amount*. In the first year there was one claim of $25,000, in the second year four claims amounting to $17,000, and in the third year two claims amounting to $51,000, thus raising the average *by amount* of insurance for the ten years to 270 per cent., but calculated *by the number* of claims the percentage was 59 on the American Table. Some of the other groups were unfortunate in having exceptionally large claims *by amount* in some one or more years of exposure, and yet our averages for the ten years are very gratifying, as will be seen by referring to Table I.

Let us now consider the exposures by ages at entry. The Actuary has given us four classes, 13-27, 28-42, 43-57, and 58-72.

At the ages from 13 to 27 we find two groups rather high. No. 9 is large *by number*, 72 per cent., but probably due to the small number at risk. No. 11 is high *by amount*, due to the few large claims. At ages from 28 to 42 we find group 11 still high *by amount*, due to two claims, one for $50,000. At the ages from 43 to 57 we find groups 9 and 11 still high by both *number* and *amount*, apparently due partly to the small number at risk and partly to rather large claims by amount, particularly in group 11. At ages from 58 to 72, the number at risk is so small as to give us very little reliable data.

In Table XVIII we have the reported causes of

Table XIII—Ages at Entry 13-27

Group	Exposures		Probable Claims				Actual Claims		Per Cent. of Probable			
			American Exp.		Compound Pro.				American Exp.		Compound Pro.	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount
1	1,685	2,086,200	13 719	17,011	8 496	10,552	8	8,200	58	48	94	78
2	6,777	11,084,400	54 598	89,414	31 758	51,686	21	53,500	38	60	66	104
3	110	204,500	0 899	1,681	0 562	1,060						
4	2,833	3,312,200	22 893	26,763	13 552	15,837	9	8,900	39	33	66	56
5	1,444	1,995,100	11 620	16,041	6 796	9,328	6	8,000	52	50	88	86
6	4,303	6,708,800	34 575	54,014	20 119	31,244	18	18,700	52	35	89	60
7	1,110	1,524,200	8 974	12,329	5 386	7,338	1	1,000	11	8	19	14
8	512	606,900	4 121	4,887	2 448	2,904	1	1,000	24	20	41	34
9	338	1,156,500	2 708	9,345	1 730	5,820	2	2,000	72	21	116	34
10												
11	367	441,200	2 963	3,563	1 749	2,090	1	10,000	34	281	57	478
Total	19,479	$29,120,000	157 130	$235,048	92 596	$137,859	67	$111,300	43	47	72	81

TABLE XIV—AGES AT ENTRY 28-42

Group	Exposures		Probable Claims				Actual Claims		Per Cent. of Probable			
			American Exp.		Compound Pro.				American Exp.		Compound Pro.	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount
1	2,833	4,344,200	26 668	41,211	18 062	27,965	13	17,000	49	41	72	61
2	12,123	44,011,200	111,443	408,583	69 312	253,295	44	136,900	39	34	63	54
3	298	428,400	2 848	4,103	1 940	2,786	1	1,000	35	24	52	36
4	3,975	7,114,100	36 429	66,413	23 346	43,181	20	42,600	55	64	86	99
5	2,383	4,773,700	21 907	44,142	13 840	27,662	11	22,700	50	51	79	82
6	5,327	15,905,700	48 368	145,503	29 885	89,264	15	68,000	31	47	50	76
7	2,155	6,126,900	19.998	57,144	12 857	36,170	11	26,500	55	46	86	73
8	276	428,000	2.509	3,933	1 594	2,515						
9	587	1,955,900	5.488	18,458	3 640	12,263	3	3,000	55	16	82	24
10.												
11 ..	813	2,171,100	7 566	20,293	4 843	12,892	2	51,000	26	251	41	396
Total	30,770	$87,259,200	283 224	$809,783	179 319	$507,993	120	$368,700	42	46	67	73

TABLE XV—AGES T ENTRY 43-57

Group	Exposures		Probable Claims				Actual Claims		Per Cent. of Probable			
			American Exp.		Compound Pro.				American Exp.		Compound Pro.	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount
1	943	1,625,800	14 377	25,779	11 408	20,513	7	13,000	49	50	61	63
2	3,958	20,031,400	54,761	277,332	39 773	199,406	26	1056,00	47	38	65	53
3	88	378,500	1 313	6,079	1 031	4,895						
4	565	1,478,800	7 891	20,523	6 019	15,397	5	17,000	63	83	83	110
5	503	3,262,900	7 122	49,571	5 322	37,205	4	6,000	56	12	75	16
6	1,210	5,080,400	16.266	67,052	11 778	47,813	9	34,000	55	51	76	71
7	825	4,020,800	11 656	58,041	8 660	42,611	7	13,000	60	22	81	31
8	23	39,000	0 308	496	0 226	359						
9	238	687,000	3 703	9,914	2 922	7,717	4	8,000	108	81	137	104
10												
11	209	704,800	2 866	9,652	2 095	6,899	5	33,000	174	342	239	478
Total	8,562	$37,309,400	120 263	$524,439	89 234	$382,815	67	$230,500	56	44	75	60

TABLE XVI—AGES AT ENTRY 58-72

Group	Exposures		Probable Claims				Actual Claims		Per Cent. of Probable			
			American Exp.		Compound Pro.				American Exp.		Compound Pro.	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount
1	85	98,200	3.243	3,644	2 780	3,105	3	3,000	93	82	108	97
2	203	1,440,900	6.775	47,881	5.377	37,341	3	4,000	44	08	56	11
3	7	14,000	0 242	483	0 207	414						
4	28	36,000	0 985	1,271	0 851	1,107						
5	18	72,000	0 894	3,916	0 799	3,681						
6	30	71,000	0 979	2,172	0 763	1,660						
7	62	126,600	2 191	4,283	1 825	3,524	1	1,000	46	23	55	28
8	7	87,000	0 198	2,504	0 149	1,916						
9	14	14,000	0 483	483	0 414	414						
10												
11	5	47,000	0 142	1,358	0 108	1,042						
Total	459	$2,006,700	16 132	$68,028	13 273	$54,204	7	$8,000	43	12	53	15

TABLE XVII—SUMMARY BY AGES

Ages at Entry	Exposures		Probable Claims				Actual Claims		Per Cent. of Probable			
			American Exp.		Compound Pro.				American Exp.		Compound Pro.	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount	Number	Amount
13–27	19,479	29,120,000	157 130	235,048	92 596	137,859	67	111,300	43	47	72	81
28–42	30,770	87,259,200	283 224	809,783	179 319	507,993	120	368,700	42	46	67	73
43–57	8,562	37,309,400	120,263	524,439	89 234	382,815	67	230,500	56	44	75	60
58–72	459	2,006,700	16 132	68,028	13 273	54,204	7	8,000	43	12	53	15
Total	59,270	$155,695,300	576 749	$1,637,298	374 422	$1,082,871	261	$718,500	45	44	70	66

death together with the urinary impairments at the time the risks were accepted for insurance.

TABLE XVIII—DEATH CLAIMS

Actuarial Code Number	Reported Causes of Death	GROUPS									DEATHS	
		1	2	3	4	5	6	7	8	9	11	No.	Amount
1	Typhoid fever	1	2				5				1	9	$32,200
12	Erysipelas		1									1	3,000
14	Purulent infection and septicemia	1	1					1				3	4,000
16	Pellagra				1							1	1,200
17	Tuberculosis of the lungs	8	13		9	4	7	3		3	2	49	71,600
18	Other varieties of tuberculosis		1				1					2	2,000
21	Cancer and other malignant tumors	1	9		3	1		1				15	81,000
22	Acute articular rheumatism						1					1	5,000
23	Chronic rheumatism and gout						1					1	2,000
24	Diabetes							1				1	1,000
25	Anæmia and chlorosis							1		1		2	3,500
26	Other general diseases		1				1					2	6,000
27	Alcoholism, acute or chronic		1									1	1,500
28	Chronic lead poisoning		1				1					2	2,000
29	Other chronic poisoning		1									1	1,000
30	Inflammation of brain and its membranes	1	2		1	2	2					8	21,700
33	Cerebral hemorrhage and apoplexy		3		1		1					5	10,000
34	Softening of the brain						1					1	2,000
35	Paralysis without specified cause	2	1								1	4	30,000
36	General paralysis of the insane		1									1	1,000
37	Other forms of mental alienation		2					1				3	5,000
39	Other diseases of the nervous system				1							1	1,000
42	Pericarditis and acute endocarditis		1					1				2	2,000
43	Organic diseases of the heart	5	4		1	3		2		3	1	19	35,400
44	Angina pectoris		1									1	1,000
46	Embolism and thrombosis	1	1				1					3	3,000
50	Bronchopneumonia		1									1	1,000
51	Pneumonia	2	8	1	4	4	1				1	21	60,000
54	Other diseases of the respiratory system	1					1					2	2,000
56	Other diseases of the stomach and mouth						1	1	1			3	4,000
60	Appendicitis and typhilitis		4			1	2					7	26,000
61	Hernias, intestinal obstruction				1		1					2	2,000
62	Other diseases of the intestines	1			2	1			1			5	8,000
63	Cirrhosis of the liver				1	1						2	2,500
64	Biliary calculi						1					1	1,000
66	Simple peritonitis non-puerperal		1			1	1					3	3,000
68	Nephritis and Bright's disease	3	4		1	1	1	1				11	16,000
69	Other diseases of kidneys and annexa						1					1	1,000
76	Diseases of pregnancy and the puerperal state				1	1						2	2,000
77	Gangrene				1							1	1,500
81	Suicide	2	6		2		4	1		1	1	17	88,500
82	Burns and conflagrations		1				2					3	4,000
83	Accidental drowning		4		1		1	1			1	8	76,000
86	Other varieties of traumatism		5		1			1				7	11,500
87	Effects of cold, heat, lightning		1									1	17,700
90	Fractures, cause not specified	2	2		1			1				6	7,000
91	Other external violence		3		1			1		1		6	15,700
92	Ill-defined organic diseases							1				1	1,000
93	Sudden death		4				2	1				7	34,000
94	Cause of death not specified or ill-defined		3				1					4	4,000
		31	94	1	34	21	42	20	1	9	8	261	$718,500

In Table XIX we have a condensed classification of the causes of death. There are 13 general classes and in column 1 are the claims showing urinary impairments; in column 2, the claims of 1912 on the issues of 1905 to 1912; in column 3, the claims of 1914 on the issues of 1892 to 1914; and in columns 4, 5, and 6 we have the percentages. Of the 261 claims we have 91 or 34.87 per cent. from General Diseases; 23 or 8.81 per cent. from Diseases of the Nervous System; 25 or 9.58 per cent. from Diseases of the Circulatory System; 24 or 9.2 per cent. from Diseases of the Respiratory System; 23 or 8.81 per cent. from Diseases of the Digestive System; 12 or 4.6 per cent. from Diseases (non-venereal) of the Genitourinary System and Annexa; 48 or 18.38 per cent. from External causes; and 12 or 4.6 per cent. from Ill-defined Diseases.

It will be seen that our highest mortality was from General Diseases and External causes, but that the percentages of claims with urinary impairments are very close to the percentages of claims of 1912, in the total issues of 1905 to 1912. It is interesting to note that in Diseases of the Urinary System and Annexa, we have 4.6 per cent. with urinary impairments while there was 7.37 per cent. in the total business issued during practically the same period. In Diseases of the Circulatory System there was 9.58 per cent. with urinary impairments as against 8.96 per cent. of the claims of 1912. The percentage with urinary impairments is here relatively high, probably partly due to the paucity of data, and partly to the fact that disturbances of the urinary system are very common in Diseases of the Circulatory System.

For the purpose of comparison we have included the claims paid in 1914 on policies issued from 1892 to 1914. Some of these policies were in force 22 or 23 years. While the length of time influences the cause of death in these cases, it is of interest to note that about the same ratios obtain as for the shorter period. The percentage of deaths from Diseases of the Genitourinary System and Annexa is not one-half the total percentage.

TABLE XIX

	Claims with Urinary Impairments	Claims in 1912 on Issues of 1905 to 1912	Claims in 1914 on Issues of 1892 to 1914	Urinary Impairments	Ratio Issue '05–'12 in 1912	Issue '92–'14 in 1914
I. General diseases	91	469	1041	34 87	32 33	31 17
II. Diseases of the nervous system, etc	23	137	378	8 81	9.44	11 32
III. Diseases of the circulatory system	25	130	378	9 58	8 96	11 32
IV. Diseases of the respiratory system	24	165	318	9 20	11 37	9 52
V. Diseases of the digestive system	23	157	303	8 81	10 82	9 07
VI. Non-venereal diseases of the genitourinary system and annexa	12	107	389	4 60	7 37	11 65
VII. The puerperal state	2	5	8	0 77	0 34	0 24
VIII. Diseases of the skin and of the cellular tissue	1	7	19	0 38	0 48	0 57
IX. Diseases of the bones and of the organs of locomotion		1	12	.	0 07	0 36
X. Malformations		..	4	..	..	0 12
XI. Old Age	..	1	5	.	0 07	0 15
XII. External causes	48	226	448	18 38	15 58	13 40
XIII. Ill-defined diseases	12	46	37	4 60	3.17	1 11
Grand total all causes	261	1451	3340	100 00	100.00	100 00

We have referred to the fact that the applicants for insurance showing the different urinary impairments, already considered, were accepted on regular plans issued by the Metropolitan. For the purpose of showing the distribution of the different kinds of policies among the 19,564 risks, you are referred to Table XX.

TABLE XX

Kind of Policy	Entire Issue	Per Cent. of Total	Urinary Impairments	Per Cent. of Total
Life Endt. at 85 Endt. at 90 Reduced Prem. Life	136,831	22.13	5,438	27 79
Ltd. Pay. Life Op. Life & Endt.	280,767	45 41	7,554	38 61
Regular Endts.	182,250	29 48	6,003	30 68
Miscellaneous	18,432	2 98	569	2 92
Total	618,280	100 00	19,564	100 00

It will be observed that for nine years in the Life, Endowment at age 85, Endowment at age 90, and Reduced Premium Life policies, the total issue amounted to 136,831 or 22.13 per cent. Those with Urinary Impairments amounted to 5,438 or 27.79 per cent.—just 5.66 per cent. above the average.

In the Limited Payment Life, and Optional Life and Endowment policies there was a total issue of 280,767 or 45.41 per cent., while those with Urinary Impairments amounted to 7,554 or 38.61 per cent. —or 6.8 per cent. below the average.

In the regular Endowment policies there was a total issue of 182,250 or 29.48 per cent. Those with Urinary Impairments amounted to 6,003 or 30.68 per cent.—just 1.2 per cent. above the average.

This table shows very clearly that the relatively low mortality in policies with some urinary impairment is not due to a large proportion of those in the Endowment class.

We propose to continue the study of these groups of impairments and, with a larger number of cases at risk, to make smaller subdivisions, from which valuable information should be obtained.

In conclusion, I wish to thank Dr. T. H. Willard, and Dr. A. S. Knight, Medical Directors, and Mr. James D. Craig, Assistant Actuary of the Metropolitan Life Insurance Company for valuable suggestions and help in the preparation of this paper.

THE FORM OF TYPHUS FEVER THAT IS ENDEMIC IN NEW YORK CITY.*

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I HOPE this audience will not be disappointed by my not presenting a formal paper. I am not to blame for this as the President of the Academy requested that the speaker give no formal paper, but present the subject of the evening in a simple talk, as he believed the subject could thereby be more forcibly brought to the attention of the members of the Academy than by the reading from manuscript. If, therefore, the presentation is deficient in detail and completeness, I will ask for indulgence.

It has been facetious but rather pertinently remarked by one of the great humorists that "the degree of civilization of a people is in direct proportion to the amount of soap used by them." If the speaker might paraphrase this epigram it would be found that it was very applicable to the subject of typhus fever. He would like to say, therefore, that the amount of typhus fever among nations was in *indirect* proportion to the amount of soap used. In other words, where cleanliness was not maintained, where the ordinary laws of hygiene were transgressed and neglected, there would be found typhus fever, with all its accompanying horrors. This form of fever was always in the train of conditions which were associated with personal filth, with segregation of people in confined quarters, with economic states which produced squalor and famine; finally it stood as an index of man's greed, of his lust of conquest, of his sociologic inefficiency. It therefore attended in the wake of wars, in the purlieus or districts of cities to which no laws of sanitation had been enforced, in prisons, ships, and other institutions where men had been herded together without the means being supplied for personal cleanliness, and in the hovels of poverty where soap was a luxury. In short, the disease under discussion appeared whenever conditions were favorable to the development of vermin, particularly of the body louse, with which the disease is now specifically associated as an etiologic factor, as was proven by the work of Nicolle, Comte, and Conseil in their experiments at the Pasteur Laboratory at Tunis, Africa.

The body louse, *Pediculus vestimenti*, explains the most of the epidemiologic factors of the disease, particularly its appearance and its spread.

Epidemic typhus fever has appeared in the past in all countries, and particularly in those where the social conditions were associated with poverty; thus in Ireland and Russia it was particularly prevalent both in disseminated epidemics and in persistent endemic form. In Russia it is prevalent to this day. Even America has not been spared in the past, as was evidenced by its occurrence in 1836, in 1847, in 1865, in 1881 and in 1893. In the latter two periods I had personal experience with the epidemics in New York City; in fact, my knowledge of typhus fever in its epidemic form has been derived from this personal contact as well as from literature.

To form a proper conception of this disease it will be necessary to divest from your minds all preconceived notions of the disease gained from textbooks and monographs. In none of these will you obtain anything like the characters of the disease as it now appears in its modified form in New York and other cities of the United States. It will also be necessary for you to learn that typhus fever exists in two forms, which in their clinical manifestations bear only a superficial resemblance; that the mild, attenuated, or endemic form is masquerading in strange garments with features so disguised as to have escaped entirely observation and to have been mistaken by almost everybody for a form of typhoid fever.

The object of the speaker is to show wherein the epidemic communicable form differs from the mild or endemic and less communicable form of this fever; for this purpose it may assist you to listen to a brief description of the picture of the more virulent type of the disease, or what we shall call epidemic typhus fever.

Epidemic typhus fever usually begins rather suddenly, with a chill or chilly sensation, though it occasionally may be preceded by two or three days of malaise and general body pains. Headache rapidly supervenes, and fever immediately appears. The headache increases in intensity and the fever is quickly augmented, so that on the second or third day the temperature of the patient may have reached its fastigium of 104° or 105° F. From this time on the fever remains constant, with only slight diurnal changes, in the form of a morning remission of rarely more than 1° F. On the fifth or sixth day from the onset an eruption makes its appearance near the axillary folds, on the back, and on the abdomen, in the order mentioned. The eruption is at first distinctly papular, each spot being about one-half of a millimeter high, ovoid in shape, dirty pink in color, not circumscribed by a well-defined border, but each spot seems to merge almost insensibly into the surrounding skin. When subjected to pressure the papule fades but does not absolutely disappear, as is readily seen when a glass microscope slide is used to produce the pressure when all the changes which the spot undergoes under pressure may be readily observed. The eruption rapidly involves more of the trunk and extremities, sometimes even the palms of the hand and the soles of the feet, though it rarely appears on the face excepting on the sides of the neck below the ears. When it reaches its full efflorescence the

*Remarks made in opening a discussion on typhus fever at the New York Academy of Medicine, October 21, 1915.

character of the eruption changes, usually on the eighth day of the disease; the spots become more of a rusty pink, are more easily discerned when under the pressure of the glass slide—that is, they fade much less, and now some of them show points of hemorrhage in their centers. These hemorrhagic spots become quickly a uniform purple, and no amount of pressure will cause any change in their appearance.

When the eruption has reached its height the headache begins to wane, and the sensorium of the patient shows a more profound involvement. Delirium, which may have been present, becomes a more prominent feature; it may appear in one of two distinct types: one as an active, wild, expansive form, in which the patient may fight with the attendant, or may suddenly jump out of bed and even attempt to throw himself from the open window; on the other hand, it may show itself as a low, muttering raving without the expression of ideas, rambling and incoherent. At this stage of the fever there is marked prostration and involvement of the entire muscular system, the afflicted one being in a condition of constant tremor, relaxed to such an extent that he may lie in a heap in the most dependent part of the bed. He is now entirely oblivious to what is going on about him; while he may obey an order to show his tongue, he may leave it protruded even when told to replace it. Somnolence, which was present in the beginning of the illness gives place to wakefulness, and the patient may lie completely prostrated, unconscious, with wide-open eyes, staring into vacancy, muttering, with trembling lips and trembling arms, or picking at the bed clothes, with all the signs of impending dissolution as evidenced by a very rapid, thready pulse and general cyanosis. On the thirteenth or fourteenth day, however, all these discouraging signs of a profound toxemia may quickly change with a sudden and critical fall in the fever; the temperature in the course of a few hours may decline to subnormal and the patient fall into a restful sleep, whereupon convalescence becomes established. When death results from the disease, which it does in from 11 to 60 per cent. of all hospital cases, varying according to the virulence of the epidemic, the age of the patient the stage of the epidemic, and similar factors, it occurs between the ninth and twelfth day of the disease, in most cases. A few patients die after the crisis, from the intense exhaustion, though this is the exception. There is no disease in which the transition from intense sickness to health is so sudden as in typhus fever. What I want to impress on you is the high mortality which this disease induces. Murchison, in statistics gathered from over twenty years of experience in the London Fever Hospital, gives the average percentage of deaths from typhus fever as 18.92 per cent. in 18,268 cases. This result corresponds fairly closely with Curschmann's observation regarding the mortality in the Berlin hospitals of 23.4 per cent., an "alarming mortality," as he designates it.

Epidemic typhus fever is a disease of the *winter months*, or rather is most prevalent in cold weather. When the warm summer months arrive the epidemic either wanes or dies out. This is borne out by the present epidemic in the Balkan States. Last winter we read of deaths by the thousands in that unfortunate country, but in the spring, or rather, early summer, on the arrival of the American Red Cross contingent, the epidemic was well on the decline, and after the summer very little was left.

The communicability of this disease is very marked; it matters very little whether it be by the body louse or by some other agent, though there is very strong reason to believe that it is only communicated by that parasite, the fact remains that the disease is very communicable.

To recapitulate briefly the main features of epidemic typhus fever: it is a disease accompanied by profound toxemia, marked by the signs of an intense blood infection, by a marked involvement of the nervous system, manifested by delirium, by excitement, by tremor, by somnolence, stupor, coma-vigil, and an unusually severe involvement of the muscular system as well, as shown by the tremor and physical exhaustion which are so often manifest.

Wherein does the second form of typhus, which we have called the endemic, or mild, or attenuated form, differ from the epidemic typhus fever? They both are alike in their onset, in the first stage of the eruption, in the critical decline, and both are not followed by relapse. In all other respects they differ.

The eruption in the mild form rarely goes to the hemorrhagic or purple stage. It is always an erythema probably induced by bacterial thrombosis in the capillaries, which influences the endothelium of the walls to permit the escape of serum and a few red blood cells into the surrounding skin tissues; thus while pressure will force back the blood above the thrombosed area, causing the spots to fade, the exuded contents will have stained the tissues over the spots so that the site of the eruption will always be apparent under pressure. In epidemic typhus fever the virulence of the organism (*Bacillus typhi-exanthematici*) disturbs the function of the endothelium of the capillaries to such an extent that the entire contents of the capillaries are extravasated into the surrounding skin, thus giving rise to hemorrhagic spots, which no amount of pressure will cause to fade, and certainly not to disappear. The eruption of the mild form is the same as that of the epidemic form only as far as the first stage of the latter is concerned. In about 2 per cent. of the cases of the former cases a hemorrhagic eruption has been observed by me.

One will look in vain in the mild form of this disease for the signs of a profound involvement of the nervous system, which is so common in the epidemic form. While in a few cases of the mild form which show a hyperpyrexia, there may be a slight delirium, it is always of a mild type, appearing only at night. The patient may appear apathetic, he sleeps a great deal, he can always be aroused, he is never, or rarely stuporous, he is never seized by maniacal excitement during his delirium; he can always tell his surroundings, he never goes into coma-vigil, nor will one observe muscular tremors, or subsultus, or carphology, which are so often seen in the epidemic form; involuntary discharge of urine and feces in the mild form has never been seen by me.

The headache which appears in both forms with the development of the infection, and which is severe in both, shows a decided difference in the mild form in that it becomes progressively more intense even up to the end of the illness, whereas in the epidemic form at the end of the first week it is rarely a source of complaint, but is displaced by the development of the more pronounced nervous manifestations, which then dominate the clinical picture.

The mortality in the mild form is less than one-quarter of 1 per cent. I have seen only one death in over four hundred cases which up to this time have been entered in our records at Mount Sinai Hospital. What a marked contrast to the mortality of 20 per cent. in the hospital cases of epidemic typhus fever seen by Murchison and Curschmann!

The period of greatest prevalence of the mild form is in the *summer months*, as directly opposed to the time of prevalence of the epidemic form, which is in the winter months. In the former twice as many cases occur in the second half of the year as in the first half, and a little less than 70 per cent. of all the cases appear in the months of July, August, September, and October.

A very decided difference occurs in the communicability of the two forms. While, as we have intimated, the epidemic form is one of the most communicable of all diseases, the endemic form shows no evidence of being at all communicable. In fact, up to this last spring I have never seen among my own cases any example of family or house infection. This question has been very carefully studied by me. Through the enthusiasm and helpful cooperation of the various members of my house staff, who visited the homes of patients who had been brought to the hospital with this disease, and who made searching inquiries and personal investigations with the object of finding some other member or members of the patient's family or some other inhabitant of the apartment or of the house suffering with the disease, we have been unable to find a single instance. In April of this year the first instance of man and wife being affected at nearly the same time occurred. This shows that the communicable factor in this form of the disease is a practically negligible one. It also demonstrates that the body louse is not an important factor in the production of this form of the disease. If it were, there ought to be more cases of contact infection; the disease ought to appear, not only in more than one member of a family or household, but even in the same tenement house. It has so far not been found under these postulates. If the body-louse were an important factor in the transmission of the endemic type of typhus fever, such cases of this type ought not to appear in the greatest number in the summer months, because that parasite dies in warm weather, as was shown experimentally by Anderson and Goldberger, who found that they could not keep it alive in retainers exposed to the warmth even of their pockets; they showed that a temperature of more than 20° C. was sufficient to cause its death and that the optimum temperature under which it flourished was between 12°-16° C. This would explain the incidence of the epidemic type of typhus fever in the cold months of the year and its absence in all warm and tropical countries. Cases of this type have only been reported from the high mountainous regions of such countries, where the heat is tempered by the altitude. Therefore, some other agent than the body louse must be looked for to explain the origin and the spread of the mild form of the disease.

It was on account of these decided differences in the clinical and epidemiological aspects that I believed when I had the honor of presenting the mild form of the disease to the recognition of the medical profession of New York, it could have no connection with typhus fever. All of you who read my communications on this subject will know that in the early articles I showed the possibility of this form of the disease, of which no mention had up to that time been made in any text book or monograph on typhus fever which I have ever seen, being a typhus fever; that I discarded that idea on account of the differences in the clinical and epidemiological features which existed between it and typhus fever in the form in which the latter was known to all clinical teachers in the civilized world. Let me read what I said in my early communication on this phase of the subject.

"In the case of an epidemic of typhus fever, in my opinion, it would be simply impossible to say that these cases which I have described were not mild typhus fever. The onset, the eruption, though subcuticular mottling is absent, the critical decline, the absences of relapses are almost identical in both. If one can believe that typhus fever has been so modified by modern conditions of hygiene as no longer to be communicable, that it exists at all times in a community, that it has lost its notoriously epidemic character, that it has been deprived of its grave nervous symptoms and of so much of its toxemia as to make it a non-fatal disease, then one can say that these cases deal with a modern typhus fever, or rather, with a peculiar typhus fever which has been evolved by modern improved hygiene and sanitation. . . . Clinically this disease resembles typhus fever more than it does any other disease, and I should have felt that I had offered nothing to our nosology if it had been proved that typhus fever had lost its virulence, that it was constantly present in a community, that it was not communicable, that when it was present epidemics of it did not occur, and that it was no longer a grave and fatal disease."

The unexpected has happened, and we now know for the first time that these very changes in the characters of typhus fever have really occurred, and that the form of this disease as it exists and has existed during the past twenty years in New York City and many of the cities of the United States does possess the very attributes which were not formerly conceived of by any of those who had been best qualified to teach us the true nature of this disease.

Even the demonstration of the cross immunity experiments of Anderson and Goldberger did not convince me of the identity of these two forms for the reasons which I have elsewhere stated, and which I need not now recall. It was the epoch-making work of my student and pupil, Dr. Harry Plotz, who isolated the organism of the mild form and that of the epidemic form of this disease, which he found to be identical in all respects, which proved that the disease which I described is typhus fever, and is nothing else. Therefore I stand now prepared to chant a requiem or speak a funeral oration over so-called "Brill's Disease," even though I had no part in giving such a name to it. In fact, I always spoke of that disease as being "an acute infectious disease of unknown origin," mainly because I have a dislike to the eponymic designation of diseases and also because I did not believe that its existence as a separate disease had been sufficiently established. The work of Dr. Plotz has been to my mind convincingly corroborated by the equally brilliant work of his collaborator, Dr. Peter K. Olitzky, in the serological aspects, a description of which you will now have the pleasure of hearing. I am thoroughly convinced that the work of these men has established the etio-

logical factor of typhus fever in its two forms, and that that dread disease is no longer a disease of unknown origin, but that it is due to the invasion of the body by the *Bacillus typhi-exathematici.*

48 West Seventy-sixth Street.

THE VALUE OF IMMUNIZED MILK AS A PROPHYLACTIC AND REMEDY FOR TUBERCULOSIS.

By JULIUS ROSENBERG, M.D.,

NEW YORK.

In response to many inquiries and requests for information regarding the present status of immunized milk, the writer reports upon the most recent investigation of the principles and functions of immunized milk and the results from its use as a remedy and preventive of pulmonary tuberculosis.

He also considers this an opportunity to ask for the cooperation of the medical profession, to further and advocate the use of immunized milk, as an infant milk for incipient cases and the early stage of pulmonary tuberculosis, disease of the glands and bones, and other types of tuberculosis —to impress upon all, in a position to help, directly or indirectly, the urgent need of facilities and means to produce and supply immunized milk; to demonstrate its efficacy as a remedy and a prophylactic. Immunized milk provides, at the price of a high grade milk, both a food and a remedy.

As a commentary and explanation of the function of immunized milk, a brief review and reference to some of the writer's recent publications are advisable, especially to "The Investigation of the Tuberculosis Problem";[1] "The Rapid Increase of Cattle Tuberculosis and Its Serious Effect Upon Health and Life of Infants and Young Children";[2] "The Antituberculosis Crusade."[3]

For the purpose of obtaining the true facts to find the correct death rate of pulmonary tuberculosis, the writer collected and tabulated the official reports and statistics of every State and large city of the United States (publishing vital statistics) and the principal European capitals. The report and the writer's tabulation disclose present-day conditions throughout the world and especially in the United States, and prove that the death rate of pulmonary tuberculosis continues unchanged, with perhaps a fractional decline in a few cities, which may be consequent upon a shifting of patients from city to State institutions; and that sickness and mortality of other types of tuberculosis, especially of the glands, bones, and joints, and among children has increased. Here are a few examples of many:

In six cities in the United States in 1908 with a population of 1,615,000 there were 2,960 deaths from pulmonary tuberculosis; in 1913 in a population of 1,848,000 there were 3,144 deaths from pulmonary tuberculosis. In thirteen cities representing every section of the country, in 1910, with a population of 5,184,000, there were 8,751 deaths from pulmonary tuberculosis; in 1912, with a population of 5,443,000, there were 8,641 deaths from pulmonary tuberculosis. In six States, including the State of New York, with almost 16,000,000 inhabitants, there were in 1909 21,968 deaths and in 1912 22,472 deaths from pulmonary tuberculosis.

Other tabulations give practically the same results. These results are surely disappointing—their most liberal interpretation cannot warrant the optimistic misleading statements which flood the medical and lay literature.

Where is the evidence to justify the prophecy "The End of Tuberculosis Is in Sight"? What basis for the conclusion published by the London Government Board that "Consumption will disappear, the disease continually decreases in the great centers of population"?

The writer collected the latest reports from the cities of London, Manchester, Liverpool, and Edinburgh, especially mentioned in the reports, and found no evidence of conditions changed for the better. Such statements are misleading, create confidence and a feeling of assurance in what is done to combat tuberculosis, which are not justified by achievements of the past or prospects of the future.

The writer does not criticize what has and is being done, but the results of many years' effort are surely disappointing. He believes in the ultimate control of the great white plague, but not by the means and methods now employed. The present-day death rate of pulmonary tuberculosis stands as unimpeachable evidence of their inadequacy. The world-wide antituberculosis crusade, carried on for years with zeal and enthusiasm, has been of inestimable value as an educator to the public in sanitation. The recognition, by men of all classes, that spitting means danger to others and from others, has made it possible to enforce sanitary regulations, brought the people *en rapport* with the problem of the day, spread the knowledge that it is easier to prevent illness than to cure disease. But the final object of the antituberculosis campaign has not been accomplished; the loss of life from pulmonary tuberculosis is frightful and alarming. Investigations among the working classes and tenement population reveal appalling conditions, the white plague saps the nation's life blood. We know that among children there is a marked increase of sickness and death in every type of tuberculosis. What is the cause of failure? Why has the effort to eradicate consumption not been successful? Why have the unlimited power to do things, boundless resources, and lavish expenditure of money proved impotent to realize the aim and end?

The principal cause of failure is the fact that the main entrance gate for infection was left unguarded. While watching every possibility of communicating the disease from man to man the diseased cow was left undisturbed. A spitting man is feared like a poisonous serpent, but milk teeming with tubercle bacilli is admitted to house and nursery without hesitancy. The roller towel and common drinking cup were banished by legislative acts, the tuberculous cow retains the privilege to spread infection to animal and man until life's end.

Cattle tuberculosis is rapidly increasing, there is scarcely a dairy herd without a number of infected animals; it is an ever-growing menace, the undoubted cause of extensive infection and illness among young children—96 per cent. according to Behring's estimate. The health department of Boston estimates the percentage of tuberculosis animals producing the city's milk supply, to be from 20 to 25. New Haven, Rochester, and Washington found milk tests to give positive evidence of tuberculosis in 20 per cent. of the specimens. This list could be continued to include every city in the Union. Tuberculous milk is everywhere. Here is

the reason why tuberculosis persists unconquered. The antituberculosis campaign neglected to guard against this source of infection. The tuberculous cows and bovine bacillus have the entrée to the best houses. The rich man's children are not safer than his poor neighbor's, for certified milk does not assure milk from healthy cows, nor is milk the sole source of infection. Butter and even cheese provide a means to gain admission. In fact, a large percentage of the butter is the product of the milk sent to the creameries, being below the standard of the city's requirement of milk used for drinking.

It is high time for physicians and the people to recognize conditions as they are, that the mortality from tuberculosis remains the same, has increased among children; that there will and can be no improvement unless the antituberculosis crusade extends to the cow, unless the tuberculous cow is banished like the roller towel and tin cup, unless tuberculous milk is excluded from the market, whether pasteurized or in the raw state.

The protection of the tuberculous cow sacrifices the lives of thousands of children, because a few men, high in authority and position, decree that milk from healthy cows can be the privilege of only a chosen few; that the banishment of tuberculous cows from the dairy is impractical and unnecessary; that tuberculous cattle cannot be excluded from providing the milk supply of the masses, that the majority must be satisfied to feed their children with pasteurized milk from animals of a doubtful standard.

The security of pasteurized milk is fallacious. Pasteurized milk is not sterile; pasteurized milk always contains myriads of bacteria. The records of pasteurizing plants handling the milk in accordance with the regulations of the New York City Health Department show that pasteurization reduces the number of microorganisms to one-half—instead of one million to the cubic centimeter, there remain half of one million bacteria to each cubic centimeter of pasteurized milk. These rapidly increase and soon their number exceeds the original multitude. The writer does not decry the value of pasteurized milk. Pasteurization improves healthy milk, but it cannot and does not transform a diseased product into a healthy milk. Were this possible there would be no need of destroying meat from tuberculous cows—cooking would make it the equal of cuts from animals in the best of health.

By what means and methods can cattle tuberculosis be eradicated? Infected animals must be removed, and if possible destroyed. Cows which react to the tuberculin test, but not sufficiently to permit a positive diagnosis of tuberculosis must be separated and segregated from the diseased and the healthy animals. The tuberculin test is dependable, in experienced hands. The symptoms of reaction are temporary, lasting only two or three days.

As a safeguard and protection of the healthy cow, prophylactic vaccination has been used with great success. Behring, Theobald Smith, and McFadden obtained encouraging results. The most recent reports by Gilliland on the production of artificial immunity in cattle, carried on by the Live Stock Sanitary Board of Pennsylvania and by Castelli of Genoa, Italy, demonstrate that the inoculation of cattle against tuberculosis is successful beyond a doubt. In these experiments, living but modified cultures of the bovine bacillus were used. But vaccination with living bacilli is impractical for any but laboratory purposes. The writer has obtained identical results by a method which is simple, harmless and unobjectionable. He uses a bacillary emulsion prepared from dead cultures of both the bovine and human type of the tubercle bacillus, injected subcutaneously, three or four times, at weekly intervals. The injections cause neither local reaction nor general ill effects in the healthy animal. Infected animals show the temporary reaction from the tuberculin test. The protection by vaccination safeguards the healthy cow against infection by her stable companions. The advantages of vaccination to both farmer and consumer of milk are evident, the operation being simple, harmless, and effective, and it should be used on all cows proven healthy by the tuberculin test.

To rely upon the tuberculin test is futile, it gives no protection, and only shows whether the animal is healthy or ill at the time of test, and two or three months hence the animal may be in an advance stage of tuberculosis, unfit as a producer of milk. Such was the writer's personal experience; a fine herd of Jersey cows, kept under ideal conditions, tested and proved healthy by a competent veterinarian, contained three months later 70 per cent. reacters, some in an advanced stage of disease.

Thus annual or semi-annual tuberculin tests do not give assurance of milk from healthy cows. Recent attempt to compel annual tuberculin tests by legislative act encountered strong opposition and failed to pass; the farmer feared the destruction of diseased animals without adequate compensation.

An educational campaign, showing the advantages of protective vaccination, would, I believe, overcome the opposition and gain the support of the dairy interests in the crusade against bovine tuberculosis.

To destroy the diseased animals and leave the healthy ones to their fate, till the next annual inspection, is out of harmony with present-day methods of disease protection. But protective vaccination accomplishes much more than immunization of the cow and protection against her stable companions; it produces a supply of immunized milk, a remedy for patients infected by tuberculosis.

What are the functions and properties of immunized milk? Immunized milk possesses antibacterial qualities like the blood serum of animals which have been immunized; it is, in fact, a dilute antitoxic and bactericidal serum. In the course of disease, the body is stimulated by invading bacteria to produce specific protective substances, antibodies, agglutinins, precipitins, bacteriolysins, etc., to combat infection and neutralize the destructive effects of the pathogenic germs. The same effect is obtained by vaccination with living or dead bacteria; it causes specific antibodies in the body fluids and the condition known as active immunity. Besides the protection due to the body's own activity, immunity is created depending upon defense-substances produced by another organism; a resisting power against disease is conferred by artificially supplying the necessary specific antibodies.

These are the fundamental principles of protective vaccination, the basis for serum therapeutics, and an explanation of the action of immunized milk. Drinking the milk transmits the antibodies which pass through the intestinal mucous membrane into the general circulation. Thus immunized milk confers the same protection, the same immunity as inoculation with antitoxic and anti-bacterial serum. The presence of antibodies in the

milk of immunized animals has been doubted and denied, it being the general belief that antibodies were confined to the blood serum, and that furthermore they could not penetrate the intestinal mucous membrane, except in the very young animal.

This widely prevailing opinion was shared by a commission of scientists, appointed by the Department of Health of the City of New York, to examine and report upon the writer's work on immunization and immunized milk. Further investigation of immunized milk showed, however, that it contained specific antibodies, that feeding this milk caused their appearance in the other animals' blood. The experiments were conducted under supervision of Dr. W. H. Park, Director of the Bureau of Laboratories, Department of Health, City of New York. Dr. Park inoculated cows with dead cultures of the typhoid bacillus, whereupon the milk showed unmistakably the presence of the antibodies, specific to this bacillus. The typhoid bacillus was selected, because of the technical difficulties of determining the presence of antibodies of the tubercle bacillus. Feeding the milk to calves, five to six months old, caused the calves' blood to respond to the test for typhoid antibodies (Widal's agglutinin tests), thus proving their presence in the milk and passage into the blood by way of the intestinal canal. The chain of evidence was a complete one, inoculation with dead cultures, specific antibodies in milk and blood; feeding the milk followed by presence of antibodies in the blood which, prior to feeding, did not contain antibodies.

Experience with immunized milk proved it valuable as a prophylactic and remedy for tuberculosis. Immunized milk is not heralded as a "sure cure," but its properties can and do assist the body to combat the invading host and counteract the destructive effects of the bacterial products upon the organism. The use of immunized milk in various types of tuberculosis has given encouraging results. The writer has reported a number of cases of pulmonary tuberculosis, tuberculosis of the bones and joints, treated in institutions and private practice. Several patients who have facilities to keep goats, use the milk from immunized goats with splendid success. This is a simple and inexpensive method, deserving more extended adoption. Goat's milk is superior to the best cow's milk, and has neither objectionable odor nor taste.

Immunized milk is now being tested in other institutions, among them one of the tuberculosis hospitals of the City of New York (The Sea View Hospital in Staten Island). The results are reported to be good; the patients gain markedly in weight and show an improved general condition compared to the control cases.

This investigation is under the supervision of Dr. Fitzpatrick, a representative of the New York Department of Health. The investigation and results will be published by the Department. The writer's first publication of immunization by immunized milk (October 13, 1913) has induced others to use immunized milk and to inoculate cows for protection and for the production of immunized milk. The most recent report on immunized milk, was presented at the June meeting of the National Association for the study of tuberculosis at Seattle by Dr. Castelli, representing the University of Genoa, Italy, of which the following is an abstract:

We have applied successfully the method of vaccination against tuberculosis and we are able now to apply this vaccination on a large scale among human beings and animals and we have shown that we can even vaccinate pregnant women and animals and obtain products of conception showing features of complete immunization. More important still, acting on the knowledge that much of the tuberculosis infection in infancy is contracted through milk, which forms the principal element of infant diet, we concluded that if we vaccinated animals or vaccinated mothers, we would eliminate the principal source of infection of this disease. In our opinion, the baby that is made immune through the vaccination of the mother against a possible infection by the feeding of immunized milk, is a victim stolen from tuberculosis. We have succeeded in training a group of farmers in the Province of Genoa in the technique of immunization of animals and have demonstrated to them that the milk thus obtained does not change, either in taste nor in its nourishing qualities. The Faculty of Genoa is convinced that by applying to the prevention of tuberculosis all the means at our disposal, in less than fifty years from now we would accomplish in tuberculosis what Jenner has accomplished in smallpox. As part of a campaign which we had planned in Italy before the war, using the Boards of Health as agencies, we recommended the following program: (1) An extensive and regular use of serum diagnosis in hospitals, dispensaries, and private practice to secure earlier recognition of tuberculosis. (2) Advising vaccination of pregnant women. (3) Establishment of farms and dairies supplying immunized milk for exclusive use of children or adults showing evidences of tuberculosis. (4) Vaccination of pregnant cows, to secure immunized products of conception.

It will be noted that this report indorses the writer's claim that protective vaccination secures the cows complete immunity against bovine tuberculosis; that feeding babies with immunized milk eliminates the principal source of tuberculosis; that it is a remedy for every type and stage of tuberculosis. Noted authorities on tuberculosis advocate immunized milk for children with a tuberculous taint, enlarged glands, etc.

But the approval of a few is not sufficient, the cooperation of many is indispensable to spread the knowledge that immunized milk differs neither in taste nor in nourishing qualities from ordinary milk; that it is the best possible milk for everybody and for every purpose; that protective vaccination and the elimination of bovine tuberculosis are the basis, the fundamental necessity for the prevention of human tuberculosis.

Reduction of the number of infected cows will reduce the human death rate, misery, and suffering. A conservative estimate places the number of cows dying yearly from tuberculosis at one million, were they permitted to die a natural death, but they are killed before drawing the last gasp and served as prime beef. The number of human deaths from consumption and other forms of tuberculosis is about 200,000 per annum, and 1,500,000 are victims of the disease, partly or totally incapacitated, a burden to the State, to themselves, and to their families.

Can there be more convincing arguments for the need of exterminating bovine tuberculosis?

The remedy offers itself; will it be accepted? Must the tuberculosis problem repeat the experience of puerperal fever, duplicate the never-ending reproach recorded on the saddest page of the history of medicine? In 1846 Ignatz Semmelweiss, a young Viennese physician, announced his belief that puerperal fever was not a disease, but depended upon poison carried by the physician's fingers to the woman in childbed. He recommended washing of the accoucheur's hands with soap and chloride of lime, demonstrated that the use of this simple expedient reduced the frightful death rate of 15 per

cent. and higher to less than 2 per cent. Semmelweiss was bitterly opposed by the group of men, "who shape opinions," command "what is to be and not to be," and his plea was rejected. Ridiculed and scorned for his pains, he ended his life, a broken-hearted, disappointed man.

For more than forty years, millions of women were sacrificed upon an altar reared by envy, ill will, and prejudice, while performing the function of motherhood, leaving behind numberless motherless children. Forty years and longer lasted the controversy and debate, whether the cause of puerperal fever lodged in the air, originated in the woman's own body, or was due to the absorption by the blood of the woman's breast milk. Finally the method of Semmelweiss was accepted, physicians washed their hands, puerperal fever ceased to be.

Immunized milk presents another simple expedient, a sure and safe method to free man of the white plague's frightful burden, the means to rescue innumerable victims from suffering and death, preserve the health of infant and child and give it sound limbs and body, shielding it from the fate of the cripple, encased in braces and plaster.

It makes man the victor over disease, instead of being the victim. The exit of the tuberculous cow will mark the beginning of the end—the eradication of consumption, of tuberculosis of every type. The path of the disease is clear—from stable to nursery, from the milk to the child; tuberculous milk, tuberculous butter and cheese are the source of the pitable condition of many. A parody on our much vaunted advanced civilization.

To supply the city resident with immunized milk requires the facilities and organization of a modern dairy. A reputable concern has agreed to distribute a standard immunized milk at a slightly higher cost than a regular high grade milk, provided the demand is sufficient to justify the additional expense. I will personally supervise the herd's immunization, and to guard against error and substitution, each bottle will carry a special label, as suggested and permitted by the Department of Health. Dairies of other cities will supply immunized milk whenever a sufficient number of physicians advise its use.

When a cow or goat can be kept on or near the premises, a supply of immunized milk is easily obtained at the cost of ordinary milk, except for the first expense of immunization. Every tuberculosis suspect, every victim of consumption at every stage, the sufferer from every type of tuberculosis should be afforded the advantages of immunized milk; its use is never harmful but is always helpful.

The technique of immunization is that of the tuberculin test which must precede the injection of the bacillary emulsion, to determine the animal's health, the absence of tuberculosis. For the protection of the cow and to supply a healthy milk for every purpose, three to four subcutaneous injections of the vaccine are sufficient. Immunized milk intended to immunize the consumer, to serve as a prophylactic and a remedy, requires a larger quantity of antibodies. (This is the only type of immunized milk which will be supplied at the present time.) I usually give fifteen injections at weekly intervals, increasing doses of vaccine; after the fifteenth injection I constinue the last dose and inject every two to three weeks. This provides a milk of uniform strength, absolutely safe for the infant and the adult, the healthy and the ill, a food and a remedy.

Every infant fed with immunized milk saves a victim of tuberculosis; every sufferer from tuberculosis deprived of the aid of immunized milk is denied a possible chance to recover. Every public hospital should provide immunized milk. Every institution devoted to the treatment of tuberculosis is incomplete without a herd of immunized cows or goats.

Immunized milk combines the effect of protective vaccination as for smallpox and the serum therapy of diphtheria; it is the only specific remedy existant for tuberculosis. Immunized milk provides a continuous supply of specific antibodies in small quantities at frequent intervals, resembling the administration of calomel in fractional doses.

These are the facts of the tuberculosis problem, of protective vaccination, of the value and usefulness of immunized milk.

The preceding lines express my belief and conviction. The fate of immunized milk depends upon the support of the medical profession. If physicians accord their patients an opportunity to use it, are ready to aid my efforts to produce and supply immunized milk, make it available to all and every one, they can form an opinion based upon their own experience.

Farmers and dairies will supply immunized milk if it is demanded. Immunized milk will be demanded if physicians recommend and advise its use.

I trust that I have succeeded in convincing the reader that the use of immunized milk is desirable, yes a necessity to mankind. I will be glad to give further information to anyone interested in the production and use of immunized milk.

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57 East Seventy-seventh Street.

THE RESULTS OF SALVARSAN AND MERCURY IN EIGHTEEN CASES OF PRIMARY SYPHILIS.*

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Although the discovery of salvarsan is but recent, yet the literature upon this mighty agent is equal to if not greater than the literature on any other drug in the domain of medicine. No week passes that one cannot see an article in this or that medical journal on this treatment. Indeed, so much has been published and said about salvarsan that one feels a hesitation in advancing any opinion whatever.

Considering, however, the prevalence and severity of syphilis, this great scourge of humanity, and its complications and sequalæ, as well as the results following the administration of salvarsan, one cannot but feel enthusiastic and justified in adding an iota to what has already been published.

In spite of the severe complications and even deaths which have followed the administration of this drug, still it is the remedy par excellence for syphilis.

Out of 1,161 cases in which I have administered salvarsan or neosalvarsan, I have had not a single case of blindness, death, or any serious complica-

*Read before the District Medical Society, May, 1915.

tion, save some elevation of temperature, headache, vomiting occasionally, and a feeling of malaise. And as far as I know, neither death nor blindness has occurred from the administration of salvarsan in this city.

Since the object of this paper is to record the results of salvarsan in purely primary syphilis, I shall not touch upon the subject of syphilis in general, but will confine myself on the report of 18 cases of primary syphilis. I mean cases without any manifestation of secondary symptoms neither adenopathy nor other evidence in the mouth or thereabout.

The examination for spirochetes and the Wassermann test in all the 18 cases were made before and after the treatment by Drs. Nickols, Creggs, Reasoner, and Vedder of the Army Medical School of this city, to whom I am greatly indebted for their kind assistance in this matter. And now, with your kind indulgence, I will proceed with a report on my cases.

Case I.—J. S., aged 21, student, of unimportant past and family history, presented himself for treatment, Nov. 25, 1913. On examination I found a slight greenish abrasion, about one-quarter of an inch long, on the foreskin, posteriorly; Wassermann negative, but numerous *Treponemata pallida* were demonstrated on a dark field. There was no adenopathy, neither were there any subjective or objective symptoms. Last coitus Nov. 15 and 20, and Dec. 1, 1913. First intravenous injection of 0.06 gm. salvarsan on Dec. 12; second, Dec. 19; third, Dec. 28, 1913. In addition patient had eight intramuscular injections of 1 c.c. of 10 per cent. salicylate of mercury, weekly. March 25, 1914, Wassermann positive. In addition protiodide of mercury ¼ gr., three times a day for three weeks. May 20, Wassermann negative; Oct. 11, Wassermann negative; Feb. 3, 1915, Wassermann provocative test, negative.

Case II.—T. D., tailor, aged 23, family and past history good, save disease of childhood. Last sexual intercourse, Aug. 18, 1913. Appearance of lesion Aug. 29. Main sore on sulcus posteriorly, chancroidal in appearance and two small vesicles, one on the glans near the meatus and the other on the frenum. Glandular system normal. Wassermann positive. *Treponemata pallida* present. Sept. 5, intravenous injection of 0.06 gm. salvarsan was given and on the 13th of the same month he received another salvarsan 0.06 gm. by the same route. This was followed by intramuscular injections in the gluteal region of 1 c.c. of 10 per cent. salicylate of mercury for two months, which caused slight salivation. Jan. 13, 1914, Wassermann test negative; April 29, Wassermann test positive. On May 10, 0.06 gm. salvarsan was given; also on the 17th of the same month he received another injection of 0.09 gm. of neosalvarsan. This was followed by two months of protiodide of mercury by mouth. Oct. 27, Wassermann still positive. Patient is still under treatment.

Case III.—J. O. G., student, aged 22, family and past history unimportant. Date of infection, Jan. 31, 1914. Sores ranging from a vesicle to a small grayish ulcer all around sulcus and base of prepuce, none of them having the slightest resemblance to chancre. They rather suggested herpes. On March 5, Wassermann test positive; dark field; examination showed spirochetes. March 10, Wassermann positive. Dark field demonstrated abundance of *Treponemata pallida*. Same day salvarsan 0.06 gm. was administered intravenously, also another dose by the same route on March 22, followed by six intramuscular injections of salicylate of mercury, causing pronounced salivation. May 15, Wassermann test positive. May 17, 0.06 gm. salvarsan was administered June 14, Wassermann test negative; also on Nov. 7, Wassermann test negative.

Case IV.—J. M., merchant, aged 29; family history negative, past history bad. Typhoid fever when 19; also three attacks of gonorrhea. Date of exposure not definite. Sore on left side of sulcus ¼ of an inch in circumference; much indurated. June 1, 1913, Wassermann test positive. Spirochetes present. June 3, 0.06 gm. salvarsan was given, also a similar dose on June 10, both intravenously, followed by one month of mercurial injections. Because the sore persisted during the whole period of treatment, patient received another dose of neosalvarsan intramuscularly. On July 22, a few days after, sore disappeared. Nov. 11, Wassermann negative. April 29, 1914, a small round sore appeared on the left side of the glans penis. April 29, Wassermann negative. May 12, Wassermann + —. May 15 and 18 Wassermann provocative test negative. This time the sore disappeared.

Case V.—P. S., waiter, aged 28; family history negative. Patient was treated for chronic ulcer in the stomach when 25 years old. Glandular system normal. Date of infection, June 23, 1914, or therabouts. Large indurated sore occupying one-third of sulcus posteriorly. Patient first noticed the lesion three weeks after exposure. Wassermann positive, also numerous spirochetes were demonstrated in the dark field examination. Aug. 9, 0.06 gm. of salvarsan was administered intravenously, also another dose of 0.06 gm. on Aug. 18, followed by a period of two months mercurial injections. Nov. 9, Wassermann positive. Patient failed to appear since.

Case VI.—L. N., shoemaker, aged 24; family and past history unimportant. Date of infection, Oct. 12, 1913. A typical large indurated sore appeared two weeks after the exposure. No adenopathy save one or two superficial fermoral glands slightly enlarged. Wassermann negative but there was an abundance of *Treponemata pallida* in the dark field examination. Doses of 0.06 gm. salvarsan were administered intravenously, one on Nov. 11, 1913, and the second on Nov. 19, followed by ten injections, intramuscularly, of 1 c.c. of 10 per cent. salicylate of mercury. Feb. 27, 1914, Wassermann negative, patient went to Boston, and on Aug. 9, 1914, I was informed by his brother that patient had a slight cerebral hemorrhage which impaired his entire left side, also an eruption both of which the physician in attendance told his brother were due to syphilis.

Case VII.—C. J., waiter, aged 21; family history negative, patient has had two attacks of gonorrhea. Patient was last exposed Oct. 15, 1913. He first noticed a sore at the edge of the prepuce in the center; two weeks later Wassermann positive, spirochetes found. Dec. 3, 0.06 gm. of salvarsan was administered, followed by a period of three months of mercurial injection. March 19, 1914, patient's entire body, principally his arms and chest, was covered with an eruption of the squamous type; there were also two mucous patches, one on the left inner side of the lower lip and a large one on the left tonsil. This time two more injections of salvarsan were given intravenously, one on March 19, and the second on March 27, followed by six weeks' mercurial injections. July 12, Wassermann negative. July 14 and 18, Wassermann provocative test negative.

Case VIII.—W. G. R., professional man; father died of tuberculosis. Patient had chronic gonorrhea with a relapse at the time he sought treatment. Date of infection Oct. 21, 1913, appearance of lesion seven weeks later. Large indurated sore nearly ½ an inch in circumference on left side of sulcus and base of prepuce. No adenopathy. Jan. 1, 1914, Wassermann negative, dark field also negative. Jan. 8, Wassermann positive, dark field showed the greatest number of *Treponemata pallida* I had ever seen. Jan. 9, 0.06 gm. salvarsan was administered intravenously and a second dose followed on Jan. 15, followed by six intramuscular injections of 1 c.c. of 10 per cent salicylate of mercury. April 12, numerous white patches appeared in the mouth, principally on the inner side of the lips and fauces. Patient refused Wassermann test, feeling sure he was not cured and demanding further treatment. April 15, another 0.06 gm. salvarsan was administered, followed by mercurial injections for a period of a month. June 2, Wassermann negative. Patient failed to show up since.

I will now simply mention the results in the next ten cases, in which after the first and in some cases the second Wassermann test had been applied, the patient failed to respond for further observation.

Case IX.—J. R., professional man, date of infection, Oct. 20, 1913, received two 0.06 gm. salvarsan intravenously and one 0.09 gm. neosalvarsan intramuscularly, followed by two months of mercurial injections. Wassermann just recently made negative.

Case X.—A. S., cook, aged 33. Date of exposure, Dec. 1, 1913, Jan. 8 and Jan. 15, received one 0.06 gm. salvarsan and 0.09 gm. neosalvarsan, followed by three weeks mercurial injections. May 18, 1914, Wassermann negative.

Case XI.—J. S., aged 23, baker. Date of infection indefinite; Jan. 27, 1913, sore appeared. First intravenous injection of 0.06 gm. salvarsan, Feb. 2, 1914. Second intravenous injection of 0.09 neosalvarsan, Feb. 20. This was followed by a month of mercurial injections. April 21, Wassermann negative. June 24, provocative Wassermann negative.

Case XII.—J. A., aged 25. Restaurateur. Date of infection unknown. Primary lesion, Jan. 19, 1914. Received two 0.06 gm. intravenous injections of salvarsan followed by one month of mercurial injections. May 9, Wassermann negative.

Case XIII.—R. R. J., aged 37, hospital attendant. Date of exposure, Sept. 27, 1913, or thereabouts. Received 0.06 gm. salvarsan intravenously and one 0.09 gm. neosalvarsan one week apart, beginning Jan. 6, 1914, followed by a month of mercurial injections. April 30, Wassermann negative.

Case XIV.—P. S. N., aged 24; waiter. Date of infection Dec. 6, 1913. Appearance of primary lesion forty days later. March 9 and 16, 1914, two 0.06 gm. salvarsan were administered. No mercurial treatment. May 27, Wassermann negative.

Case XV.—I. B., hospital attendant, aged 22. Date of exposure, Feb. 20, 1914, March 15 and 23, two 0.06 gm. doses of salvarsan were given. June 5, Wassermann negative; July 6, Wassermann negative.

Case XVI.—H. S., aged 23, government clerk. Date of infection Feb. 1, 1914. Three intravenous injections were given; first, Feb. 18, second, Feb. 24, and third, April 2. No mercurial treatment was given. April 21, Wassermann negative.

Case XVII.—C. C., waiter, aged 31. Date of exposure, Feb. 20, 1914. March 13, 0.06 gm. was administered; also March 20, another 0.06 gm. salvarsan was given, both intravenously, followed by two weeks of mercurial injections of one c.c. of 10 per cent. of salicylate of mercury. July 3, Wassermann negative. Aug. 3, Wassermann provocative negative. March 12, 1915, Wassermann provocative negative; this patient had two provocative tests.

Case XVIII.—J. H., aged 27, government clerk. Date of infection not definite. Received first injection intravenously Jan. 17, 1914, second, Jan. 29. Also similar doses on April 2 and April 9. Lesion persisted until the last injection of salvarsan was administered. Patient received no mercurial treatment and has not been seen since.

In all the ten last mentioned cases both Wassermann and dark field examinations were made before treatment and all showed positive results.

From the foregoing report we deduct the following conclusion: that contrary to the prevalent opinion among the majority of physicians at home and abroad, the results of my experience in these cases force home upon me the conviction that from two to five salvarsan injections are sometimes necessary before one can finally pronounce a cure in primary syphilis. Still further do I advance the opinion that at least six Wassermann tests, together with one provocative test, should be made before one can with absolute security pronounce a patient cured.

Massachusetts Avenue.

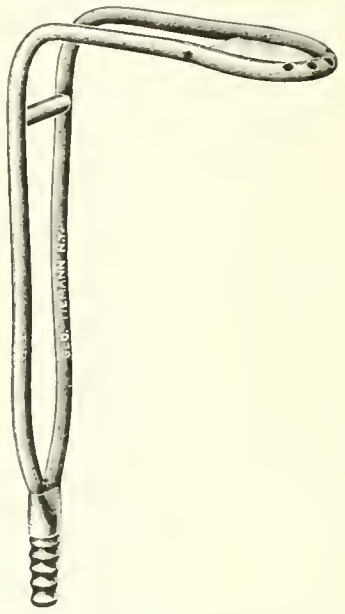
A SUCTION TONGUE DEPRESSOR.

By NORMAN EDWIN TITUS, M.D.,

NEW YORK.

In the course of adenotonsillectomies at St. Luke's Hospital, New York City, on the service of Dr. D. Bryson Delavan, Dr. A. P. Voislawsky, the associate attending surgeon, has been accustomed to use suction to remove the mucus and blood from the patient's mouth. For this a regular mouth sucker was used; the tube of which was fastened to the sheet over the patient by a towel clamp. An ordinary tongue depressor was also kept on the patient's chest most of the time. So it occurred to the writer to combine these two instruments.

The instrument illustrated herewith combines suction with a tongue depressor and has been found most advantageous in keeping the operative field free of blood and mucus. The holes are on the upper surface of the tube, so that no suction is applied to the tissue of the tongue itself. The uvula is sometimes caught, but no bad results have come from the effect of suction on this loose piece of tissue.



In view of the small caliber of the tube we have adopted the technique of having the operator immerse the suction tongue depressor in a basin of water as soon as the operation is completed. This point has been found sufficient to keep the tube free of clots which otherwise would easily form and make the instrument less effective.

Saint Luke's Hospital.

Medicolegal Notes.

Admissibility of Expert Evidence.—Where in an action by a tenant for injuries by escaping gas, the tenant testified as to her condition, and a physician testified that when he called at the tenant's apartment he noticed an odor of gas in the apartment, and that he found plaintiff suffering from chronic inflammation of the respiratory tract and irregular heart action, questions as to whether with reasonable certainty he could state the cause of the condition of plaintiff, and whether with reasonable certainty the condition was due to gas poisoning, were held to be improperly excluded.—Pincus v. Schlecter, New York Appellate Division, 153 N. Y. Supp. 67.

Revocation of License for Unprofessional Conduct.—A statute permitting the revocation of a physician's license for grossly immoral or unprofessional conduct is held not to be invalid, in Aiton v. Medical Examiners, L.R.A.1915A, 691, on the theory that what shall be regarded as unprofessional conduct is too uncertain to constitute a standard, since the language must be interpreted to mean that which is by general opinion considered to be grossly unprofessional because immoral or disreputable.

Basis of Hypothetical Questions.—The Missouri Supreme Court holds that, since an expert witness may give his opinion upon a hypothetical question as to the sanity of an accused person, and may also give his opinion based upon a personal examination of the accused, he may give an opinion having for a basis a hypothetical case, together with what he learns from such examination. Objection had been made, but was not sustained, that a hypothetical question cannot be combined with a physical examination; that the two must be kept separate.—State vs. Harris (Mo.), 177 S. W. 362.

MEDICAL RECORD.

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New York, November 27, 1915.

EXPERIMENTAL YELLOW FEVER IN LABORATORY ANIMALS.

THE apparently successful transmission of yellow fever to laboratory animals has been reported by Marchoux and Simond, Thomas, Seidelin, Macfie, and Johnston. Marchoux and Simond in 1906 observed slight febrile reactions in chimpanzees which had been bitten by infected stegomyiæ. Thomas in 1907 and 1909 obtained febrile reactions and albuminuria in chimpanzees, and mild febrile reactions in rabbits and guinea-pigs. He experimented chiefly by means of infected mosquitos, and to a lesser extent by means of injections of blood from yellow fever cases. Seidelin in 1912 injected guinea-pigs with blood taken from a yellow fever patient on the fifth day of illness, and containing *Paraplasma flavigenum*. He found the parasites in the blood of two of the injected animals, but no marked febrile reaction was observed. Another experiment with blood taken from a patient on the seventh day of illness gave a negative result.

Macfie and Johnston in 1914 experimented on guinea-pigs, dogs, and rats. In guinea-pigs they obtained marked febrile reactions, and in some cases albuminuria, and in the blood they found paraplasma-like bodies. In dogs and rats positive results were likewise obtained as far as the examination of the blood was concerned, but a febrile reaction was observed in one rat only, and in none of the dogs.

Drs. Harold Seidelin and Andrew Connal of the School of Tropical Medicine, University of Liverpool, have published in a recent issue of the *Yellow Fever Bulletin* of the Liverpool School of Tropical Medicine a paper dealing with investigations and experiments made in the same direction, in Lagos, Nigeria, West Africa. In October, 1913, one of them obtained a strain of *P. flavigenum* from a yellow fever patient in Lagos, inoculating four guinea-pigs with blood drawn from a cubital vein. Since then they have carried on experiments with this strain, working mainly with guinea-pigs, which have been found very suitable. The guinea-pigs were carefully observed, records being kept of the temperatures and of the blood examinations, as well as of the post-mortem findings, with subsequent microscopical examinations. The guinea-pigs showed great variations in the way in which they reacted after infection. They showed considerable rises of temperature in some cases, and occasionally marked remissions; in fact, some of the temperature charts might be taken for charts from yellow fever in the human. A sudden drop of temperature occurred in several of these cases after four to nine days; and in such cases death, as a rule, took place at this stage, the post-mortem examinations showing alterations typical of yellow fever.

More or less marked, but rather irregular rises of temperature were observed in other cases, and death followed in one to two or three weeks after inoculation, a sudden drop of temperature just before the fatal issue often occurring also in this group. In other cases again, recovery took place, which was, so far as one could judge, often final, but sometimes only apparent, death supervening one or two months after inoculation. Emaciation and more or less pronounced albuminuria were the only abnormal conditions found post-mortem in these instances.

The conclusions reached by Seidelin and Connal as the result of their exhaustive experiments were as follows: The yellow fever parasite *Paraplasma flavigenum* has been transmitted to guinea-pigs and monkeys by direct inoculation of blood. The infection has been carried seriatim through twenty-three guinea-pigs. The peripheral blood of the infected animals contains forms of the parasite identical with those occurring in human blood in yellow fever. Various internal organs of the infected animals, particularly the lungs, contain elements which the investigators regard as division forms of *P. flavigenum*. No conclusive results have been obtained by mosquito experiments or by blood cultures.

Hitherto Seidelin has failed to prove the case for *Paraplasma flavigenum* as the pathogenic organism of yellow fever, and his work has not been regarded with much favor by students of tropical medicine. It is possible, however, that he may be right, and his work is at least worthy of respectful consideration.

IS OBSTETRICS A LOST ART?

IN a paper read before the Chicago Gynecological Society R. W. Holmes (*Surgery, Gynecology, and Obstetrics*, November, 1915) bitterly arraigns the profession for the apparently increasing tendency to resort to cesarean section under conditions which he does not consider to warrant such a severe operative procedure; and in the discussion of Holmes' paper, W. A. N. Dorland compares the operative furor for cesarean section at the present time to that seen in pelvic surgery some 15 or 20 years ago when ovaries were removed on all sorts of indications. Certainly many of us have heard reports of cases of abdominal, and especially of vaginal, cesarean section concerning which we have felt that the interests of mother and child would have been equally well if not better served by a less drastic measure; and we feel, therefore, that Holmes' paper is worthy of serious consideration.

With what might be called the old indications for cesarean section we are all familiar. To these have been gradually added other more or less cogent reasons for performing that operation, partly due to the fact that with the development of improved methods of aseptic technique abdominal section is more lightly undertaken than formerly, sometimes, unfortunately, by those not any too well qualified. Then again, the introduction of Dührssen's vaginal method of cesarean section seems to have stimulated a further small percentage of operators to employ this method of delivery in certain cases where less dangerous methods are entirely feasible. Holmes first considers the general aspects of the situation; then takes up in order the relation of obstructing tumors, eclampsia, and placenta previa to cesarean section. This is followed by an arraignment of those who do cesarean section on indefensible indications; and the author shows that a more profound knowledge of the obstetric art would have suggested a simpler way out of the real or imaginary difficulties in many cases where an entirely unwarrantable cesarean section has been done, and that too sometimes with disastrous consequences.

His conclusions are formulated as follows: (1) A contracted pelvis alone should be considered as the single, definitely permanent indication for cesarean section. (2) No cesarean section should be considered, unless the baby is in good condition, or unless section is the only resort. (3) Eclampsia, placenta previa, or other specious indications do not offer warranty for the operation unless there is some contributing obstetric anomaly. (4) Every woman with a relative indication (pelvic contraction) should be allowed to go into labor so that there may be a test of the actual cephalopelvic disproportion. During this test no vaginal examinations should be countenanced, but labor should be controlled by abdominal palpation and rectal examination. (5) It is neither wise nor expedient to permit a patient with an absolute indication or where cesarean section has previously been performed to enter labor. (6) A cesarean scar is a vulnerable point in the uterine wall, and is likely to rupture; therefore, a cesarean section once is a cesarean section always. The only exception worthy of consideration would be a multipara with soft, lax, or torn pelvic floor. (7) Cesarean sections have been performed on inordinately broadened indications which in many respects are not defensible. The indications should be restricted. (8) Obstetric manual dexterity has been compromised by the development of cesarean section. The beneficent results from obstetric procedures should be emphasized. (9) One who has a mortality of 5 or more per cent. for his cesarean sections should revise his indications—should use discrimination in his selection of cases.

While the author of the article quoted is at times too severe in his castigation of his fellow obstetricians, it is indubitably true that many cesarean sections have been performed upon questionable indications and possibly, as Holmes says, "many never will be reported, for there was no real justification for their performance."

CORRECTABLE PHYSICAL DEFECTS.

THE general prolongation of human life has given opportunity for bringing into relief a great many physical deficiencies and stigmata of degeneration which the previous shorter life snuffed out before development. For it must be remembered that all hereditary qualities or defects are not patent at birth, but keep continually cropping out thereafter; and the longer one lives the more of them will become patent. Although it is true that they all exist in the germ in a latent condition, yet in their latency they can give no concern except as transmissible characteristics. The large increase in the incidence of physical deficiencies with which we are now confronted is, then, rather a discovery than a new development, and is therefore more apparent than real. Besides the longer life and diagnostic refinements which brings these conditions forward, the apparent increase is the direct result of our rapid progress which requires of human beings the exercise of finer and better physical powers and those who do not have them soon become conspicuous.

Many of the physical defects are first discovered at school where the child is hampered in his progress because of his inability to comprehend or to be attentive or because of the presence of gross sensory deficiencies. The school medical inspection instituted in most educational organizations brings to light the cause of the backwardness of many of these children and allows their restoration to efficiency. Yet this inspection is at present very poorly developed, either because the time allotted for this work is too small or because the insufficiency of remuneration does not secure the best and the most conscientious work. Visual defects are perhaps the ones that cause the greatest amount of trouble to the school child, even though they are the most amenable to correction. High degrees of myopia or of astigmatism and juvenile cataracts may all be so severe as not only to be frequently mistaken for organic blindness, but actually to lead to it. The deficiencies include also ear diseases, dental caries, adenoids, nasal obstructions, tonsillar hypertrophy, gastrointestinal and parasitic conditions as well as the neuroses.

More recently the influence that the physical deficiencies exert upon the composition of the juvenile offender has aroused a great deal of interest. While it may be that the antisocial tendencies of a child may be but the untrained though normal atavistic tendencies of the human race, brought into especial emphasis because of parental neglect or other adverse environmental conditions, it is yet a fact that many of these delinquents are in the gross underdeveloped, undernourished, have many of the special physical defects, or are distinctly mentally feeble from the lack of potency of the special senses. Moreover, because of their physical weakness they are unable to take hold of the industrial occupations and are left to become the pauper, the vagrant, the prostitute, or the positively criminal.

Proper medical examination of these delinquents before they are improperly stamped as criminals would save many of them for future usefulness.

Chicago has made a remarkable advance in this respect by attaching to its juvenile courts a psychologist. The new children's court in the city of New York is a model in many respects, and will be in more when there is attached to it a physician experienced in this work, who can devote all his time to its development.

"Euthanasia" Again.

The newspapers devoted a great deal of their valuable space last week to a discussion of the justifiability of letting babies die when they are not built right. The occasion of the discussion was the loudly announced determination of a Chicago physician not to perform an operation which he seemed confident would save the life of a baby born with but one external ear and other defects and assumed also to be mentally deficient. From the newspaper accounts one gathers that this deformed child had an intestinal defect, and if this was the condition it is by no means certain that an operation would have resulted in prolonging life; it might even have cut it short. However, this is not the point. The discussion was simply a revival in a slightly modified form of the perennial dispute regarding the justifiability of so-called euthanasia. The discussion belongs to the silly season, for the question is a purely academic one and will remain so until the science of prognosis has advanced far beyond where it is now. The prognostic ability of the average, or even the better than average physician is about on a par with his diagnostic ability—and the autopsy room, according to Cabot, shows that that is hardly worth talking about. "The most exact calculator," says Emerson, "has no prescience that somewhat incalculable may not balk the very next moment," and this applies to the physician in equal measure with the weather forecaster. It is the duty of the physician to relieve pain, remove disease, and save life so far as in him lies the power. That he is justified in jeopardizing life to relieve intolerable agony is unquestioned, but to hold that he is permitted to take life or refuse to save life, if he can, because he thinks the life is not worth saving or cannot be saved, is pernicious. He does not know and cannot know that the life cannot be saved; nor can he say that an infant of a few days who is physically defective may not grow up to be a useful member of society—more useful, it may be, than some of those who would have condemned him, untried, to execution. In the specific instance above mentioned, if the physician thought the operation was not justified under the circumstances, he was right not to perform it, but the reason which he published to the world and Cook County for his abstention was not a good one.

The Dutchess County Health Association.

The fact is too well known to be insisted upon that the sick who are meagerly endowed with this world's goods are frequently inadequately or improperly cared for. Furthermore, it is obvious that good nursing is, at least, of equal importance with efficient medical service, while in many instances careful nursing is more than half the battle. It would be idle to dwell on the point that many lives that might have been useful to the community are lost for lack of care when sick, and this occurs, perhaps, more often in the country districts than in the cities. The Dutchess County (New York) Health Association has been formed to combat existing conditions and while the territory selected for investigation into the extent, care, and prevention of sickness under the auspices of the Committee on Hospitals of the New York State Charities' Aid Association and the Thomas Thompson Trust of Rhinebeck, N. Y., is of both urban and rural character, it is in fact more rural than urban. This inquiry is held to be the first systematic attempt to secure direct and detailed information concerning sickness in the home that has ever been made in the United States and the information acquired has been unique in its nature. The striking feature of this investigation has been that in the districts investigated there were found to be many instances of neglect, unnecessary suffering, and financial losses of large proportions, which can and should be checked. All of these undesirable and indefensible conditions, it was discovered, arose from the inadequate provisions existing for the care of the sick and the prevention of disease. As a result of the investigation it was revealed that out of eleven thousand people who lived in the district, sixteen hundred, or over 15 per cent., were seriously sick, and of the latter number more than six hundred, or 42 per cent., were inadequately cared for during their illness. Also the inquiry made evident the fact that in order to obtain the best results in the prosecution of a campaign to improve nursing conditions and the medical care of the sick, organized and coordinated efforts are essential. Space here is wanting to give in detail the comprehensive and workmanlike plan of campaign mapped out by those responsible for the formation of the Dutchess County Health Association, but it may be said that from a perusal of the report it appears to be lacking in no feature calculated to guarantee success. Preventive work will occupy a prominent place in the campaign and special attention will be given to the problems involved in the prevention of feeblemindedness, epilepsy, alcoholism, and tuberculosis, not by cooperating with the State and national agencies that are specializing along these lines, but by doing additional new work on its own initiative.

Traumatic Dementia Precox.

The somatic basis of dementia precox has frequently been debated, as well as the syndrome-like character of the affection, in virtue of which it might exist under a variety of circumstances. Among the systemic causes invoked to explain the nature of this affection are autointoxication, anomalies of internal secretion, and trauma. At a meeting last summer of the Hamburg Medical Society (*Berliner klinische Wochenschrift*, August 16) Weygandt described the case of a youth who fell from a scaffolding and suffered a contusion of the ribs. Soon afterward his mind seemed to fail and he threw himself from a balcony, sustaining a cranial injury. He now developed a condition highly suggestive of dementia precox, but passed at once into a cachectic state, ending in death. The autopsy finds were inconclusive. They were all microscopic and seemed to consist of old and recent miliary hemorrhages. Degenerative phenomena were in evidence and there were no evidences of inflammation. The author seems inclined to bring this case under the clinical domain of traumatic psychosis.

News of the Week.

To Aid Maimed and Blinded Soldiers—There has recently been founded in France, under the patronage of President Poincaré, a Union of Neutral Colonies, which has for its object the assisting of blinded and maimed soldiers, and at a meeting on November 16, at which Ambassador Sharp presided, an American Colony was organized. It is estimated that each soldier helped will cost the Union from four to five francs a day, and that it will be necessary to continue the assistance for six months at least. The Union has thus far an annual revenue of $4,000, of which $1,200 has been subscribed by Americans.

Hospital Ship Sunk.—The British Hospital ship Anglia, crossing the Channel from France with nearly 400 wounded soldiers on board, struck a mine when three miles off shore and sank in a few minutes. Eighty-five soldiers were reported drowned, as well as some of the nurses and crew.

Dr. Cecile Lenore Greil, one of the survivors of the *Ancona* massacre, is a graduate of the New York Eclectic College in 1910, and was formerly assistant neurologist to Mt. Sinai Dispensary in this city.

New York City Death Rate.—During the week ending November 13 there occurred in New York City 1,324 deaths, giving a death rate of 12.34 per thousand, against a total of 1,276 deaths during the corresponding week of last year, when the rate was 12.54. The most noteworthy features of the mortality record for the week were the decrease in the number of deaths reported from acute infectious diseases and in the increase in those from diarrheal and respiratory diseases. The mortality of children under one year of age was considerably greater than that of last year, 232 as against 183. The death rate for the first forty-six weeks of the year, based upon a revised estimate of the population, was 13.59 per thousand, as against a rate of 13.75 per thousand for the same period of 1914, a decrease of 0.16 of a point. If this decrease be maintained during the remaining weeks of the year there will be approximately 885 fewer deaths during the entire year than during 1914.

Chicago Death Rate.—The death rate in Chicago for the week ending November 13 was 12.4 per thousand, as against 11.7 for the corresponding week of 1914, the total number of deaths being 581 and 537, respectively. There was only one death from typhoid fever, while diphtheria caused 13, measles 4, tuberculosis 74, pneumonia 51, and infantile diarrhea 44.

To Study Microbes.—A course of lectures on "The Haunts and Habits of Microbes" is to be given to the employees of the Department of Health in the laboratory of the Bellevue Hospital Medical College on alternate Saturdays from November 20 until next May, under the direction of Dr. William H. Park, director of the Research Laboratory. It is thought that such a course will serve to familiarize the sanitary and food inspectors of the department with some of the advanced scientific aspects of their work.

Diagnostic Wassermann Clinic.—The Department of Health of New York calls attention to the establishment of a Wassermann Diagnostic Clinic at the Bronx Borough Office, 3725 Third Avenue, where the drawing of blood for the complement-fixation tests for syphilis and gonorrhea, the taking of smears, etc., will be carried out. Physicians who desire to avail themselves of the services offered are urged to refer their Bronx cases to this office. The hours are from 11 a.m. to 1 p.m. daily, Sundays and holidays excepted.

Bureau of Child Hygiene.—At a conference in New York on November 17 on "What the City Does for the Child, and What the City Should Do" Dr. Josephine Baker, director of the Bureau of Child Hygiene of the Department of Health, stated that 60,000 babies annually were cared for by the bureau, and that this care began as soon as the child was born, a trained nurse being sent out on each case immediately after the birth certificate was received. The death rate among babies in New York, Dr. Baker said, had been reduced to 95 per thousand, the lowest mortality rate in the State, and the lowest rate among the ten big cities of the country.

Clearing House for Feeble-Minded.—The New York State Board of Charities advocates the establishment by the State of a clearing-house for the mentally defective, to determine the special treatment suitable in each case. The Board favors the enlargement of the present State institutions for the feeble-minded to a capacity of 2,500, the establishment of three new institutions, and State control of the New York City institution for the feeble-minded on Randall's Island.

Physicians Warned.—The filing of several death certificates in cases of tuberculosis which had not previously been reported has led the city health officer of Portland, Ore., to notify physicians that they are subject to punishment under both city ordinance and State law for failure to report any case of contagious disease.

Anthrax Case.—For the third time in three months a fatal case of anthrax has been reported in New York, an unusual feature of the case being that none of the three patients was in a direct manner liable to the disease, by employment or otherwise. The last victim was a young woman who up to the time of her illness was employed in a candy factory. It has been suggested that in this instance the disease may have been contracted from a piece of cheap fur worn about the neck.

Centenarian Dead.—Mrs. Emma Cable of Paramus, N. J., died at her home recently at the age of 101 years and 10 months.

Orders Tonsils Removed.—Justice Ryan of the Brooklyn Children's Court on November 17 decided that the Board of Education had the right to compel the removal of physical conditions which retard a school child's mental progress, and, therefore, instructed the parents of a child who had been brought before him on a charge of truancy to submit to the demand of the Board that the child's tonsils be removed. The fact that the child's tonsils were diseased had been given by the parents as an excuse for his delinquency.

Christmas Seals.—The State Charities Aid Association of New York has distributed throughout the State 15,000,000 Red Cross Christmas seals, the proceeds of the sale of which will be devoted to tuberculosis work as usual.

Blockley Association.—The twenty-ninth annual banquet of the Association of Blockley (Philadelphia General Hospital) ex-Resident and Resident Physicians, was held at the Hotel Adelphia, Philadelphia, on November 13. Dr. Charles S. Potts presided, and addresses were made by Dr. Oscar H. Allis, Dr. Daniel L. Bertolette, Dr. David Riesman, Dr. R. C. Rosenberger, and others. The fol-

lowing officers were chosen for the ensuing year: President, Dr. B. Franklin Stahl; First Vice-President, Dr. J. Chalmers Da Costa; Second Vice-President, Dr. David Riesman; Secretary, Treasurer, Dr. David R. Stone.

Surgeon's Degree.—The American College of Surgeons, which held its fourth convocation in Boston recently, has approved the desire expressed by many surgeons for a distinct degree which would differentiate the surgical and medical branches of the profession. The fellowship pledge just adopted by the college reads as follows: "Recognizing that the American College of Surgeons seeks to develop, exemplify and enforce the highest traditions of our calling, I hereby pledge myself, as a condition of fellowship in the college, to live in strict accordance with all its principles, declarations, and regulations. In particular I pledge myself to pursue the practice of surgery with thorough self-restraint and to place the welfare of my patients above all else; to render willing help to my colleagues and to give freely my services to the needy. Moreover, I pledge myself to shun unwarranted publicity, dishonest money-seeking, and commercialism as disgraceful to our profession; to refuse utterly all secret money trades with consultants and practitioners; to make by fees commensurate with the services rendered and with the patient's rights, and to avoid discrediting my associates by taking unwarranted compensation."

Salvarsan Released.—The appeal of the American Government to Great Britain for the release of fifteen cases of salvarsan shipped from Germany to the United States and held by Great Britain has been favorably considered, and the drug will be forwarded without delay. It is hoped that this shipment will be sufficient to meet the demand for the drug until it can be manufactured here. France, it is said, protested against the granting of the appeal on the ground that it could supply the need with salvarsan of its own manufacture, and it is possible that further supplies can be obtained from that country.

Clubhouse for Nurses.—The corner-stone of a new Central Club for Nurses, connected with the Young Women's Christian Association, on East Forty-fifth street, New York, was laid on November 17. The building will be thirteen stories high and will contain 218 single and eighteen double rooms, besides a sewing room, dispensary, library, offices, rest rooms, reception rooms, tea room, cafeteria, and roof garden.

Charitable Bequests.—By the will of the late Julius S. Hotchkiss of New Haven, Conn., the New Haven Hospital receives a legacy of $100,000.

The Delaware Hospital of Wilmington, Del., receives a residuary bequest of $15,000 under the will of the late James G. Hendrickson of Philadelphia.

Harvey Society.—The third lecture of the series will be given at the New York Academy of Medicine, 17 West Forty-third street, on Saturday evening, November 27, 1915, at 8.30 p.m., by Dr. Eugene F. Du Bois, Cornell University. Subject, "The Respiration Calorimeter in Clinical Medicine."

Personals.—Dr. David W. Cheever of Boston, Dr. Wilfred T. Grenfell of Laborador, Dr. Stephen Smith of New York, and Dr. Lewis McL. Tiffany of Baltimore were elected honorary fellows of the American College of Surgeons at its recent meeting.

Dr. Leo Loeb has been appointed professor of comparative pathology in the Medical School of Washington University, St. Louis.

Dr. James G. Cumming of Ann Arbor, Mich., has been appointed director of the Bureau of Communicable Diseases of California.

Degrees Conferred.—The University of Pittsburgh conferred the degree of doctor of laws on Dr. John W. Williams, dean of the Johns Hopkins University Medical School, Dr. Barton Cooke Hirst, professor of obstetrics in the University of Pennsylvania, and Dr. Walter W. Chipman, professor of obstetrics and gynecology in McGill University, on the occasion of the dedication of the Elizabeth Steel Magee Hospital in Pittsburgh recently.

Dr. Henry Charlton Bastian of London, emeritus professor of medicine and clinical medicine at the University of London, consulting physician to the University College Hospital and to the National Hospital for Paralyzed and Epileptics, died on November 18, aged 78 years. Dr. Bastian was a believer in the theory that life is a form of energy which can arise spontaneously, and considered that his experiments, which he published in 1870, proved conclusively that life can arise from inorganic material. The truth of his observations, however, was contested by both Huxley and Tyndall.

Tuberculosis Conference.—At the joint meeting of the North Atlantic Tuberculosis Conference and the New York State Tuberculosis Conference at Albany on November 4, telegrams were read announcing that the voters of five counties in New York had approved plans to erect tuberculosis hospitals. Thirty-five counties in the State are now provided with hospitals for tuberculous patients, or have definitely decided to build them. Nineteen such hospitals are already in operation and three more are in course of construction. The movement against tuberculosis has been more widespread in New York than in any other State. Addresses were made at the conference by Governor Whitman, Dr. H. M. Biggs, State Commissioner of Health, Dr. John B. Andrews, secretary of the Association for Labor Legislation, who advocated the establishment of a State health insurance system, Dr. Frederick L. Hoffman, who spoke on "Tuberculosis as an Industrial Disease," Dr. Haven Emerson, Commissioner of Health of New York City, and Dr. Victor G. Heiser, formerly director of the Department of Health of the Philippine Islands.

Prevention of Blindness.—Ex-President Taft, Mr. Joseph H. Choate, Prof. G. E. de Schweinitz, and Mr. Edward M. Cleve were the speakers at the meeting of the National Committee for the Prevention of Blindness at the New York Academy of Medicine on November 4. Mr. Taft expressed his belief that the energy and knowledge which had rid the Panama Canal Zone of yellow fever and malaria, and within a few months has put a stop to the ravages of typhus fever in Serbia, would be able to wipe out to a large extent the proportion of blindness from preventable causes in this country. Mr. Van Cleve told of the campaign which is now being waged against ophthalmia neonatorum through lectures illustrated by lantern slides.

Covered Garbage Carts.—Following a conference on November 5, with 300 contractors employed by New York City to dispose of ashes, garbage, and other refuse, Commissioner of Health Emerson stated that after January 1, 1916, no permits would be issued for the use of uncovered carts. The wagons used by the Department of Street Cleaning in removing ashes and garbage are already provided with covers, and there will no longer be any discrimination between this Department and the contractors.

Spurious Drugs.—The Bureau of Chemistry, Department of Agriculture, has recently issued a circular letter calling attention to the fact that considerable quantities of spurious aspirin and neosalvarsan are being peddled about the country in a way that makes it difficult to find interstate shipments. The spurious aspirin is a mixture of either calcium acid phosphate and starch, cream of tartar, and citric acid with some alum, or milk, sugar, starch, and calcium acid phosphates. The so-called neosalvarsan consists of common salt with naphthol yellow. While the Department of Health of New York City, in accordance with this warning, has notified the drug trade to be on its guard against these vicious frauds, it is impossible to protect the medical profession from unscrupulous druggists, and it is suggested that physicians who have any reason to believe that substitution has been practised in the compounding of prescriptions, send a sample of the medicine together with a copy of the prescription to the Department for examination.

Leprosy in Boston.—The Boston City Health Department announced on November 6 that a young man who had been afflicted with leprosy for at least seven months had been working as a dishwasher in a small west end restaurant. The patient, a Greek, had received treatment at a hospital for several weeks before the nature of his ailment was recognized. The case has been reported in order to emphasize the need of legislation giving the Health Board power to license all persons handling food.

Milk Inspection.—The quarterly meeting of the Milk Committee of the Westchester County (N. Y.) Medical Society was held at the Hotel Gramatan, Bronxville, on November 5. This board employs inspectors to examine the various dairies in Westchester County and no milk is certified until the dairy has complied with the requirements of the board.

Change Hospital Name.—By a recent order of the Supreme Court the Red Cross Hospital on Central Park West, New York, will be permitted to change its name to the Park Hospital. The institution was founded in 1894 as a branch of the National Red Cross, but it is felt now that the change in name will give it a wider scope and permit of greater accomplishments.

Medical Society Elections.—The Southern Medical Association, at its annual meeting held in Dallas, Texas, on November 10 and 11, elected the following officers: *President*, Dr. Robert Wilson, F. Taylor, Fort Worth; and Dr. Guy Hunter, Balti- Jr., Charlotte, N. C.; *Vice-Presidents*, Dr. Coleman more; *Secretary-Treasurer*, Dr. Seale Harris, Birmingham, Ala. Atlanta was chosen as the meeting place in 1916.

Medical Society of the County of New York: At the annual meeting of this society, held on Monday evening of this week, there was a spirited contest over the election of the first vice-president and of the delegates to the State Society, the contest being made by members of the society belonging to the Federation of Medical Economic Leagues. The latter were defeated, the election resulting as follows: *President*, Dr. Frederic E. Sondern; *First Vice-President*, Dr. J. Bentley Squier; *Second Vice-President*, Dr. Charles H. Peck; *Secretary*, Dr. John Van Doren Young; *Assistant Secretary*, Dr. Daniel S. Dougherty; *Treasurer*, Dr. Charles H. Richardson; *Censors*, Drs. Howard C. Taylor, Willy Meyer, Floyd M. Crandall; *Delegates to the Medical Society of the State of New York*, Drs. Alexander Lyle, Orrin Sage Wightman, Ralph Waldo, Daniel S. Dougherty, Ernest E. Smith, Brooks H. Wells, John Van Doren Young, Harold Hays, J. Bentley Squier, Lewis F. Frissell, Ward B. Hoag, George W. Kosmak, Nathan E. Brill, and Calvin S. May.

American College of Surgeons: Annual meeting at Boston on October 30. Officers elected: *President*, Dr. J. M. T. Finney, Baltimore; *Vice-Presidents*, Dr. W. W. Chipman, Montreal, and Dr. Rudolph Matas, New Orleans; *Treasurer*, Dr. Albert J. Ochsner, Chicago; *Secretary*, Dr. Franklin H. Martin, Chicago. The fund of the society was increased by about $100,000, bringing the total amount to nearly half a million, with which it is purposed to establish a great medical library and museum.

Minnesota Academy of Ophthalmology and Oto-Laryngology: Annual meeting at St. Paul in October. Officers elected: *President*, Dr. Thomas McDavitt, St. Paul; *First Vice-President*, Dr. John M. Robinson, Duluth; *Second Vice-President*, Dr. John A. Watson, Minneapolis; *Secretary-Treasurer*, Dr. John Morse, Minneapolis.

Charlestown (Mass.) Medical Society: Annual meeting on October 18. Officers elected: *President*, Dr. Pramath N. Roy; *Vice-President*, Dr. Nelson M. Wood; *Secretary*, Dr. Joseph B. Lyons; *Treasurer*, Dr. Francis L. Magurn.

New Haven County (Conn.) Medical Society: 131st annual meeting at Waterbury on October 28. Officers elected: *President*, Dr. William W. F. Verdi, New Haven; *Vice-President*, Dr. Frederick G. Graves, Waterbury; *Clerk*, Dr. Willis E. Hartshorn, New Haven.

National Society of Keep Wells.—This society, which has its headquarters in Washington, D. C., has plainly indicated its object in the name it has selected. Meetings are held frequently and at these physicians are invited to speak on the preservation of health in popular fashion. These familiar talks will then be published by the society so that their influence may be more extensive and permanent.

Obituary Notes.—Dr. Rush W. Kimball of Norwich, Conn., a graduate of the Long Island College Hospital, Brooklyn, N. Y., in 1890, medical examiner of New London County, visiting surgeon to the William W. Backus Hospital, and a member of the American Medical Association and the Connecticut State and New London County Medical Societies, died at his home on November 15, aged 52 years.

Dr. Hermann E. Hasse of Santa Monica, Cal., and formerly of Milwaukee, Wis., a graduate of the University of Würzburg, Bavaria, Germany, in 1861, a veteran of the Civil War, and a botanist of international authority, died at his home on October 30, aged 79 years.

Dr. Frank D. Harter of Grand Rapids, Mich., a graduate of the Chicago Homeopathic Medical College in 1900, died at his home from blood poisoning following an ulceration of a tooth, after a short illness, on November 1, aged 43 years.

Dr. Michael J. Nonney of Manawa, Wis., a graduate of the Milwaukee Medical College in 1911, and a member of the State Medical Society of Wisconsin and the Waupaca County Medical Society, died suddenly in his office, on October 22, aged 39 years.

Dr. William Wallace Chisholm, a graduate of Hahnemann Hospital and College of Philadelphia, with class of 1915, and an interne at the Hospital, died on October 29.

DR. FRANCIS DELAFIELD.*

IN MEMORIAM.

By THEODORE C. JANEWAY, M.D.,

BALTIMORE, MD.

As I look about me and see so many of you who, twenty years ago, sat with me in the big lecture room at Fifty-ninth Street, I know that the subject of this evening's discussion brings instinctively before your minds, as it always does before mine, the picture of that four o'clock lecture and the tall, calm figure of the man who gave us our first fundamental concepts of renal disease. Dr. Francis Delafield made original contributions to knowledge in many aspects of pathology and clinical medicine, but to none did he devote so much labor as to the study of diseases of the kidneys, and on none did he so impress the personal point of view which grew out of that labor. Our nomenclature may change again and again, differing interpretations of inflammation may come and go, new methods of investigation in the living will alter the emphasis and determine the interest of succeeding generations, but none of us can ever forget the basic facts of morbid anatomy and of the association of ante-mortem pictures with post-mortem lesions, whose clear delineation we, in New York City, owe to Francis Delafield more than to any other man. In this work, as in all that he did in medicine, he followed in the best tradition of the first great student of disease of the kidney, Richard Bright himself. He followed, but not blindly, insisting on seeing every step with his own eyes, both during the illness of the patient and when the body was brought to the autopsy room. Nor did he stop there. The morbid anatomy of Bright was a gross anatomy; Dr. Delafield's study was not finished until the tissues had been cut by his own hand and subjected to the most careful scrutiny under the microscope. No memory of him is more fixed in my mind than the occasional glimpse through the half-open door of his little room under the big amphitheatre, where he sat by his microtome cutting his own sections. In these days of enthusiasm for experimental investigation as contrasted with morphological, some would tell us that the professor of medicine who works in his laboratory with his own hands is a new figure. Such men can never have passed that half-open door as I did, nor have tiptoed their way fearsomely among the specimen jars of a father's workshop in such a home as I grew up in. There is no new figure in medicine. Galen himself was a laboratory clinician. Only the laboratory has changed, and we, in our day, may attack new problems with new tools, because those who have gone before have solved so many of the old problems with other tools.

Dr. Delafield was a frequent contributor to medical periodicals over a long term of years. His first publication appeared in 1868 in the *Medical News*. Between this and 1904, a term of thirty-six years, he published eighty-two articles. His descriptions of broncho-pneumonia, of organizing pneumonia, "lobar pneumonia with the production of new connective tissue," as he called it, of meningitis, of emphysema, of non-obstructive jaundice, being especially noteworthy, in addition to his studies of nephritis. Besides all this, he published with Stillman, "A Manual of Physical Diagnosis," in 1878, contributed to the International Encyclopædia of Surgery in 1881, the article on "Pyæmia and Allied Conditions" and to Pepper's System of Medicine, and its successor, "The Twentieth Century Practice of Medicine," the sections on Diseases of the Kidney. His lectures on the practice of medicine are familiar to you all. But his larger books show how pre-eminently a laboratory clinician he was. In 1872 his "Handbook of Post-mortem Examinations and of Morbid Anatomy" appeared, a volume of 376 pages. In 1885 it was followed by the first edition of Delafield and Prudden's "Handbook of Pathological Anatomy and Histology," with 575 pages. Delafield and Prudden still remains the standard American text-book of pathological anatomy, and in 1914 reached its tenth edition, having grown to 1116 pages. Besides all this, between 1878 and 1891 he published his illustrated "Studies in Pathological Anatomy," a lasting monument to his industry and his attainments as a pathologist.

As a teacher, his memory is still fresh with most of us. Speculation had no place in his lectures or clinics. To present facts in the fewest words was his invariable method. He never resorted to any of the tricks of the lecturer to stimulate interest, nor could one imagine him descending to facetiousness. He cared not for popularity. His very bearing was instinct with dignity and reserve. We often thought there was no appreciation of the lighter side of life behind that reserve until, one day, we caught the twinkle in those deep-set eyes and knew that we were wrong. Nothing is more characteristic of his modesty than his motive in promoting the organization of the Association of American Physicians, of which he was the first president. This motive, he said, was that there might be a medical society of which no one would know who was president, and no one would care.

Gentlemen, when Francis Delafield passed away last summer, in his seventy-fourth year, New York City lost one of the really great figures which it has contributed to American medicine. The profession of New York should cherish his memory by following his example:—to care not for fame, but for fact; to spare no labor in the ascertainment of fact; to use to the full each new method which will put us in possession of new facts; to impart those facts in language which shall be unequivocal; to face facts with uncompromising honesty to the reality outside ourselves and to our own mental integrity, and to face situations with unswerving fidelity to others. In one thing only would I have you diverge from his precepts,—I would have you not cease to remember, nor forget to honor the name of Francis Delafield.

*Read at a meeting of the New York Academy of Medicine, November 4, 1915.

Public Health School.—Plans for a School of Sanitary Science and Public Health are now being prepared by the Department of Extension Teaching at Columbia University, and it is hoped that courses may be offered during 1916-17. Graduates of the school will be eligible for positions in the State and municipal service as public health laboratory workers, public health statisticians, sanitary engineers, medical officers of health, and administrative officers or commissioners of health. It is proposed to have the course extend over two years, and to require a certain amount of preliminary education. Those who complete the course will be given a certificate from the Administrative Board of the Extension Teaching Department.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

FATIGUE—GUNSHOT WOUNDS OF PERIPHERAL NERVES, MEDICAL AND SURGICAL ASPECTS—INTESTINAL STASIS—PTOSIS AND STASIS—NOVO-ARSENOBENZOL, A DANGER—BRIGHTON SOCIETY, PRESIDENTIAL ADDRESS ON OBSTRUCTION.

LONDON, November 6, 1915.

FATIGUE after work or exercise is a natural condition—not as some seem to think injurious and so to be prevented. It is not merely a normal physiological process, but is probably essential to the health of the body. So long as repair keeps pace with waste all goes well, but let this fail and injurious fatigue sets in leading to destruction—a condition which may be brought about not only through excessive or too prolonged exertion, but by inadequate rest. Besides this the accumulation of toxic results of tissue changes from interruption or diminution of excretory action must be reckoned with. Any interference with the normal functions by want of ventilation or by atmospheric toxins will lead to more rapid development of the condition of fatigue; as will also any failure to distribute proper rest intervals throughout the working day so as to ensure the recovery of the tissues before they have become thoroughly exhausted, which condition would lead to great increase of ultimate fatigue. To test the rapidity of response to a stimulus eight women in the printing trade were experimented on, the reaction times being determined at the beginning and end of the day's work. Four out of the eight took less time to respond in the evening than the morning, though in several instances this was not so and in some the reverse occurred. As to the effect of daily work on fatigue it was found that at the beginning of the work the response was quicker in the evening than morning, but on successive days the evening became, relatively to the morning, slower and slower, until on Friday the time in the evening was considerably greater than in the corresponding morning. Progressive habituation to the test seemed to affect the result. It appeared as if men gradually became less able to withstand the wear and tear of a day's work. In women the results were less regular, but there was some evidence of considerable fatigue on Friday. The foregoing notes relate to muscular fatigue. Mental, as we call it, is made more obscure and we have no definite knowledge about it. To call it a disturbance of coordination explains little, if any, more than to say it seems due to a lack of attention or an inability to concentrate thought. Some of these points have been suggested by a report to the Home Secretary by Dr. Stanley Kent.

The Medical Society of London is engaged in a discussion on gunshot wounds of the peripheral nerves. It was opened by Dr. Wilfred Harris, who considered (*a*) the diagnosis and localization of the injury, (*b*) the prognosis, especially as to the question whether operative treatment were required. He laid down that there should be an accurate history of the wound or wounds and their effects, a methodical examination of both the motor and sensory paralysis to determine if it agreed with the anatomical distribution of a nerve or nerves, or a portion of a plexus, or if it resembled phenomena of hysteria. Careful charts of sensory loss were more important than the presence of complete muscular paralysis with reaction of degeneration, in estimating the severity of injury to a mixed nerve. In testing sensation the stimuli used were tests of different degrees of conductivity of the nerve, not of different systems of fibers. In secondary suture of nerve, recovery of sensation might begin within a few days. Variations of sensibility had to be allowed for, as differences might be noticed from day to day, according to whether the limb was warm or cold.

Mr. Wilfred Trotter submitted a paper on the surgical aspect of the question. He held that experience at present could not give a definite estimate of results. Restoration of a peripheral nerve presented problems in plastic surgery of a special kind. Interruption of a nerve left a permanent defect which could not be compensated by any other mechanism. Restoration of a nerve to its normal anatomical continuity was not a guarantee of recovery. An incomplete lesion or an incomplete recovery of a nerve might be more disabling than a total loss of function. He divided these injuries into (*a*) complete typical lesions; (*b*) mixed lesions with complete division of some trunks or parts of trunks and incomplete division of others; (*c*) incomplete lesions without pain, such as bruising, laceration, scarring, pressure; (*d*) incomplete lesions with pain; (*e*) pure pressure lesions, as by bone or foreign body. As to treatment, isolation of the central nervous system had been more and more insisted on in recent years and the facts of cerebral surgery showed the importance of the isolating mechanisms, *e.g.* ready reformation of the dura after removal; impossibility of draining cerebrospinal fluid into the subcutaneous tissues. Division of a nerve brought about a complicated reaction between the central end and surrounding tissues and regeneration depended on this: where reactions could not occur, as in the spinal cord, no regeneration took place; where they could occur fibrosis might interfere. A regeneration which involved a reaction between nerve and tissue was apt to set up irritation of the nerve rendering it hypersensitive, as in the so-called amputation neuroma, which was a necessary sequence of nerve section. When great deficiencies of nerve have to be closed two plans have been tried: (1) implanting both ends in an adjacent trunk; (2) filling the gap with one or more lengths of a large cutaneous nerve. The most exact coaptation of sutured ends must be effected and the portion of nerve insulated from surrounding tissue. This can be done by stitching a tube of subcutaneous fat closely round the nerve and fixing it to its sheath. The strictest asepsis must be ensured. If resection be decided against the nerve must be freed from scar or other pressure and wrapped in fat. Muscular relaxation must be secured both before and after operation.

At the Royal Society of Medicine Prof. A. Keith introduced the subject of intestinal stasis in reference to certain *x*-ray appearances. In the dissecting room of the London hospital, about the time of Lane and Starling's researches, his attention was drawn to such problems by the number of cases of displacement (towards the pelvis) of abdominal viscera and he concluded that the muscles in the abdominal wall are the chief agents in maintaining the viscera in position when the person is standing up and these muscles are called into action by reflexes arising when the erect position is assumed. While the mesenteries may act as ligaments, they only do so when muscular support has been overcome. Re-

cent examination of a series of colons which had been excised showed that stasis and ptosis may be due to the same lesion. He based an explanation on Sherrington's discovery that stimulation of the splanchnic nerves threw the abdominal muscles into tonic contraction. The intramuscular nerve plexus and peritoneal covering were both visibly altered in most specimens he had examined.

Dr. A. F. Hertz agreed for the most part with Dr. Keith, though he thought the relation between ptosis and stasis was hardly so intimate as represented. He had seen one without the other. The changes in the cases of removed colon might be more marked because they were end cases. The only cases that could be susceptible of mechanical explanations were those caused by such gross conditions as tumor or tubercle.

Dr. Jordan supported by skiagrams Lane's views, as also did Dr. A. E. Barclay. The last named remarked that the true intepretation of various discoveries in medicine was best reached by someone standing apart; it was too much to expect it from a worker in the special department.

At the dermatological section of this society some interesting cases were exhibited on the 21st ult. One, very important, of exfoliative dermatitis produced by a single injection of novarsenobenzol. It came on a few days after injection and the patient could not leave the hospital for six months. A member related nine similar mishaps, of which two ended fatally.

Major A. H. Buck, R.A.M.C., made intestinal obstruction the subject of his presidential address at the opening of the session at the Brighton Medico-Chirurgical Society, dealing particularly with cases which came under his personal notice. He expressed belief that inflammatory obstruction might act in one of three ways—by reflex or direct action on nerves governing peristalsis, or by the mechanical action of adhesions. In obstruction, if present, flatus may appear to pass on giving an enema, on account of some air having been injected. Captain Fletcher, R.A.M.C., thought postoperative vomiting, if it continued for ten hours or more, was probably due to obstruction—a history of previous attacks of inflammation was suggestive. Captain Parry said the classical sausage-shaped tumor was not felt in a number of cases of intussusception; the most important signs of it were passage of mucus and blood only; in ileocolitis there was fecal matter also.

A DISCLAIMER.

To the Editor of the Medical Record:

Sir:—A pharmaceutical manufacturing company recently published a brochure upon one of its products in which it says: "Stow in reporting upon his use of the Bulgarian bacillus in children writes: 'There is no class of cases where more brilliant success has been accomplished than in these severe cases of summer diarrhea of infants. The Bulgarian bacillus when rightly employed works with remarkable rapidity and certainty, etc.' 'Metchnikoff's Basic Principle,' etc., by Bond Stow, M.D., Medical Record, August 8, 1914."

I wish to disclaim any association with or recommendation of the product in question, and the use of my name in the advertising brochure is unwarranted and without my sanction. I have never employed the product in my practice nor advised others to do so. I have said that the Bulgarian bacillus when rightly employed, works with remarkable rapidity and certainty. That means a pure, fresh, viable, high bacterial count (1,000,000,000 baccilli per c.c.) culture of this bacillus grown in a medium particularly adapted to the conditions of the gastro-intestinal tract of young suckling infants. The *Bacillus bulgaricus* combined with other substances, particularly those that coat it with an indigestible material, cannot meet these conditions. Both it and the sugars and carbohydrates in the intestinal tract must be free of any impervious nonmetabolizable coatings if the proper action of this microorganism is to be obtained. These two factors must have the readiest access to each other for the prompt generation of the sought-for nascent lactic acid.

Bond Stow, M.D.

200 West Seventieth Street, New York City.

Progress of Medical Science.

The Boston Medical and Surgical Journal.

November 11, 1915.

1. Legislation for the Insane in Massachusetts, with Particular Reference to the Voluntary Admission and Temporary Care Laws. Frankwood E. Williams.
2. Report of Harvard University Service at the American Ambulance, Lyrée Pasteur, Neuilly-sur-Seine, France. Robert B. Greenough.
3. Artificial Pneumothorax. Edward O. Otis.
4. On the State of the Respiratory Mechanism in Pneumonia. J. H. Means, L. H. Newburgh and W. T. Porter.
5. Note Concerning Exercise in the Treatment of Severe Diabetes. Frederick M. Allen.
6. A Study of the Statistics of the New York State Hospitals for 1913, with Special Regard to Statistics Regarding Dementia Precox. Charles T. LaMoure.

1. Legislation for the Insane in Massachusetts.—Frankwood E. Williams reviews the history of legislation for the insane in Massachusetts since 1907, when the first law providing for the care of insane persons was passed. He states that Massachusetts has today six laws for the temporary care of insane persons, and that of these six laws, four provide care without court action. It is in this that their great significance lies. This freer access to the hospitals seems like a new development. As a matter of fact it is but getting back to the fundamental conceptions of one hundred years ago. In the beginning patients could receive treatment without application to the courts. This continued for many years, but a growing prejudice and misunderstanding, due to the false hopes created in the minds of people by superintendents who honestly entertained these hopes themselves; to the distrust which arose because friends did not sufficiently understand the object in isolating patients; to the fear that developed that patients were being improperly confined resulted in the regulations pertaining to admission of patients to the hospitals being made more and more rigorous, until the time came when there was an almost insurmountable legal barrier about the hospitals. A medical matter became a legal matter. A judge who would hesitate to diagnose a case of heart disease showed no hesitancy in making a diagnosis of mental disease. Happily this stage was now being passed. A study of the present temporary and voluntary care laws shows that they are valuable for the following reasons: 1. They tend to express in legal form the modern conceptions of mental disease; and without endangering the personal liberty of any individual. 2. They at the same time emphasize the patient's cause as a patient. 3. They make it possible to provide early treatment, which is the most hopeful treatment. 4. They afford protection to the patient both from himself and from unprincipled members of the community quick to take advantage of his illness. 5. They afford protection to the family and community against the

acts of a patient. 6. They obviate in a large number of cases the delays, legal exactions, semi-publicity, and stigma of having been declared insane. 7. They remove the hospitals from the isolation they have suffered in the community and make it possible for them to take their place as hospitals in fact as well as in name, a more integral part of the social fabric. 8. They make possible a wider cooperation between the hospitals and the lay and medical public, which will yield to the Commonwealth which supports them a greater usefulness. 9. And, finallly, by means of a wider understanding of the more fundamental facts in regard to mental disease on the part of physicians, cooperating with the hospitals, through the more frequent use of these laws it may be possible to prevent certain forms of mental disease.

2. **Report of Harvard University Service at the American Ambulance, Lycée Pasteur, Neuilly-sur-Seine, France.**—Robert B. Greenough states that this service was generally known as the Harvard Unit and took charge of the University Service of the American Ambulance from April 1st to July 1, 1915. This service was composed of eighteen wards, containing ten or eleven beds. All the administrative departments of a modern hospital had been established and one could not reasonably ask for more favorable conditions under which to work. A system of triplicate records with a card index was put into operation on April 10. These records show that 441 cases came under the charge of Harvard University service and of these they have records of 383. Of these 441 cases, seven died. Thirty-nine of the 383 cases were miscellaneous diseases and injuries without wounds. Of 154 wounds by bullets, 128 were perforating wounds and in 26, or 16.8 per cent., the bullet lodged. Of 32 wounds produced by shrapnel balls, 17 were perforating and in 15, or 46.8 per cent., the missile lodged. Of 161 wounds produced by shell fragments, 89 were perforating and in 72, or 44.7 per cent., the fragments lodged. Many of these cases presented more than one wound, and in many more several different anatomical structures were affected. The different lesions were classified and studied, giving data on some 670 instances of special medical or surgical conditions. The writer analyzes these groups of cases and states that a more extended report on the surgical aspects of the work is in preparation.

3. **Artificial Pneumothorax.**—Edward O. Otis refers to the vast amount of literature on this subject and states that from the extensive evidence at hand from all over the world no one can now deny the value of artificial pneumothorax in pulmonary tuberculosis when other means fail. In some cases it brings about an arrest of the disease not otherwise attainable; in other cases, a relief from one or more distressing symptoms. However, in the author's opinion, its applicability is limited, it is often unsuccessful, and should only be undertaken after careful consideration of each individual case. There seems to be little doubt that the unilateral cases with but little or no infiltration in the other lung, that are inactive, and in which there is still a fair amount of resistance, offer the most favorable conditions for this treatment and give the best results. To assume that if the operation does no good it will do no harm, is, in the author's opinion, false; for there is always the possibility of pleural shock, gas embolism, subcutaneous emphysema, infection of the pleural cavity, disturbance of the blood supply from displacement of the heart, and a lighting up of the inactive process in the other lung. One must also bear in mind that although the surgeon considers the operation a very simple one, to the patient it means an operation with all the dread that the word suggests. The consensus of opinion is that one is not justified in carrying out this treatment without constant access to the *x*-ray with a skilled technician. The scope of artificial pneumothorax is apparently not yet determined, but it has fully justified its place in the treatment of some severe cases of pulmonary tuberculosis; however, it does not take the place of well-known measures for increasing and maintaining the resistance of the patient.

4. **On the State of the Respiratory Mechanism in Pneumonia.**—J. H. Means, L. H. Newburgh, and W. T. Porter describe their experiments on cats to determine the percentage increase in tidal air due to the progressive increase in the carbon dioxide breathed. It is known that when an animal breathes through a closed system of tubes, the amount of the carbon dioxide in the inspired air progressively increases. In normal animals, the volume of the tidal air, *i.e.* the volume of the air passing in and out of the chest, increases with the increase in carbon dioxide until the reaction ceases. In our observations, the reaction of normal animals continued usually until the volume of the tidal air was four or five times greater than when the animal breathed only atmospheric air; in our highest observation, the increase was seven-fold, at which point the animal was still reacting. The increase of carbon dioxide in the inspired air is, therefore, a stimulus to the respiratory mechanism, and the state of that mechanism may be measured by determining the ratio of the tidal air (cubic centimeters per minute) to the percentage of carbon dioxide inspired. As a result of these observatons they conclude: (1) that the reaction of the respiratory mechanism to carbon dioxide is greatly diminished in pneumonia, and (2) that the graver the disease the less is the reaction.

5. **Exercise in the Treatment of Severe Diabetes.**—Frederick M. Allen says that the fact that muscular exercise is a useful means of increasing tolerance in cases of mild or moderate diabetes led them to make tests on diabetic dogs with a known tolerance for carbohydrate or protein. It was found that vigorous exercise on the treadmill raised the tolerance of such animals as judged by the sugar in both urine and blood. In some experiments dogs which for months past had regularly shown glycosuria whenever they were given 100 grams of bread, on exercise became able to take 200 grams as a regular daily ration without glycosuria. Tests with patients are more recent, but the results thus far appear sufficiently favorable to warrant recommending exercise as an addition to the treatment. With due precautions against nervousness and sleeplessness due to over-weariness patients are worked right up to the limit of their strength like athletes in training.

6. **Statistics of New York State Hospitals for 1913, with Special Reference to Dementia Precox.**—Charles T. LaMoure finds that during the year 1913, 8269 patients were admitted, and 7294 were discharged. Of the number admitted there were 1,021 cases of dementia precox first admissions of practically one-eighth of all admissions. Of these the following were the type of cases: Paranoid 542; katatonic 66; hebephrenic 299; simple 98, and unspecified 16. The greatest number admitted were between twenty and twenty-four years of age. There was no history of insanity found in 537 of these cases and no history of alcoholism in 598. There was no history of any nervous disease in 408 cases. During the year 548 cases of dementia precox died, the greatest number being between the ages of

35 and 39 years. As only 16 cases of dementia precox were discharged as cured during this year, and only 259 cases as improved, it seems that methods of treating this form of mental disease are lacking.

New York Medical Journal.

November 13, 1915.

1. Peritonitis. John B. Deaver and Damon B. Pfeiffer.
2. The Indocarmine Test. Charles Greene Cumston.
3. Cancer Treated with Autolysins. Henry Smith Williams.
4. The Treatment of Colles' Fracture. Arthur E. Hoag.
5. Anesthesia by the Rectum. Walter Lathrop.
6. Primary Carcinoma of the Appendix. J. Goldstone.
7. Clinical Teaching. M. Schulman.
8. Suspected Thoracic Aneurysm with Death from Rupture. F. Griffith.
9. Trachoma and Follicular Conjunctivitis. M. B. Beals.

1. Peritonitis.—John B. Deaver and Damon B. Pfeiffer emphasize the importance of keeping always in mind that peritonitis is not so much a disease in itself as it is a complication of diseases, and that it varies most remarkably in its character and course. After considering the pathology of the condition, they state that prognosis is influenced by the type and degree of the infection, the situation of the infection, the time of operation, the operation itself, the pre-operative and the post-operative treatment. In discussing the time for operation, they state that it is impossible to lay down a general rule, but that it may be said that it is seldom possible to act too quickly in peritonitis caused by the appendix, or a perforated gastric or duodenal ulcer, while in peritonitis of pelvic origin, delay should be the rule. Peritonitis of rapid spreading character seldom comes from the gall bladder. When present it is usually due to perforation and demands quick action. Another important rule in the presence of acute peritonitis is to do the least consistent with the ends of operation and in the shortest time compatible with good work. There is one exception to this, namely, the performance of a gastroenterostomy at the same time as the closure of a perforated gastric or duodenal ulcer. The authors say that their plan in perforation is to close the perforation, do a gastroenterostomy, and establish pelvic drainage through a suprapubic stab. Never do they irrigate. As for a spreading peritonitis not yet general the physiological treatment is better than the operative. There is no surgical treatment for general peritonitis. All the victims die with the exception of a few that prove the rule. Similarly for acute spreading peritonitis it is fallacious to hope that incision and drainage will limit its advances. On the other hand the indications are to put the intestinal tract at rest by withholding everything by mouth, by placing the patient in the sitting posture to favor gravitation of the inactive fluids to the pelvis, and by giving him constant enteroclysis. When the outlying inflammation subsides and centers about the appendix it is time to operate upon the patient. With reference to the post-operative treatment their slogan is "let him get well." If the operation has been properly timed and well executed, there will be little to do and the less done the better, though a sharp watch must be kept for complications.

3. Cancer Treated with Autolysin.—Henry Smith Williams presents a summary on the autolysin treatment of cancer that represents the findings not alone of Dr. Beebe, but of sixty other regularly qualified practitioners who have had personal experience with autolysin in inoperable cases of cancer. There are also more than 300 other physicians of corresponding standing in various parts of the country who have tested autolysin on at least one patient, tentative reports from a large number of whom are available. All told 1,000 inoperable cases of cancer have been treated with autolysin. About 600 cases have been treated long enough to get somewhat definite results, the remaining 400 have been treated for too short a period to furnish material for a statistical summary. The writer finds that setting aside the small number of cases that were in such a desperate condition that no expectation was entertained that anything could be done for them, it may be said that a more or less specific action has been observed as a practically uniform sequel of the administration of autolysin, there was a marked alleviation of unfavorable symptoms, and in a good many of these cases life was somewhat prolonged. In fact, seemingly about 64.6 per cent. of the whole number have to some extent been benefited by the autolysin treatment.

5. Anesthesia by the Rectum in Thyroidectomy.—Walter Lathrop has used a slight modification of Dr. James T. Gwathmey's oil-ether, colonic anesthesia in 111 cases of goiter and is convinced that in it he has an ideal method superior to inhalation. He summarizes as follows: 1. It is most valuable in head and neck operations. 2. There is no fear, as is so often seen in the usual method. 3. The pulse and respiration, as a rule, remain near normal, or do not vary much from their conditon when the operation is begun. If rapid, as in hyperthyroidism, it remains rapid, but does not increase as when fear is added to the troubles of the patient. 4. There is less tax on the lungs and kidneys. 5. Operations can be done without the knowledge of the patient, which is surely valuable and must play some part in anociassociation, while Crile's technique may be carried out, if desired.

9. Trachoma and Follicular Conjunctivitis.—M. B. Beals says that the usual routine treatment of trachoma and follicular conjunctivitis by blue stone, tannic glyceride, argyrol, etc., has shown but poor results when applied in the thousands of school children on the records of the Health Department of New York. The writer finds that the intense bichloride rub, combined with the treatment indicated to modify the intense reaction whch often follows the first few applications is so far superior to the other methods that it should supersede them in nearly all cases. One of the most pleasing features of this treatment is that no scar tissue results.

Journal of the American Medical Association.

November 13, 1915.

1. Elective Localization of Streptococci. Edward C. Rosenow.
2. Influence of Peptone on Tolerance of the Body for Homogenous Ovarian Transplants. Louis A. Mitchell.
3. Detachment of the Retina, with a Preliminary Report on a New Operative Procedure. Edgar S. Thomson and Thomas H. Curtin.
4. Sclerotrephine Operation for Detached Retina. Clinical Report of Eleven Cases. Walter R. Parker.
5. Methods of Measuring and Weighing Parts of the Living Human Body. C. D. Spivak.
6. Chronic Retention of Urine in Children. Edwin Beer.
7. A Study of Immunity Following the Use of Typhoid Vaccines and Serobacterins. W. E. Richard Schottstaedt.
8. The Acetone Bodies in Diabetes Mellitus. Influence of Low and High Protein Intake on the Excretion of Acetone, Diacetic Acid and Beta-Oxybutyric Acid. Jacon Rosenbloom.
9. The Prevention and Treatment of Ringworm and Favus of the Scalp. J. E. Lane.
10. Nephritis. A New Series of Cases with a Review of Recent Literature. W. Ophüls.
11. Raynaud's Disease. Report of a Case of Symmetrical Gangrene of Unusual Severity. Archibald L. Hoyne.
12. An Unusual Case of Salvarsan Poisoning. Karl C. Eberly.
13. Tumor of the Hand Caused by Foreign Body. F. P. Hammond.
14. Removal of Swallowed Foregn Bodies. R. Penn Smith.

1. Elective Localization of Streptococci.—Edward C. Rosenow records a summary of the results obtained from the intravenous injection, under a standard technique of streptococci isolated from appendicitis, ulcer of the stomach and duodenum, cholecystitis, rheumatic fever, erythema nodosum, herpes zoster, epidemic parotitis, myositis and endocarditis, and discusses the bearing of these results on the localization of streptococci.

A study of a table showing the elective localization of streptococci shows that streptococci from the various diseases often have a striking affinity or tropism for the organ or tissues from which they are isolated. Thus, fourteen strains from appendicitis produced lesions in the appendix in 68 per cent. of the sixty-eight rabbits injected, which is in marked contrast to an average of only 5 per cent. (given in lowest line of table) of lesions in the appendix in the animals injected with the strains as isolated from sources other than appendicitis. Eighteen strains from ulcer of the stomach or duodenum produced hemorrhages in 60 per cent. and ulcer of the stomach or duodenum in 60 per cent., a combined total of 74 per cent. of the 103 animals injected, in contrast to an average of 20 per cent. hemorrhages and 9 per cent. ulcer following injection of other strains. Twelve strains from cholecystitis produced lesions in the gall bladder in 80 per cent. of the forty-one animals injected, in contrast to an average incidence of lesions here of only 11 per cent. with the other strains. Twenty-four strains from rheumatic fever produced arthritis in 66 per cent., endocarditis in 46 per cent., pericarditis in 27 per cent., and myocarditis in 44 per cent. of the seventy-one animals injected, in contrast to an average of arthritis in 27 per cent., endocardial lesions in 14 per cent., pericarditis in 2 per cent. and myocarditis in 10 per cent. of the animals injected with strains from sources other than rheumatic fever. Six strains from erythema nodousm produced lesions of the skin in 90 per cent. of twenty animals injected, in contrast to an average of 2 per cent. in the animals injected with the strains from sources other than erythema nodosum and herpes zoster. Eleven strains from herpes zoster produced herpetiform lesions of the skin, lips, tongue or conjunctivæ in 77 per cent. of the sixty-one animals injected, in contrast to the average of only 1 per cent. of what seemed to be herpes of the skin with the other strains. Nine strains of streptococcal organism from epidemic parotitis produced lesions in one or both parotid glands in 73 per cent. of the nineteen animals injected intravenously, in contrast to no instance of lesions here with the other strains. Three strains from cases of true myositis produced myositis in 75 per cent. and myocarditis (chiefly of the right ventricle) in 35 per cent. of the forty animals injected, in contrast to an average of myositis of 12 per cent. and myocarditis of 10 per cent. following injection of strains from sources other than myositis or rheumatic fever; and eight strains of *Streptococcus viridans* from chronic septic endocarditis produced lesions in the endocardium in 84 per cent. of the forty-four animals injected, in contrast to an average of 15 per cent. with the strains other than those from endocarditis. The results detailed in this and in previous papers seem to bring the necessary experimental proof that chronic foci of infection play a most important role in causing systemic disease, a fact which has been observed and frequently commented on by different observers, but has been recognized in its full clinical significance by Billings.

2. **Influence of Peptone on Tolerance of the Body for Homogenous Ovarian Transplants.**—Louis A. Mitchell thought that it might be profitable to undertake certain animal experiments in order to determine whether or not the repeated periodic injections of a solution of Witte's peptone would increase the tolerance of the body to grafts of foreign tissue and reaches the following conclusions: Peptone injections tend to intensify rather than inhibit the reaction of the host against homogenous grafts of ovarian tissue; such injections of peptone produce a condition of reduced metabolism in the animal, but not to such an extent as to prove dangerous to life; an abundant blood supply to the graft does not indicate that it is viable in its new environment, but rather may be evidence of an intense reaction against it on the part of the host; the destruction of the graft is practically complete by the sixth week, both in animals injected with peptone and in those not injected; the host primarily reacts to the presence of the graft by revascularization of its tissues, and the further reaction which evidently involves the destruction of the graft is evidenced by round-cell infiltration and proliferation of the connective tissue of the host; the presence of peritonitis within a few days destroys the viability of intraperitoneal grafts.

3. **Detachment of the Retina with a Preliminary Report of a New Operative Procedure.**—Edgar S. Thomson and Thomas H. Curtin believe they are justified in the two following assumptions: First, the presence of the detachment in itself leads to lymphatic disturbances and further complications of a degenerative nature; second, the evidence on all sides is in favor of some operative procedure which withdraws the subretinal and subchoroidal fluid. In the past when simple sclerotomy has been done and the fluid evacuated, it has been the rule to find a marked improvement in an attempt at reattachment. They have endeavored to secure permanent drainage by means of a trephine opening in the sclera, through which the subretinal fluid can be completely removed by aspiration with a small syringe. It is evident that the procedure outlined, in order to be successful must be undertaken before the detachment is old enough to have undergone degenerative changes. The rationale of the operation is in recent traumatic or spontaneous detachments where there seems a likelihood that the fluid accumulation is acting to keep up the condition.

4. **Sclerotrephine Operation for Detached Retina with a Clinical Report of Eleven Cases.** — Walter R. Parker reports an operative procedure the object of which had been to secure an opening in the sclera and choroid which will allow free drainage of the subretinal fluid for a sufficient length of time to permit the retina to become reattached. The procedure seems to be unattended by any danger, and the results obtained, as compared with those from any like number of cases previously treated, compel the author to look on the operation as one of distinct value in the treatment of detachment of the retina.

7. **A Study of Immunity Following the Use of Typhoid Vaccines and Serobacterins.** — W. E. Richard Schottstaedt says that in order to gain more information regarding the immunizing value of the various sensitized and non-sensitized typhoid vaccines in use at the present time, a series of experiments on rabbits was undertaken. Following the inoculation with such vaccines, blood was withdrawn at regular intervals, and estimations of the opsonic index and the agglutinating and bactericidal powers were made. He finds that there is a slight reaction following the injection of non-sensitized vaccines in rabbits, which is absent following the injection of sensitized vaccines. Vaccines killed by heat seem to be less active than those killed by the addition of phenol only. Washing the vaccines does not seem especially to influence their immunizing value. The height of the immunity curves occurs earlier after sensitized than non-sensitized vaccines, but the former appear to be only about one-fourth as potent. The agglutinins disappear within three months after the first injection, while bactericidins and opsonins can be detected much longer. Opsonins increase more quickly than do agglutinins and bactericidins. Opsonins and bactericidins remain more permanent than agglutinins, and immunity is more

likely due to the former than to agglutinins. Sensitized typhoid vaccines are less potent than non-sensitized typhoid vaccines, probably because the bacteria of sensitized vaccines undergo phagocytosis and bacteriolysis more rapidly. In conclusion he states that in conditions in which a prolonged reaction is desired, as in conferring immunity, the non-sensitized vaccines seem preferable. In conditions in which no general reaction is wanted and a quick response of the protective powers is desired, as in active typhoid fever, a sensitized vaccine would seem preferable.

10. Nephritis. — W. Ophuls reports a new series of cases with a review of recent literature and gives a brief summary of his findings as follows.: 1. Nephritis from an anatomic point of view may be best subdivided into: (a) acute, subacute and chronic *parenchymatous nephritis* which is very frequently associated with amyloid; (b) acute, subacute and chronic *glomerulonephritis* to which class belong most of the cases with continued definite urinary findings, renal hypertension, uremia, and other definite symptoms of renal disease. 2. Hypertonic cardiovascular disease may involve the kidneys more or less extensively, often causes certain functional disturbances in the kidneys, may cause contracted kidney, but should be segregated entirely from true nephritis. 3. The cause of true nephritis is continued bacterial septicemia, and the lesions in the kidneys are probably due to rapid bacteriolysis and incidental liberation of large doses of toxic material in and about the affected glomeruli. 4. The lesions in the arterioles, in at least some of the more chronic cases, are due to the organization of a hyaline (thrombotic?) deposit on the inner surface of the arteries which at times is found underneath the endothelium.

The Lancet.

October 30, 1915.

1. Wound Infection and their Treatment. Almroth E. Wright.
2. The Harveian Oration. Sidney Coupland.
3. Notes on a Case of Tetanus of Short Incubation Period, with Recovery. R. Lester Scott.
4. Congenital Pulmonary Stenosis. Douglas Martin.
5. The Use of Hypertonic Saline Solution in Gynecology. Clifford White.

2. The Harveian Oration.—Sidney Coupland delivered this oration at the Royal College of Physicians of London on October 18, 1915, in which he first refers to the war and the special tragedy that it has brought to them as scientists. He then reviews the life and work of Harvey and shows that the impetus given by the discovery of the circulation of the blood to the study of animal functions was not confined to the solution of physical problems, but that it had also proved to be the starting point of attempts to explain the relationship between mind and body. He finds that the philosophy of Descartes and of Hobbes was influenced by the light shed by Harvey's discovery. He goes on to show that while psychology has traveled far from the standpoints of either Descartes or Hobbes, the great problem of the real relation between mind and body remains unsolved. And although we must be content to remain ignorant of the real nature of mind there is an enormous and still untraversed area for research into the causation and characters of insanities. He sketches the progress that has been made, and is still being made, in the treatment and the study of insanity and expresses the hope that we may see the day when, in respect to scientific work, the asylums for the insane in various localities may become affiliated to universities in their vicinity, so that workers in such centers may be enabled to draw from many sources the material needed for research, which might then be conducted on definitely coordinated lines. He discusses the two great divisions of insanity, based on the work of Dr. Shaw Bolton, amentia and dementia; the relation of alcohol and syphilis to insanity, and the hope that psychoanalysis holds out. Of the latter he says that while it has been encumbered with theories and speculations which are not only difficult to accept, but in some respects positively repugnant, the central hypothesis affords a reasonable basis for the explanation of many of the most characteristic symptoms of mental disorder, and that working on this hypothesis it is possible to pluck from the memory a rooted sorrow or eradicate a long-held delusion, and thus restore mental balance. The writer believes that while there is recognition of the advantages to be derived from skilled advice and care in the earliest stages of insanity, yet this advantage can often be secured only with the greatest difficulty and often not at all. This is largely due to the deep rooted misconception of the nature of mental disease, a persistence in the public mind of medieval ideas of possession and the like, giving rise to an aversion, consciously or unconsciously felt, for anything associated with lunacy. For this the law is not to blame; it is for the scientists and the physician to remove from the path of science and humanity the last cumbering relic of the Middle Ages.

3. Case of Tetanus of Short Incubation Period.—R. Lester Scott relates the history of a lieutenant, admitted to a base hospital, suffering from a circular punched out wound on the anterior aspect of the left thigh, about the middle third, which had been received two days previously. The wound discharged pus and liberated gas on pressure. It was operated on the day following admission. Two days later the patient complained of pain in the wound and jerking in the affected limb. Within a few hours well developed symptoms of tetanus developed. Serum was administered both intravenously and intrathecally, 102,000 units in all being given. The interesting features of the case are as follows: 1. The incubation period was short. 2. There is no doubt that the operative interference some days after wound infection had a definite effect on both the onset and the severity of the attack. 3. There is equally no doubt that the attack was a severe one, characterized by clonic and tonic seizures associated with great pain. 4. The essence of the treatment consisted in the adoption of immediate, persistent, and almost extravagant serum therapy. 5. The result of the treatment was an uncomplicated recovery, with entire absence of secondary lesions.

4. Congenital Pulmonary Stenosis.—Douglas Martin states that it may appear to some to be incredible that pulmonary stenosis can be present in children without producing obvious symptoms. Yet in the school inspection of 5,000 or 6,000 children annually, though there are many affections discovered only then, none are so striking to the writer as the cases of congenital pulmonary stenosis. He cites five cases brought in this way for the first time to the attention of the parents. The height, weight, nutritional and mental condition of the children was outwardly unimpaired, and the children showed none of the usually obvious signs of pulmonary stenosis. The writer believes that these cases serve as an illustration of the utility of the medical inspection of school children for the detection of unrecognized conditions requiring treatment and care. In the examination of children he recommends the method of auscultation at the pulmonary area first.

5. Hypertonic Saline Solution in Gynecology.—Clifford White states that the use of hypertonic saline solution is being attended with such success in the treatment of septic shell wounds that it may not be out of place to draw attention to the value of such

solutions in the treatment of surgical affections of the female pelvis. He has been using a solution made of four drachms of sodium chloride and one-half drachm of sodium citrate to each pint of water as a vaginal douche in all inflammatory and septic cases in which a douche is required and finds that the effect is better than that of the antiseptic douches previously employed. In puerperal cases with sloughing of the perineum and vagina the effect is extraordinary. In gynecology all forms of infected and congested pelvis respond well, such as salpingitis, cellulitis, gonorrhea, vaginitis, and erosions of the cervix. Among the most striking results is the way in which a carcinomatous cervix cleans up before operation. In cases in which drainage per abdomen is necessary on account of acute infection the results of saline irrigation of the drainage track have been highly satisfactory.

British Medical Journal.

October 30, 1915.

1. On Wound Infections and Their Treatment. Almroth E. Wright.
2. Note on Functional Murmurs and Irregularities of the Heart. James F. Goodhart.
3. The Recruit's Heart. Alexander Morison.
4. The Effect of Exercise on the Circulation. J. M. Macphail.
5. Rapidity of the Pulse Dependent upon Persistent Disturbance of the Vasomotor Mechanism. Knowles Boney.
6. Escape of the Ventricle, in Association with Cerebrospinal Fever. J. Davenport Windle.
7. Successful Early Operation in Wound of Small Intestine. John H. Stephen.
8. Some Cases of Head Wounds. H. H. Taylor.
9. The Manufacture of Aseptic Hospital Furniture. J. Lionel Stretton.

3. The Recruit's Heart. — Alexander Morison, who during the progress of the present war has had to consider, both in hospital and private practice, the suitability of officers and men for military service on account of some cardiac condition or anomaly, comments on Sir James Mackenzie's memorandum on the recruit's heart, believing that this memorandum requires both amplification and modification. He states in general terms that the heart which manifests an endocardial bruit after the exertion of coming to the recruiting office and having been given exercise there to determine its persistence, is either organically affected, or, if "functionally," shows such a degree of lack of tone in the cardiac muscle that the recruit should only be accepted on probation. It seemed from the memorandum referred to that the writer would not hesitate to accept one who showed organic valvular lesion provided the muscular action of the heart satisfied him. Experience, however, has satisfied the Army Medical Service that there is wisdom in absolutely rejecting the recruit with organic valvular disease of the heart. What is true of the heart affected with functional endocardial murmurs is true also of the extrasystolic heart and of auricular fibrillation, which at the recruiting age is usually found associated with mitral valvular disease. The negligible functional bruit at the apex of the heart which should disappear on assuming the erect position and rhythmical variation of pulsation associated with respiration, coupled with an occasional reduplication of the second sound, being purely physiological is no cause for rejection.

4. Effect of Exertion on the Circulation.—J. M. Macphail says that in making the tests as the results of exertion on the circulation sphygmographic observations have held a prominent place, but doubt has been thrown on their value as an index to the work performed by the heart or a guide to its functional ability and a method is surely defective which merely registers the maximal pressure but fails to indicate the pressure maintained between the arterial beats. The author in making his observations has used the sphygmograph of the Mackenzie clinical polygraph and has followed the following method: A tracing of the pulse was taken in the sitting and the erect posture, and with the sphygmograph and paper still in position, the patient was asked to ascend twenty steps. Immediately on arriving the clock work was again set in motion and the result was a study of the pulse within the first second or so of the completion of the exertion. As the pulse changes in character so rapidly from moment to moment time is all important in recording the delicate changes. The author gives the tracings with their explanations in six cases and concludes as follows: 1. Exertion causes a rise in systolic pulse pressure, though a general vasodilatation may nullify this effect. 2. There is always a lowering of diastolic pressure. 3. In heart disease with failing compensation the fall in diastolic pressure is most pronounced, and there is often an almost complete absence of the predicrotic wave pointing to a diminished systolic pulse pressure.

5. Rapidity of the Pulse. — Knowles Boney reports his observations on twenty cases of rapid pulse, the subjects being all Indians from the Indian Expeditionary Force in Flanders, who after various injuries and ailments had been transferred to a convalescent camp. When first seen by the author these men all presented the same general characters—a tired, listless expression, fatigue on walking a few yards, and in two instances undue shortness of breath after such slight exertion. In no case was there any complaint made of pain, palpitation, or other subjective symptoms. After giving a more detailed history of these patients, the writer states that everything points to a central lesion of the controlling nervous mechanism. The patients neither showed signs of hypertrophy nor of dilatation supervening on hypertrophy. There was nothing in the condition analogous to the staleness of the overtrained athlete, neither was there evidence of complete breakdown due to cardiac overstress from hard work. The somewhat vague expression "irritable heart" has been applied to two states which are radically different, the one a functional condition occurring chiefly in growing boys, and eminently curable; the other comprising the group also known as "soldier's hearts," a condition involving more or less permanent myocardial damage and too often incurable. In these cases there was no evidence of such damage. Furthermore, in the writer's cases there was no history of great muscular effort. The history was one of laborious work of more or less vexatious nature, spread over a considerable time in a strange climate and frequently under conditions of great personal danger. The causation was probably to be found in a great complexity of factors into which the psychology of the Indian, exposure, shock and fatigue in a climate to which he is unaccustomed, all enter.

7. Successful Early Operation in Wound of Small Intestine.—John H. Stephen relates the case of a private who was operated on within a half hour after having received a penetrating wound of the abdomen. And end-to-end intestinal anastomosis was performed with the greatest possible speed and with rather rough and ready materials for an operation of that kind. The patient made a very rapid and excellent recovery. The author believes that this case offers proof that many cases of abdominal injury might be saved if dealt with on the spot by the field ambulances, instead of undergoing operation after a long and exhausting journey and the delay of many hours in a casualty clearing station. He also states that the German military surgeons now incline to the idea of operating early and on nearly all abdominal cases coming into the field hospitals, and that their statistics show that

the mortality in these cases is in direct proportion to the length of time elapsing between the wounding and the operation and to the length of journey that the patient has to undergo before treatment.

Berliner klinische Wochenschrift.

September 27, 1915.

Treatment of Pneumonia with Ethylhydrocuprein.—Lowe and Meyer have treated forty-three military cases of pneumococcus infection with this remedy. The crisis in pneumonia is due to the formation of immune bodies, which so weaken the virulence of the infection that the leucocytes can attack and destroy the pneumococcus. In theory, therefore, pneumonia should be treated with an antiserum and some chemotherapeutic remedy which can stimulate leucocytosis. Of the forty-three cases all but two were pneumonias, the exceptions having been pneumococcus meningitis. Of the pneumonias twenty-eight were primary and single, eight primary and double, while the remainder were associated with measles, pleurisy, and empyema. There were two fatalities, one recurring in an empyema case after operation and the other in the measles case. These patients, naturally vigorous, were much worn with forced marching and other hardships and showed nervous collapse, dilatation of the heart, and other complications. In fact every case treated was severe in type. Aside from the Römer serum and ethylhydrocuprein the patients received digitalis, caffein, camphor, oxygen inhalations, morphia, and large quantities of alcohol. The duration of the fever averaged one week. A crisis almost invariably set in, but passed into a lysis. Most of the credit is awarded to the ethylhydrocuprein, and especially in the meningitis cases. The majority of patients received about 4 grains of the drug from four to six times daily. No disorders of vision were noted. The quantity should perhaps be somewhat higher—six to eight doses daily—and when given at the outset of the disease the authors feel much confidence in its ability to control the disease.

Diagnosis of Farcy.—Pfeiler devotes much space to the diagnosis of farcy in animals and man, but does not appear to arrive at any dependable results such as might guarantee a diagnosis of the chronic disease. It was formerly taught that an inoculation test on the mouse was a certain criterion (orchitis), but this is no longer even mentioned by the serologists. An inoculation test is now practised in the guinea-pig, and it is said to be easy to cultivate the *B. mallei* from the secretions of the inoculation wound. There must, however, be many negative results, for the author never employs it alone. If there are unopened abscesses the author obtains "sterile" pus from them, and in some cases finds the bacillus in ordinary smears. Under such circumstances he does not wait for inoculation results. To the experienced even the histological picture may suggest farcy as it may be quite characteristic at times (pyknosis, presence of neutrophile leucocytes to the exclusion of others). Serological tests, apparently, must seldom be omitted because they may give very prompt results. These consist of trial agglutination and complement deviation tests. To increase the likelihood of a positive result in the latter polyvalent sera are recommended.

Berliner klinische Wochenschrift.

October 4, 1915.

Treatment of Congenital Syphilis.—Müller, in connection with a home for orphans and other institutions has under treatment from fifty to sixty children at a time throughout the year. Treatment has become modified in consequence of the new medicaments and viewpoints. Judged by the Wassermann reaction the older plans of treatment must have been insufficient. He gives even to nurslings intramuscular injections of calomel suspended in olive oil and of neosalvarsan in alternation. During the first year the infant receives several cures with intermissions. This intensive treatment is given not because of any severity of symptoms but with the aim of eradicating the disease before the child shall have passed from control. In the second year of life mercurial inunctions are given in addition to the two kinds of injection. A negative Wassermann reaction does not mean a permanent cure and so-called prophylactic cures are continued until the possibility of relapse seems excluded. The author sees both comparatively rapid and delayed results under a common plan of treatment.

Influence of Muscle Work on Blood Sugar.—Von Moraczewski seeks to learn whether exercise tends to produce glycemia. This form if it exists may be compared with alimentary glycemia, although the two conditions are quite distinct. The alimentary type probably depends on defective synthesis of glycogen, the movement type on delayed absorption of sugar from the muscles or elsewhere. Experiments on a diabetic showed that exercise always tends to cause a rise, and rest a fall in the glycemia. The author also fed cane sugar freely to men after hard labor, but found no trace of sugar in the urine nor was the percentage in the blood materially varied. In other words exercise increases carbohydrate tolerance in the healthy. The diabetic's glycosuria disappears during a febrile period, and while resting he burns up less sugar than while active. A sort of parallelism is seen in this respect between sugar in the blood and uric acid in the urine—increase of both being due to the same failure in combustion. Even with subjects profusely sweating, with scanty urine, the elimination of uric acid is unchanged.

Treatment of Cancer of the Buccal Cavity, with Radium.—Sticker writes at great length of fifteen cases of cancer favorably influenced by radium treatment. Since mutilating operations in this region cause such hardships, radium alone can hold out some hope of escaping the latter. Such cases are too often inoperable, especially when recurrent. Radium treatment is intended for two purposes—one to secure an anatomical, *i.e.* nonmutilating recovery while the other is to attack early relapses *in situ*. The danger of implantation recurrence is also done away with. The author first reports three cases of cancer of the tongue which he sums up as follows: a large, crateriform ulcer was made to heal like any simple ulcer; a leukoplakia area in cancerous degeneration was restored to its original condition and a cancerous nodule in the center of the tongue was made to disappear. Results of the same character were obtained in seven cancers of the upper and five of the lower jaw and two of the cheek. These results were evidently due in great measure to the technique. The radiation took place at night and was maintained too many hours on fourteen consecutive nights. Much ingenuity was evidently required to adapt the tubes to the area to be rayed and to render them endurable. The *x*-ray photographs helped to show when the tubes were properly inserted. The aid of a dentist was invoked for the prepartion of special tube holders. These cases may recur but the author has relieved all pain and functional disability without any loss of tissue.

Münchener medizinische Wochenschrift.

October 5, 1915.

Boeck's Sarcoid with Participation of Internal Organs.—Kuznitzky and Bittorf collaborate on this subject, respectively as dermatologist and internist. The former reports the case as a peculiar dermatosis in which a

diagnosis was at first impossible. Firm, brownish-red, non-pruriginous, slightly desquamative papules with indolent enlarged inguinal lymph nodes, although suggesting lues, were rather interpreted as plexiform neurofibroma, the Wassermann reaction having proved negative. The microscope when called upon, at once made the diagnosis of Boeck's sarcoid. In addition to the papules already mentioned which were diversified over the lower extremities, lower part of the trunk and upper extremities were accompanied by subcutaneous nodules. Boeck's opinion was that his sarcoid belonged to the group of infectious granulomata which would not exclude the likelihood of internal manifestations. In the interest of simplicity efforts must in such cases be made to exclude the known forms of granuloma, especially tuberculosis and lymphoid forms. Thus far other than superficial manifestations have been bronchitis, iritis, enlarged spleen, and other indefinite symptoms. The author's patient reacted negatively to several tuberculin tests. Professor Bittorf now took up the examination, and found a personal history of maladies attacking at different times the thoracic organs, stomach and kidneys. The patient, a man of 27, who had been fit at one time for military service, had become greatly emaciated and weak. The chief seat of mischief seemed to be the entire right lung which was the seat of râles, bronchial sounds and other indications of disease. There was but little sputum, no fever, no tubercle bacilli. Evidences of chronic nephritis were present. The slightest exertion caused dyspnea and a little cyanosis. The blood picture was not much affected. Arsenic provoked an intercostal zoster. The lungs, which at first gave a mottled shadow, improved under treatment. The patient also improved to such an extent that he was discharged. These manifold and varying evidences of implication of viscera with no serious outcome could mean but one thing—they were made irritable by deposits within their substance akin to those to be seen on the surface. The history also pointed to a succession of such deposits even before the appearance of the skin lesions. The nearest congener of such an infection is Hodgkin's disease. The links here seem to have been the enlarged lymph nodes and spleen, the blood count and unfavorable symptoms due to arsenic.

Uses of Old Newspapers in the Army. — Weisbach mentions the use of newspapers for inner soles and for wrapping the feet; for packing the joints in mild rheumatic disorders, and especially for the shoulders and elbows. They may be worn outside the shirt without any hindrance to motion. By superimposing a number of sheets good back and side warmers may be extemporized. Newspapers may also be made to serve as moist dressings, poultices, etc. In the barracks newspapers can be used for filling sacs and if first finely divided by machinery may be packed evenly. Perhaps as a result of the printer's ink insects are kept at a distance from barracks in which newspaper has replaced wool, etc. Even housewives know that newspapers can be used with success against moths.

Deutsche medizinische Wochenschrift.

September 30, 1915.

Abortive Forms of Cerebrospinal Meningitis.—Hochhaus states that these may be so slight or transitory as to be readily overlooked. Often, in fact, the medical man was not consulted. However, in garrison practice these forms do not escape detection, in fact there is a constant watch kept for them. Literature is comparatively silent as to abortive forms. During the present year 32 cases of cerebrospinal meningitis were announced. Of this number 13 were in soldiers and 8 of them came under the author's care while 16 suspects also came before him. The latter had been exposed to the contagion and had further developed certain suspicious symptoms. These had come on suddenly, without prodromes, and comprised headache, soreness of the neck, rigors, and vomiting. Other symptoms more or less common in meningitis were less constantly in evidence. In some of the cases, but one or two days advanced when first seen, the symptoms had already relaxed in severity, while in others the typical picture of the disease was present to the full. In all the patients there was a simple angina and the majority had also bronchitis. Smears from the nasal mucus showed the meningococcus only in a minority of cases. The results of lumbar puncture were even less satisfactory in this respect. These defective finds, however, may accompany fully developed epidemic cases. The author gives 5 histories of aborted disease, and in summing up claims that in all probability these could have been nothing else than meningitis, even if for some of them strict proof was not forthcoming.

Etiology of Gas Phlegmon.—Selter investigated fourteen cases of this lesion microscopically and culturally. In four of these the presence of spores could not be demonstrated at any time; while in the others they could never be found in the open wound although invariably present in the muscles. At first the author believed that he had to do with Fraenkel's bacillus throughout but these spore-containing bacilli were certainly different in the series of ten cases from Fraenkel's germ which was doubtless responsible for the series of four cases. The unknown spore-containing bacillus bore a similarity to the anthrax bacillus, and authors have described a denatured form of the latter, which in turn strongly resembles the bacillus of butyric acid. This bacillus has lost the locomotive properties present in *B. anthracis*, as well as its sporing capacity. Fraenkel himself has seen gas gangrene which resembled clinically malignant edema. The author has had no opportunities for cultural comparisons as for inoculation experiments. Clinically every one of his fourteen cases corresponded to the typical form of gas gangrene as described by Fraenkel and not to the atypical forms. His thesis therefore is simply that different forms of microorganisms can cause a common clinical type of gas phlegmon. The various bacteria preexist in the soil as anaerobes. Hence the prospect of producing an antiserum for gas phlegmon is rather dubious. The author has found bacilli like Fraenkel's in simple wounds and this suggests that all fresh wounds contaminated by the soil should be treated at once as potential gas gangrene.

Pituitrin's Effect on Lactation.—Maxwell and Rothera experimented by injecting "pituitrin" into cows and goats and noting its effect on the secretion of milk. They found that it causes a temporary secretion of an extra amount of milk.—*Journal of Physiology.*

Use of Tobacco and Snuff by Children. — Professor Stiles of the U. S. Public Health Service has made a study of the use of tobacco by white school children in the city of X where he finds less than 1 per cent. of the 2,215 white school children admit chewing tobacco and less than 1 per cent. admit dipping snuff, while 3.25 per cent. admit smoking. In all 4.2 per cent. admit the use of tobacco (chewing or smoking) or of snuff. Smoking and chewing were admitted only by boys, while more girls than boys admitted dipping snuff. The use of tobacco was found to be more common among children from homes with inferior sanitation (privies) than among those from homes with better sanitation (sewer connection).—*Public Health Reports.*

Insurance Medicine.

The Medical Referee.—A paper with this title was read before the Medical Section of the American Life Convention by Dr. Daniel W. Layman, medical referee, New York Mutual Life Insurance Company. He said that the medical referee system of the Mutual Life Insurance Company of New York had its beginning in the year 1908. The first year or two the system was on probation. It was first tried out at the company's general agencies in the large cities and met with such approval that it was gradually extended to other agencies, after due consideration and careful and deliberate investigation of the system.

The duties of the medical referee may be classified as follows: (1) Revision of all examinations, certificates of health, and special reports. (2) Action on medical examiners. (3) Nomination of examiners. (4) To act as chief examiner for the city of his appointment. The most important duty of the medical referee is the revision of all examinations that pass through the manager's office. This means that the medical record is carefully and thoroughly scrutinized. The referee approves all certificates of health and decides when medical reports should be returned to examiners for completion. The referee is at liberty to call for special reports, which are obtained for him by the manager. He acts upon the medical matters of these reports in the same way that he acts upon the applications and certificates of health.

The medical referee has the authority to release policies subject to medical restrictions. Because of this authority most policies are forwarded to the manager's office immediately upon receipt of the applications at the home office. On receipt of the policies at the manager's office they are promptly released in the "clean cases" and also in the cases where the information requested regarding the medical report has been received and is satisfactory. In other words, in the latter cases the policies are sent subject to information regarding the impairment. But when all the requirements have been complied with and the additional information is unsatisfactory or an adverse report has been received, the policies are held for further instruction from the home office. In some of these cases it is necessary to leave the final decision to the home office. When there is yet a possibility of clearing up the case policies are still held subject to further information, which the referee seeks to obtain.

The medical referee passes on the examiner of each medical report; in cases of irregular examinations, whether approved or disproved, the notation of his actions appears on the memorandum sheet attached to the application. On the memorandum sheet also appears the medical referee's actions regarding an examining physician who is not an appointed examiner of the company. The medical referee nominates examiners in the agency and has sufficient authority in such nominations that the manager can refer directly to him for temporary appointments.

The medical referee, by personal instruction, can make more efficient the work of the field examiner. Through the medical referee system the field examiners are brought into closer touch with the home office medical staff.

Dr. Layman, in conclusion, stated the advantages accruing from this system to be as follows:

(1) Advantages to the company: (*a*) Business is expedited, for policies are sent subject to medical restriction. (*b*) A larger per cent. of business will be done, either accepted or rejected. There will be less business held up, since the referee knows the company's requirements. He will, therefore, in his own examinations present the report of the risk in such conditions that it will be either accepted or declined. (*c*) Under the medical referee system time and labor is saved at the home office, as the referee will write examiners, asking for requirements. There is no limit to the number of applications that can be handled at the home office. (*d*) Under the medical referee system there is a better selection of medical examiners for the company and a better selection of risks, as very few bad risks will be accepted by the referee, and a careful selection of examiners promotes a better selection of risks. (*e*) The medical referee is a protector of the company's interests at all times in preventing bad risks from being accepted. Upon receipt of unfavorable information at the last hour from any source in regard to an applicant to whom a policy has recently been issued, the referee notifies the manager, who takes steps to prevent the delivery of the policy.

(2) Advantages to the manager's office: (*a*) The system materially facilitates the dispatch of business at the manager's office, as there is a quick release of policies; time is saved, the referee anticipating the home requirements. (*b*) The referee is in a better position to promptly secure additional information, either by correspondence or telephone. (*c*) The referee's action regarding just what application papers, etc., are necessary to return to the examiner for completion or revision is a great time saver for the manager's office. Otherwise, these would have to be acted upon by the home office and returned from there to the examiners. (*d*) The manager can consult with the referee regarding the company's position on border-line cases and impairments. (*e*) The manager is able to learn quickly what physicians may be used for emergency examinations. (*f*) The manager, with the referee's assistance, can usually calm the ruffled feelings of an irritated agent and convince him that the examiner has been fair. (*g*) The medical referee system minimizes bad risks. The advantages of this are apparent. In the first place it is always bad for an agency to get bad risks. Cancellation of policies on bad risks makes soliciting business in that place difficult. In the second place, if a bad risk becomes a death claim and is contested it is a bad advertisement for the agency and the company. (*h*) Under this system evils do not exist that formerly existed in the cities where the managing agencies were located. In many of these cities, before the medical referee system was established the company had three or four examiners, and there was considerable rivalry among them for the agent's favor. A conscientious and skillful examiner who had the unpleasant duty of declining several risks in succession would lose favor with the agent, and for future examinations he would be used very little, if at all. Applicants would be taken to an examiner who was probably less skillful, in the hope that impairments would not be discovered. Such evils are abolished under the medical referee system, the success of which is greatly due to the independence of the referee and examiners. The company insists on careful work by impartial and uninfluenced examiners, who are familiar with its rules, thus eliminating impaired risks.

Book Reviews.

PRINCIPLES OF HUMAN PHYSIOLOGY. By ERNEST H. STARLING, M.D. (Lond.), F.R.C.P., F.R.S., Hon. M.D. (Breslau), Hon. Sc.D. (Cambridge and Dublin); Jodrell Professor of Physiology in University College, London. Second Edition. With 566 Illustrations, 10 in Color. Price, $5.00 net. Philadelphia: Lea & Febiger, 1915.

IN comparing this with the first edition that appeared three years ago one notes a number of important changes. Although the text has been enlarged the number of pages has been reduced from 1423 to 1271. This has been accomplished by a slight increase in the size of the page and in the number of lines to the page. The use of a thin but opaque paper prevents the volume from becoming unwieldy, a serious disadvantage in a textbook. The same clearness and elegance of literary style that characterized the first edition are still evident. All the recent advances in physiology are fully incorporated in the new work. Particular mention may be made of the new sections dealing with the nutrition of the brain and with the innervation of the bronchi. The sections on voluntary muscle and on the circulation have been rewritten. In its general plan this work is divided into four books: I, dealing with General Physiology; II, with the Mechanisms of Movement and Sensation; III, with the Mechanisms of Nutrition, and IV, with Reproduction. At no time more than the present has there been a closer dependence of the practical phases of medical science upon the teachings of physiology. The physician realizes this perhaps more than the medical student, as he scans the pages of this book and notes the recent conceptions of such subjects as the hormones, the autonomic nervous system, the defense of the organism against infection, etc. As a guide to the practitioner in refreshing his earlier studies in physiology and as a complete modern text book on the subject for the medical student this book fulfils its purpose admirably.

CANE SUGAR AND HEART DISEASE. By ARTHUR GOULSTON, M.A., M.D. Cantab. Hunterian Society Medallist, 1912. Price, $2.00 net. New York: Paul B. Hoeber, 1915.

DR. Goulston has had much success in the treatment of heart disease by means of cane sugar and has published in this work the reasons for this treatment and the results. He certainly makes out a good case for this mode of treatment. While admitting that cane sugar treatment is no panacea for diseases of the heart, he holds that it is a valuable addition to our therapeutic armament against failing, irregular hearts. He further suggests that there is "something" in West Indian cane sugar which is absent from beet sugar, and asks the question: Is it of the nature of a coenzyme or activator or what? He further hazards the opinion that in the matter of diet, if more sugar derived from cane and less sugar derived from beet root were consumed a more satisfactory prophylaxis in the treatment of circulatory diseases would be attained. The book is at once instructive and suggestive and will well repay a careful study.

SCHOOL HYGIENE. By LEO BURGERSTEIN, Ph.D., LL.D. (Vienna). Translated by BEATRICE L. STEVENSON and ANNA L. VON DER OSTEN. With 43 Illustrations and diagrams. Price, $1.00. New York: Frederick A. Stokes Company, 1915.

THIS is a small volume of 188 pages and is divided into five parts. Part I deals with the schoolhouse, its general planning and erection, lighting, and ventilation and heating; with the classroom and its equipment, and with other rooms, grounds, and facilities of the school. Part II discusses the hygiene of instruction under the following headings: general considerations; number of pupils and curriculum; the hygiene of different school subjects; homework, examinations, etc., and boarding schools. Part III deals with instruction in hygiene and Part IV, with school diseases and medical inspection of schools. The hygiene of the teaching profession comprises the subject-matter of Part V.

STUDIES FROM THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH. Reprints. Volume XXI. New York: The Rockefeller Institute for Medical Research, 1915.

THESE studies comprise a great variety of subjects of which may be mentioned the etiology of Hodgkin's disease, the virus of poliomyelitis, the migration of the malarial parasites, the spleen in relation to hemolytic jaundice, carbohydrate metabolism, the chemistry of gluconeogenesis, the cultivation of human tissues, experimental operations on the pulmonary valves, studies on spermatozoa, paroxysmal auricular fibrillation, Allen's studies on diabetes, and pneumococcus infection and lobar pneumonia.

ON THE FUNCTIONS OF THE CEREBRUM: I. Symptomatological Differences Associated with Similar Cerebral Lesions in the Insane, by SHEPHERD IVORY FRANZ. II. Variations in Distribution of the Motor Centers by SHEPHERD IVORY FRANZ, with the assistance of J. DUERSEN STOUT. The Psychological Monographs. Vol. XIX, No. I. Princeton, N. J., and Lancaster, Pa.: Psychological Review Company, April, 1915.

THE first part of the monograph deals with the clinical histories and autopsy findings of a group of cases from the Government Hospital for the Insane. That less than 600 records out of over 3000 were complete enough to be of value for study is a commentary on our failure to make proper records of all hospital cases. The study is finally narrowed down to 38 cases and from these the conclusion is drawn. "In none of these collections of cases did there appear to be any definite correlation between the degree of the atrophy and the special form of the disease, and in the special discussions of the individual groups of cases it has been stated that no correlation between the degree of dementia (paretic, arteriosclerotic, senile, or precox) and the extent or the degree of atrophy was present."

The second part deals with a series of careful experimental stimulations of portions of the brain in monkeys. The extent of the arm and leg areas is determined and the localization and type of movement recorded. From his own experiments and those of other workers, Franz concludes that "the connections which are made by way of the cortical motor cells are not definite in the sense; for example, that there is a passage of an impulse from a Betz cell in the anatomically defined cerebral motor region to another particular efferent cell in the spinal cord, but that the connection is in special senses of the terms, promiscuous and irregular" that there are various pathways from the Betz cell, any of which may be used. Though one path may be commonly used, the same stimulus under new conditions may cause the use of another path, and so, a variation in response to the same stimulus. The work is carefully done and well presented.

THE HEALTH OF SCHOOL CHILDREN. Contributions from American Medical Journals, July, 1913, to July, 1914. Compiled by W. H. HECK, Professor of Education, University of Virginia, United States Bureau of Education, Bulletin, 1915, No. 4. Washington: Government Printing Office, 1915.

THIS is a valuable compilation of the articles pertaining to the health of school children that have appeared in American medical journals in the course of one year. Many of these articles have been contributed to the MEDICAL RECORD. The subjects deal with many aspects of pediatrics and educational hygiene. It is to be hoped that a similar compilation will be made for succeeding years.

THE OPERATIVE TREATMENT OF PULMONARY TUBERCULOSIS AND ARTIFICIAL PNEUMOTHORAX; by Prof. F. JESSEN, M.D.; Würzburger Abhandlungen, Vol. XV, Nos. 4 and 5, 1915. Price: Mk. 1.70.

IN this pamphlet of 118 pages Jessen describes the extirpation of the tuberculous lung as indicated by Garré, Quincke, Lowson, Doyen, von Herff, Tuffier, and others, but protests against pneumonectomy of the apices. Equally conservative are his expressions concerning opening and draining of cavities. He speaks enthusiastically of the compression of such cavities by artificial pneumothorax and considers this proceeding much more safe. The rest of the pamphlet is devoted to the description of the technique of this latter operation, of extrapleural thoracoplastic, the filling of cavities with paraffin, the cutting of the phrenic nerve to put the lung at rest, the ligation of the pulmonary arteries to cause shrinkage and formation of fibrous connective tissue, and lastly of Freund's operation consisting of opening the upper bony apertures. Jessen expresses his conviction that the future treatment of pulmonary tuberculosis will be a combination of climatic, chemical, and surgical means.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held October 21, 1915.

THE PRESIDENT, DR. WALTER B. JAMES, IN THE CHAIR.

The Form of Typhus That Is Endemic in New York and Has Been Unwisely Called "Brill's Disease."—Dr. NATHAN EDWIN BRILL spoke on this subject (see page 914).

Typhus Fever as I Have Observed It in Mexico, in England, and in This Country, in Its Clinical and Experimental Aspects.—Dr. JOHN F. ANDERSON, Director of the Hygienic Laboratory, United States Public Health Service, read this paper. He said that Dr. Brill had so exhaustively discussed the disease as it occurred in this country that nothing remained for him to say in regard to that type. There were others who were to take part in the discussion who had had a larger experience with the European type than he, because his experience had been confined to some 60 or 70 cases studied in England. He said he would confine himself largely to the disease as he had observed it in Mexico He had never noted any essential difference between typhus fever as seen by him in the United States, in Mexico and in England, except as regards the severity and mortality. The disease as seen by him in England had a case mortality of about 20 per cent.; the case mortality of the disease now recognized in America was not over 2 per cent. The case mortality in Mexico City showed in different years and in the native and foreign population considerable variation. In 1909 and 1910, among the patients in the Mexican General Hospital, the mortality was a little over 10 per cent., while in 1911 and 1912 it was nearer 5 per cent. The disease among the foreign population was much more severe as was shown by the fact that, according to the statistics of the American Hospital in Mexico City, there were treated, in that institution from 1888 to 1910, 144 cases of typhus fever of which 50 died, this being a case mortality of 34 per cent. The Mexican physicians ascribed to it a mortality of about 20 per cent. It was but natural that many of the mild cases escaped observation and did not come under the notice of the physicians or health authorities, while the severe cases were seen and in this way the case mortality rate was increased over the true figure. The disease was present in England, Ireland, certain parts of Europe, the central portion of northern Africa, in the temperate portion of Asia, and other portions of the Eastern Hemisphere. In the Western Hemisphere it occurred as a mild type of the disease in practically all of their larger cities as far west as Milwaukee and as far south as Atlanta. It also occurred in certain sections of the Republic of Mexico and of Central America. It had been observed in Mexico for years that typhus fever never prevailed below an elevation of 5000 to 6000 feet. Even when persons came from the higher altitude during the period of incubation and developed the disease after reaching the coast, or as called by the Mexicans the "true caliente," the disease did not spread. The inability of typhus fever to spread in the lower altitudes of Mexico or of other tropical and subtropical countries and its lessened prevalence in summer and fall was, he believed, due to the effect of the higher temperature on the transmitting insect, the body louse or pediculus vestimenti. He and Goldbuyer were the first to call attention to the adverse effect of temperatures higher than 20 C. on the longevity of the body lice and their observations were confirmed by Wilder. Since they now knew that typhus fever was transmitted by the body louse and knew the effect of temperature on the life of the insect, they were able to anpreciate the influence of the higher temperatures on the prevalence of the disease and to know why the disease was less prevalent in summer and fall and why in tropical and sub-tropical countries it never prevailed except above a certain altitude. Dr. Brill had reported having observed 254 cases of so-called Brill's disease, which was now known to be typhus fever, in the wards of Mt. Sinai Hospital between the years 1896 and 1910; 18 cases had been reported by Louria at the Jewish Hospital, Brooklyn, during the summer and fall of 1910; cases had been reported in other hospitals in New York City, as well as from Chicago, Milwaukee, Indiana, Virginia, Washington, Atlanta, Providence, Boston, and other places. It was evident that typhus fever, instead of having been completely eradicated from the United States, was still present. The demonstration of the endemic presence of typhus fever in the United States should require American sanitarians to recognize the persistence of the problem of which they had hitherto been unaware and to be on their guard against a disease that might at any time assume epidemic prevalence and virulence. All the efforts at prevention were centered upon the louse and these efforts might be broadly grouped under the following headings: (1) Measures for the reduction of lice infestation among the population in general. (2) The destruction of all lice and their eggs found on the bodies, clothing, bedding, and surroundings of all cases of typhus, typhus-suspects and contacts. (3) The adoption of measures by persons in the vicinity of cases of typhus to reduce or prevent the possibility of their being bitten by lice. (4) Inoculation with the mild type of the disease by persons contemplating entering localities where the disease was prevalent. Should Plotz's work be confirmed, this might be substituted by the use of a vaccine prepared from the typhus fever germ.

Pathogenesis as Demonstrated in the Pathological Laboratory of the Mount Sinai Hospital.—Dr. PETER K. OLITSKY stated that in response to the kind request made by the president of the Academy, he was presenting some of the conclusions that were contained in the publication made by Drs. Plotz, Baehr, and himself. He said that the organism was a small Gram-positive bacillus which grew only under anaerobic conditions. It was found in 100 per cent. of the epidemic typhus cases cultured before the crisis and 53 per cent. of the endemic cases. In two cases the blood cultures were positive twelve and thirty-six hours after the crisis. The earlier in the disease the blood culture was taken, the more often was it positive. The organisms were more abundant the more severe the case. The highest figures found were in two fatal cases of epidemic typhus. Antibodies against the organisms were found in the blood of typhus fever patients or in animals in which the disease was produced experimentally. There were found also complement fixing bodies, agglutinins, precipitins, and opsonins. These antibodies were usually absent when the fever was present and were present to a small extent at or shortly after the crisis. The greatest concentration was found from five to twelve days after the crisis. The crisis was not due to a sudden destruction of bacteria, but rather to the results of the activities of the cells. It was probable that the bacteria were gotten rid of by phagocytosis. Complement fixation tests were positive in 71 per cent. of the cases after the crisis. They were negative when tests were made with the serum of patients suffering from other diseases or with the serum of typhus fever cases tested against other organisms. Agglutinins were present in 92 per cent. of the cases after the crisis. In numerous control cases no agglutinins were found. The serum of typhus fever cases tested with organisms other than the typhus bacillus did not give an agglutination reaction. Precipitins were found in 73 per cent. of the cases after the crisis. In monkeys with experimental typhus fever, antibodies were found the same as in man. Eighty-three per cent. of the monkeys which reacted to the typhus virus showed positive agglutination and complement fixation tests. In guinea-pigs, only opsonins were found. In cases of endemic typhus the most marked antibody reactions were found in cases with negative blood cultures. Antibodies could be produced in a few monkeys by inoculation of the organism, but they were not immune to the virus of typhus fever. Antibodies have been found in the serum of several patients who have come closely in contact with typhus fever patients, although they did not present the clinical picture of the disease. Blood cultures were made in 24 guinea-pigs that were inoculated with blood from typhus fever patients. In one-third of them, the typhus bacillus was isolated. Positive results were also obtained in one monkey which had been inoculated with blood from a typhus fever patient. In guinea-pigs, the organisms were found more often the earlier the blood culture was taken and the more severe the disease was. In one animal a positive blood culture was obtained twenty-four to thirty-six hours after the crisis, corresponding to the period of infectivity of the typhus virus as determined by previous observers. It was found that blood from typhus fever patients which contained no bacilli or only very few bacilli, was not infective for animals. Typhus blood in which bacilli were more numerous, was infective for animals. This was of the greatest importance in linking the bacillus with the etiology of

typhus fever. Finally, Dr. Olitsky said they have succeeded in finding a febrile reaction like that in typhus fever by injecting a guinea-pig with an emulsion of live typhus bacilli from a case of epidemic typhus fever. In one guinea-pig the organism was recovered from the blood at the height of the febrile reaction. A typical typhus fever could not be produced by injecting organisms from endemic cases. The experimental studies show that the relation of the organism to typhus fever in animals had its counterpart in man, that it was possible to reproduce the disease in animals with the bacillus of epidemic typhus, that at the height of the disease in such animals, the organism can be obtained from the blood, and finally that typhus blood is only infectious when it contains a sufficient number of bacilli.

Dr. G. A. FRIEDMAN said that while in active practice in a provincial town of western Russia he had had the opportunity of observing three epidemics of typhus fever. As modern preventive measures were never undertaken in that community, he constantly saw endemic cases of the disease which ran a mild course with a very low or no mortality. Thus being well acquainted with endemic typhus it was not a difficult task for him to correct Dr. Brill when he first heard his paper in 1910 and in later discussions on the theme to maintain Brill's disease was nothing else but typhus fever. In a paper read before the Section on Medicine he stated the following conclusions: 1. Typhus fever occurred sporadically in many regions. 2. Mortality from typhus fever no longer reached the high figures quoted by some observers of the disease. 3. Typhus was little contagious wherever good ventilation, abundance of light, and good hygienic conditions existed. 4 Epidemics of typhus fever might occur at infrequent intervals even where the disease was endemic. 6. Brill's symptom complex was identical with mild and moderately severe cases of typhus fever. Dr. Brill, not agreeing with his conclusions, said that the discussion of such an important matter should be brought up before the whole Academy. He was glad that he had shown he had finally come to agree with the views first expressed by him and at that time violently opposed by him. His clinical observations gave the stimulus to the work of Dr. Anderson and Goldberger, whose results combined with Dr. Noguchi's and Dr. Libman's bacteriological excellence had served to establish firmly the etiology of the disease by Drs. Plotz, Olitzky, and Baehr. This sequence was shown by the fact that during the period of about fourteen years when Dr. Brill's observations were going on, not a single case of experimental work had appeared in press in regard to this disease and only in February, 1912, nine months after his paper was read, and five months after it was published, they first heard about the well known cross immunity tests. Dr. Friedman said he did not wish to speak about it to demonstrate his priority in identifying Brill's disease with typhus fever, but to show once more that the clinicians' observations at the bedside meant very much indeed. And even if good fortune had not blessed them with such skilled laboratory investigators, the clinicians would not have gone bankrupt after all, as according to the latest report of Dr. Plotz and his co-workers, the bacillus typhi-exanthematic was found in 53 per cent. of the endemic cases only. For the practitioner of medicine, the symptomatology and not laboratory findings still remained the mainstay of diagnosis, and Dr. Brill deserved all credit for giving an extremely well observed picture of endemic typhus fever and he, therefore, would proceed to discuss briefly the epidemiology of the infection. In a given locality epidemic typhus fever, when it had not been present in the near past or ever, was never present unless the cause was an exogenous one, *i.e.* the contagion being imported. In such a community the epidemic spread more rapidly than in a community where outbreaks occurred at frequent intervals. These cases ran a more severe course, and the mortality was higher. It was then possible to trace the first case, especially in the province. An epidemic broke out with few exceptions in the fall (October or November) and reached its acme in February or March when it started to decline and with the first warm days the epidemic died out. Somehow there was a tendency for the contagion to remain in many regions of the world in an attenuated state. In such a community one saw constantly mild or moderately severe cases of typhus fever; in other words the disease had become endemic and in large cities the origin of an epidemic from endemic cases was frequently overlooked for the simple reason that they remained unrecognized even by very good observers. From the fact that in some places typhus fever died out completely and in others it remained endemic, one must assume a predisposition of many localities to preserve the contagion in a modified form. From such cases an epidemic might be expected at any time. It was therefore evident that if an epidemic of typhus fever broke out in a community where the disease was endemic, the actual origin of the first case remained unknown. It was also impossible to state why the endemic cases did not lead more frequently to epidemics in overcrowded dwellings of the large cities. In endemic regions one saw cases of typhus fever in all seasons of the year, though in fall and winter the moderately severe cases were more noticeable, while in spring and summer the mild cases predominated. Thus in epidemic and endemic typhus fever, cold seemed to favor not only the spread of the disease, but likewise its severity. As a rule the course of the disease was mild among children even in epidemics.

Dr. E. LIBMAN said that Dr. Brill had forgotten to mention two other fatal cases of endemic typhus fever in which he had made autopsies. He mentioned these two cases not so much because of the influence on the mortality figures as that brought the mortality only up to three-quarters of one per cent., but because in both of them the bone marrow of the femur was red. This feature of typhus fever was first noted by Dr. Welch who has expressed the view that possibly the organisms multiply in the bone marrow. The suspicions that have been expressed, that the organism of Dr. Plotz might be a secondary invader, could be easily dismissed. Those who had had such an idea had brought into the discussion the findings of secondary invaders in yellow fever and in hog cholera. People had thought that in scarlet fever there was a constant secondary invader, but it had been shown that streptococci were found in the blood of scarlet fever only in cases which had a definite primary focus for invasion, which focus was generally in the nose or throat. Cases that died of fulminating scarlet fever showed no streptococci in the blood or organs. As regarded yellow fever, it was now known that the disease was produced by a filtrable virus. Sanarelli found a paracolon bacillus occasionally in the blood during life, but generally only post-mortem, and the organism was generally found associated with other organisms. Reed and Carroll did not find this organism present in the blood during life or in the organs of the fatal cases. Other observers had found colon bacilli or paracolon bacilli mixed with other organisms. There was no single true secondary invader in yellow fever. Hog cholera was now believed to be due to a filtrable virus. Originally there was found a paracolon bacillus after death, but it had now been found that this organism was not found alone and in other cases colon bacilli are found. The bacilli have not been found in the blood during life. They knew then of no disease which had a constant secondary invader. The organism described by Drs. Plotz, Baehr, and Olitzky was found regularly in the blood of epidemic typhus fever and in half of the cases of endemic typhus fever. It was found more often and more abundantly in the epidemic cases than in the endemic cases. The organisms from the epidemic cases were found to be virulent, those from the endemic cases were not. Sufficient other evidence was contained in the published work on the subject, but attention should be called here to a point of considerable interest. In the part of the work done by Dr. Olitzky one found that, in the endemic cases of typhus fever, he found the most marked complement fixation and agglutination reactions in the twenty cases that had negative blood cultures. Most of these cases were cultured within five days before the crisis. As the organism was not in the blood at that time, it was evident that it either was in the blood before that time or was in the organs, otherwise reactions would not have been obtained against the organism. This was definite proof that the organism could not be considered a secondary invader but was a primary invader. Those who still doubted the organism will have to contend that there were two organisms which caused typhus fever and that this is one of them. No other disease has been found to be due to more than one organism. The first appearance of the complement fixing bodies and other antibodies after the crisis was to be explained by the remarkable studies of Dr. Richard Weil on pneumonia. In pneumonia, antibodies did not appear until after the crisis. By a set of ingenious experiments, Dr. Weil showed

that during the disease the antigen was present in such large amounts that it bound the antibody; that after the crisis with the disappearance of the antigen, the antibody could be found. As regards the bacteriology of typhus fever in Serbia, Dr. Libman announced that he had a letter from Dr. Baehr in which he states that the blood cultures in the very first two cases of typhus fever that Dr. Plotz and he studied in Belgrade, showed the typhus bacillus. In the first case the blood culture was taken on the fifth day; in the second case on the tenth day. Although both were mild cases, the number of organisms found was large. In fact, the number of organisms found in the case cultured on the fifth day was larger than that of any case that has so far been studied. This gave additional proof that the bacteriemia was more marked early than late. The probable reason why the investigators, who were studying typhus fever in Serbia before the arrival of Drs. Baehr and Plotz, did not get the organism in any number of cases was that the serum which they used was not favorable for the growth of the organism. Dr. Zinsser recovered the organism in one case, Dr. Hopkins in one case, and Dr. Anderson isolated the bacillus from the blood of infected guineapigs. As regards the question of immunization, Dr. Libman believed it would be best before adopting the method suggested by Dr. Anderson, namely, by injecting a patient with the virus of Brill's disease, to first try the injection of dead bacilli, then of sensitized living bacilli, and, finally, if it should be found necessary, small numbers of live bacilli from the endemic cases, these bacilli not being virulent. It had never been demanded that to prove that an organism was the cause of the disease one would have to prove that one could immunize with the organism. To ask for this proof would mean that they would have to add a fifth postulate to the four announced by Koch which would say that no organism would be considered the cause of the disease unless one could at the time one announces the discovery of the organism, also announce the method of immunization against it, or cure of the disease. While the experiments of Dr. Anderson were of great interest, it must be noted that his inoculations of virus were all made intraperitoneally. Theobald Smith stated, "Immunity that can be established toward a subcutaneous dose of the virus may fail completely to protect against a much smaller intraperitoneal dose." Human beings acquired typhus fever through the skin. Apart from that, the organisms used by Dr. Anderson were not virulent, and from results of the immunity experiments on animals, one would draw no binding conclusions as regards the efficiency of vaccination in human beings. It had been found by Metchnikoff and Besredka that chimpanzees could not be immunized against typhoid fever with dead bacilli; only sensitized living bacteria would immunize. In human beings remarkably good results were being obtained in the prophylaxis of typhoid fever by injections of dead bacteria. It would be best at the present time to follow the advice given by Leishmann in connection with typhoid fever, that was to make careful studies in human beings.

PHILADELPHIA NEUROLOGICAL SOCIETY.

Stated Meeting Held October 22, 1915.

A Patient with Symptoms Suggestive of Rhizomelic Spondylosis.—Dr. JAMES HENDRIE LLOYD reported this case which occurred in a man about fifty-five years old who for some time had complained of shooting pains in the lower extremities and who presented dorsolumbar kyphosis, with restricted mobility at the hip-joints, preserved perhaps increased knee-jerks, abolished Achilles jerks, inequality of the pupils with sluggish light-reaction and a negative Wassermann reaction. X-ray examination disclosed coalescence of some of the vertebræ and the presence of osteophytic processes.

Brain Tumor in the Parietooccipital Region Causing Homonymous Hemianopsia.—Drs. J. H LLOYD and MAX H. BOCHROCH reported this case. The patient suffered from headache and he had causeless vomiting, without changes in the ocular fundus. He had a tendency to pitch forward in walking, and the Wassermann reaction yielded a negative response. Great relief followed cerebral decompression, but gradually the symptoms progressed and terminated fatally. Autopsy disclosed a new-growth of considerable proportions in the parieto-occipital region of the brain.

Unusual Form of Myotonia. — Dr. FRANCIS X. DERCUM presented this case. The patient was a boy nine years old who some months following an attack of mumps developed swelling of one knee and later difficulty in walking, and in time also in the use of the upper extremities. Any attempt to perform a given act was attended with spasm of the muscles involved, which did not relax on persistent use as in Thomsen's disease. The knee-jerks were increased, and on electrical stimulation anodal closure contraction was as great as kathodal closure contraction. The disorder was thought to be due to a diseased state of the musculature. In the discussion Dr. Charles K. Mills suggested that the case might belong in the group of extrapyramidal lesions of the nervous system affecting the tonectic mechanism.

Dr. DERCUM exhibited also a man twenty years old who presented symptoms indicative of involvement of the nuclei of all of the cranial nerves with the exception of the pneumogastric. One of the earliest symptoms was pain in the right ear, and later a discharge from the same ear. After a time enlargement of glands on the right side of the neck was observed, and these were removed, but nothing could be learned as to their histologic character. Soon there developed complete internal and external ophthalmoplegia on the same side, with immobility of the eye and ptosis, facial paralysis, with loss of sensibility in the distribution of the upper branches of the fifth nerve, difficulty in swallowing, loss of taste on the right side of the tongue, with atrophy and deflection of the tongue to the right, probably impairment of smell, and beginning atrophy of the optic disc. A neoplastic mass was found in the nasopharynx. It was thought there might be a metastatic lesion or a degenerative process involving the nuclei of the respective nerves, but in the discussion Dr. William G. Spiller suggested that the symptoms might be explained by a metastatic growth at the base of the brain involving the trunks of the several nerves involved in the course or at their points of exit from the skull.

Drainage of the Cerebrospinal Fluid as a Factor in the Treatment of Nervous Syphilis.—Drs. S. F. GILPIN and THOMAS B. EARLY read this communication. They pointed out that the inefficiency of treatment in cases of syphilis of the central nervous system is explained by the fact that the drugs ordinarily employed and administered by the mouth or into the subcutaneous or muscular tissues or into the bloodstream do not reach the nerve tissues on account of their failure to pass through the choroid plexuses into the celebrospinal fluid. With a view to bringing about such a passage of the active medicaments the author reasoned that such a result might be effected by removing cerebrospinal fluid by lumbar puncture to such a degree as to lower the pressure in the meningeal sac sufficiently to favor the passage of therapeutically active substances from the blood into the cerebrospinal fluid. Influenced by this reasoning they undertook to treat cases of tabes and paresis with inunctions of mercury in conjunction with withdrawal of maximum amounts of cerebrospinal fluid, and the results thus far in a small number of cases have been successful and encouraging, as manifested by disappearance of previously positive Wassermann reaction, diminution in the number of cells in the cerebrospinal fluid and subjective and objective symtomatic improvement.

Endothelioma of the Temporooccipital Lobe with Partial Motor Aphasia. — Drs. WILLIAM G. SPILLER and GEORGE P. MULLER reported this case. The patient presented symptoms of a brain-tumor without localizing indications, but when the skull was opened a telangiectatic state of the pia nater was found. Some of the vessels were ligated, but the patient survived only a few days. Post-mortem examination disclosed a neoplasm in the temporooccipital region and this on histologic examination proved to be an endothelioma. Death had resulted from cerebral hemorrhage secondary to ligation of the blood-vessel.

Observations in the European War Zone.—Dr. DANIEL J. MCCARTHY gave this informal account. He pointed out that by reason of changed conditions of warfare a new group of diseases is being observed. The greatest harm is done by shrapnel, which in addition to any primary injury usually gives rise to infection, the sequels of which cannot be forseen or anticipated. It was found better to permit such wounds to remain undisturbed for a while rather than to make attempts to remove foreign materials carried into the wound,

contenting oneself for the time being merely with cleansing the superficial area. Bullet-wounds on the other hand are usually clean and may heal with remarkably slight manifestations. Apart from direct injuries of nerve-tissue there occur a great many cases of what must be described as disorders attributable to concussion. Not rarely injuries result directly and indirectly from the force of an explosion without apparent superficial lesion. At times at field and base hospitals the cases are so numerous and the pressure of emergency work so great that little time is afforded for full investigation, thorough study and complete records.

Verbal Amnesia and Alexia.—Dr. ALFRED GORDON reported this case and exhibited the specimen. The patient had difficulty in naming objects and when he made a mistake he was at once aware of the error. He had no difficulty, however, in repeating names mentioned to him, and here again he appreciated their proper application. He could read letters but not words. Death resulted and autopsy disclosed a neoplasm of the left occipital lobe.

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

SENESCENCE AND REJUVENESCENCE. By CHARLES MANNING CHILD. Published by The University of Chicago Press, Chicago, Ill.; 481 pages. Price $4.00.

PHYSIOLOGICAL CHEMISTRY. By ALBERT P. MATHEWS. Published by William Wood & Company, New York. Illustrated; 1040 pages. Price, $4.25 net.

HEREDITY AND ENVIRONMENT. By EDWIN G. CONKLIN. Published by Princeton University Press, Princeton, N. J.; 533 pages. Price, $2.00 net.

CHARACTER AND TEMPERAMENT. By JOSEPH JASTROW. Published by D. Appleton and Company, New York and London; 596 pages. Price, $2.50 net.

THE WORK OF OUR HANDS. By HERBERT J. HALL, M.D., and MERTICE M. C. BUCK. Published by Moffat, Yard & Company, New York; 211 pages.

ORAL SURGERY. By TRUMAN W. BROPHY. Published by P. Blakiston's Son & Co., 1012 Walnut Street, Philadelphia, Pa. With 909 illustrations, including 39 plates in colors; 1090 pages.

THE CLINICS OF JOHN B. MURPHY, M.D., at Mercy Hospital, Chicago, October, 1915; 1025 pages. Published bi-monthly by W. B. Saunders Co., Philadelphia and London. Price, per year, $8.00; foreign, 35 shillings.

WISH-FULFILLMENT AND SYMBOLISM IN FAIRY TALES. By Dr. FRANZ RICKLIN of Zurich. Published by Nervous and Mental Disease Publishing Company, New York; 89 pages. Price, $1.00.

MANUAL OF EMBRYOLOGY. By A. MELVILLE PATERSON. Published by Oxford University Press, Warwick Square, E.C. London; 391 pages. Price, $2.75.

HOW TO LIVE. By IRVING FISHER, and EUGENE LYMAN FISK. Published by Funk & Wagnalls Company, New York and London; 345 pages. Price, $1.00 net.

VAGOTONIA. A Clinical Study in Vegetative Neurology. By Dr. HANS EPPINGER and Dr. LEO HESS. Published by Nervous and Mental Disease Publishing Company, New York; 92 pages. Price, $1.00.

THE HEALTH-CARE OF THE GROWING CHILD. By LOUIS FISCHER, M.D. Published by Funk & Wagnalls Company, New York and London; 341 pages. Price, $1.25 net.

RULES FOR EMPLOYEES OF THE BUREAU OF PREVENTABLE DISEASES. Including those for All Employees. The Department of Health of The City of New York; 106 pages.

A MECHANISTIC VIEW OF WAR AND PEACE. By GEORGE W. CRILE. Published by The Macmillan Company, New York. Illustrated; 104 pages. Price, $1.25.

DIAGNOSTISCHE UND THERAPEUTISCHE ERGEBNISSE, DER HIRNPUNKTION. Von Dr. WALTER PINCUS. Published by August Hirschwald, Berlin, 1916; 211 pages.

QUANTITATIVE LAWS IN BIOLOGICAL CHEMISTRY. By SVANTE ARRHENIUS. Published by G. Bell and Sons, Ltd., London; 159 pages. Price, 6/- net.

Therapeutic Hints.

Emetine in Bronchial and Pulmonary Affections.—At a meeting of the Société Médicale des Hôpitaux, July 5, 1915, M. Guinon and Mlle. Pouzin reported that they had obtained good results in the treatment of bronchial and pulmonary affections in infants and children by means of emetine. The daily dose in infants was 0.005 gram; in children up to five years it was 0.01 gram, and in children over five years it was 0.02 gram. If the polypnea and cyanosis indicated a danger of bronchial asphyxia the authors used in addition subcutaneous injections of oxygen in doses of 200 to 500 c.c.—*Presse Médicale.*

Hexamethylenamine Internally for Ophthalmia.—Kirkpatrick has successfully used hexamethylenetetramine in septic inflammations of the cornea and conjunctiva by administering 15 grains every four hours. The drug is excreted by the lacrymal gland. He finds it of use also in the treatment of ordinary colds.—*The Indian Medical Gazette.*

Salvarsan for Schistosomiasis.—Post reports that there was a marked change in his case from the date of administration of salvarsan, and that Mann of the U. S. Navy has had similar experience in the use of salvarsan in schistosomiasis.—*U. S. Naval Medical Bulletin.*

Frostbite.—The theory of Noesske, that gangrene may often be avoided in severely crushed and lacerated wounds of the extremities by deep incisions in the injured part, allowing the escape of venous blood and the entrance of arterial blood, was applied by A. Wittek (*Dermatologische Wochenschrift*) to cases of gangrene due to freezing. Within twenty-four hours of the application of the treatment he has seen the line of demarcation descend and the blue-green, glassy appearance of the part clear up. The fever promptly receded and no phlegmon formed. He used collargol wet dressings for the first three days, then a mild ointment. He recommends the method highly. "One is pleasantly surprised at the slight extent of the necrotic area." E. Bundschuh also praises the excellent results of the Noesske treatment. In addition to the deep incisions, he applies the cupping glass twice the first day and once each day thereafter, and prevents the adhesion of the wound edges by the interposition of gauze dipped in sterile oil. Lukewarm baths for the affected member were also very effective. In superficial freezing the incisions need not be so deep, but they should always be deepest on the ball of the finger, as this part is always in the greatest danger.—*Journal of Cutaneous Diseases.*

Craving for Alcohol.—

℞ Strychninæ nitratis, gr. ss.
Fluidextracti capsici, ℥ss.
Fluidextracti avenæ sativæ.
Fluidextracti cinchonæ, āā fl. ℥i.
Aquæ, q.s. ad fl. ℥iv.

M. Sig.: Teaspoonful three or four times a day.

℞ Pulveris capsici, ℥ss.
Quininæ sulphatis, ℥i.

M. et div. in pil. No. xxx. Signa: One pill before each meal.

Gingivitis.—

℞ Chlorati hydrati, ℥i.
Tincturæ cochleariæ
Glycerini.
Aquæ, āā fl. ℥i.

M. et signa: Apply to gums on a pledget of cotton twice a day.

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Original Articles.

MILK-BORNE SEPTIC SORE THROAT—A NEW HEALTH PROBLEM.*

BY HERMANN M. BIGGS, M.D.,

NEW YORK.

SEPTIC sore throat, while probably not a new disease, has at least appeared in a previously unrecognized form in this country within the last few years. A number of extensive epidemics have occurred, all resembling each other closely in character and due, as a rule, primarily to widespread milk infections.

Previous to the Boston epidemic in 1911, which was carefully studied and reported by Winslow, no milk-borne epidemic of tonsillitis or similar throat disease had hitherto been reported in this country. Similar epidemics were not, however, uncommon in Great Britain, as Swithinbank and Newman[1] in 1903 stated that "it is safe to assume that a year never goes by in which there are not outbreaks of sore throat or tonsillitis due to milk or cream." As early as 1875 the medical officer of South Kensington[2] reported twenty cases infected from a common cream supply, while at Aberdeen in 1881,[3] 300 cases occurred in 90 families supplied by a single dairy. As it is not the purpose of this paper to give in detail the history of the English epidemics, only a brief citation of the more important ones will be made. From 1880 to 1905 there occurred ten epidemics, fulminating in character, which presented clinical pictures so at variance with the well-known types of sore throat and tonsillitis previously observed as to attract widespread interest and comment.

Notable among these were the epidemics occurring at Rugby,[4] Dover[5] and Edinburgh,[6] at Rothesay,[7] Hackney[8] and Lincoln,[9] at Bedford,[10] Woking,[11] Paisley[12] and Colchester.[13] This list, incomplete as it is, is sufficient to establish the fact that septic sore throat has been known in Great Britain for over thirty years.

In the Boston[14] epidemic of 1911 the records of over 1400 cases were collected, of which between 1100 and 1200 cases occurred in Boston, Brookline, and Cambridge between April 22 and June 6. At about the same time 392 cases occurred in Hudson, Marlboro, and Southboro—twenty miles to the west of the Boston district—between March 27 and June 5. This smaller outbreak apparently antedated the Boston epidemic and was complicated with it. It consisted of two separate outbreaks, the height of the first being in the week of April 3 and of the second in the first two weeks of May. The source of the first outbreak was not determined; the second was evidently the result of the same milk infection which caused the major epidemic in Boston, namely, the milk from the Deerfoot Dairy. Forty-eight deaths were ascribed directly or indirectly to the disease, most of which occurred in the later periods of life as the result of complications which were numerous.

About 70 per cent. of the cases occurring in the Boston epidemic were supplied by milk from one dairy. In his report, Winslow concludes that "the milk from this dairy was the means of transmitting this disease, but it was probably infected by human beings and not by dairy cows, although no acute cases of sore throat were found among dairy employees," and he was convinced that a carrier case presumably infected the milk.

In December, 1911, and January, 1912, an extensive outbreak occurred in Chicago,[15] described by Heineman and by Capps and Miller. These authors estimated that over 10,000 cases occurred, a majority of which were receiving milk from one dairy. It is stated that an epidemic of mastitis occurred among the cows supplying the milk to this dairy during the winter months. Dr. D. J. Davis of Chicago, who made bacteriological examinations of the milk, stated that he found a streptococcus identical in morphology and cultures and in pathogenicity with the culture obtained from a human case, complicated with arthritis. Dr. E. C. Rosenau, who also made bacteriological studies in this outbreak, says "the fact that milk so modified streptococci is an additional indication of the important part it may play in epidemic sore throat. It is not possible to determine whether the streptococci in such epidemics are exclusively of bovine or human origin—they may be both. Milk drawn in a sterile way from normal cows may contain virulent streptococci and pneumococci; hence, certified milk, while surely less contaminated than ordinary milk, may contain pathogenic bacteria, and the advisability of pasteurization even in this case should be considered, especially during the season of sore throat."

Coues reported an epidemic of 227 cases that occurred in Boston[16] in February, 1912. With the exception of twenty-one cases, the milk supply of all was ascertained and carefully investigated. It was found that 48.5 per cent. of all the cases received milk from one dealer, and an examination of the employees of the dairies supplying him disclosed several cases of septic sore throat, from four of whom practically pure cultures of streptococci were obtained. Most of the milk was unpasteurized.

In Baltimore[17] during the months of February and March, 1913, a similar outbreak occurred with a total of 602 recorded cases. It is certain, however, that the total number of cases greatly exceeded this estimate. In his epidemiological study of the outbreak, Frost states that "the extent of the epidemic can only be surmised. It may be estimated that certainly not less than 1000, and perhaps as many as 3000 cases, occurred in this outbreak."

*Read at a meeting of the Practitioners' Society of New York, October 8, 1915.

The majority of the cases developed between February 1 and March 20. Sixty-five per cent. were supplied with milk from one dairy, which dairy supplied only 3.3 per cent. of the milk sold in Baltimore. Twenty-eight deaths occurred during this outbreak, chiefly as the result of secondary infections. Thirteen of these deaths were caused by peritonitis, seven were cases of general septicemia, four septic pneumonia, two erysipelas, and one appendicitis. The milk causing this outbreak was pasteurized by the "flash" method.

A number of articles on this epidemic were published, the most extensive being that by Frost and Stokes, and Hachtel. It is stated in their reports that "either pathogenic germs were introduced into the milk by some infected person who had had to handle the milk, or were derived from the udders of some of the cows who produced it." A veterinary examination made after the beginning of the outbreak failed to show the presence of mastitis in any of the cows in this dairy, although the authors believe this to be the more probable source of infection. The system of "flash" pasteurization used by the dairy was found to be inefficient. They isolated a streptococcus from the peritoneum and from the milk glands of one of the cows, which closely corresponded with cultures from the throats of patients suffering with the disease. An organism of *Streptococcus epidemicus* type was also isolated from the raw milk shipped to the dairy—the milk which probably caused this epidemic. Further investigation also showed one cow whose milk contained a large number of pus cells. Cultures from this milk were contaminated by colon bacilli, so that no pneumococci or streptococci could be obtained. Cultures from the throats of the family and employees, however, showed that one driver was a carrier, although there was no history of sore throat. An examination of the suspected dairy farm disclosed the presence of several gargety cows.

Contemporary with this outbreak, Mann reported the occurrence of an extensive epidemic at Concord, N. H.[18] Records of 472 cases were obtained but, in the opinion of the author, over 1000 cases occurred. A remarkably large number of the people affected with the disease obtained their milk from a common source—82 per cent. receiving milk from one dealer. Investigation of the milk supply developed the fact that there had been several recent cases of sore throat among the farmers supplying this dealer. Although the mortality was low, four deaths resulting from the disease, there were many complications, erysipelas, pneumonia, tonsillar abscess, and otitis media occurring most frequently.

In February and March and the first two weeks in April, 1913, a number of scattered cases of sore throat occurred among the inhabitants of the city of Cortland[19] and the village of Homer, and in the last week of April a constant increase in the number of cases appeared and a widespread epidemic rapidly developed. Between April 1 and May 9, 669 cases were reported, with 14 deaths—all the results of complications and all occurring in the later periods of life. Five deaths were due to peritonitis, four to erysipelas, two to pneumonia, two to heart failure, and one to edema of the lungs. This outbreak was carefully studied by North, White, and Avery. The following is from their report:

Summary.—1. Two epidemics of septic sore throat occurred simultaneously in May, 1913, in Cortland and Homer, N. Y., the two communities being three miles apart.

2. Over 70 per cent. of the cases in each community occurred among the patrons of a dairyman who was the only dairyman selling milk in both places and who supplied less than 7 per cent. of the total milk supply. Adjacent towns had no cases, and further, they received no milk from the suspected dairy.

3. Physical examination of the cows and microscopical examination of milk sediments showed the existence of acute udder inflammation in two cows in the herd of the suspected dairyman.

4. Bacteriological examination showed that cultures from the throats of four patients contained streptococci apparently identical with strains of streptococci obtained from milk slime from the two cows suffering from garget. Cultures from the throats of eight other patients contained streptococci of this same type, but differing by slight variations only in their carbohydrate fermentations.

5. The streptococci isolated from the milk slime from the two gargety cows and the throats of four patients in the present epidemic correspond in all respects to strains of streptococci isolated previously from three cows of another herd known to be suffering from garget, and from the milk slime from one cow supposed to be normal, but which gave an abnormal amount of slime.

In February, 1913, at Middlebury College, Middlebury, Vt.,[20] and in the vicinity, an outbreak of septic sore throat occurred which is reported by Dr. Eddy, the health officer of Middlebury. Over sixty cases of the disease occurred in the month of February with one death. The evidence of this outbreak strongly indicated that it was the result of milk infection, although the source of infection was not determined.

In New York State during a little more than a year past, three serious outbreaks have occurred and several smaller ones. Two of the serious outbreaks were characteristically epidemics of septic sore throat and the third was either an epidemic of scarlet fever and septic sore throat or an unusual type of septic sore throat.

The first occurred in Nassau County,[21] where 232 cases with two deaths were recorded in the village of Rockville Centre between May 30 and June 30—the majority of the cases occurring in the first two weeks in June. In 89 per cent. of these cases there was a definite history of the use of the milk from one dairy, although this milk supply constituted not more than one-fourth of the total used in the community. The first case in this outbreak reported on by Dr. Overton, sanitary supervisor of the State Department of Health, Dr. Krumweide of the New York City Department of Health, and Dr. Jacques, health officer of Rockville Centre, was the daughter of the woman who owned the dairy in question. The woman herself developed the disease as did also two of the milkers on the farm.

Inflammation of one-half of the udder was present in one cow in this dairy and abundant streptococci were found in the milk of another cow which had no outward signs of sickness. The epidemic quickly subsided when this milk was withdrawn from sale.

On August 14, 1914, the health officer of Easthampton[22] reported to the sanitary supervisor of the State Department of Health that septic sore throat was prevalent among the summer colony. Forty-six cases were discovered, all but one of which received milk from the Y—— dairy. Inquiry was made at the dairy, where it developed that one of the

helpers had been ill from August 4 to 7. On examination, his throat was still inflamed, and a culture taken on the 16th showed an abundant growth of almost pure streptococci. Exclusion of this helper from the dairy, and pasteurization of the milk for a limited period, resulted in the prompt subsidence of the epidemic. No evidence of infection of the udders of the cows was found.

An extensive and serious outbreak of septic sore throat occurred in Westchester County during[23] the spring of the present year. Mt. Vernon, Bronxville, and Tuckahoe were specially affected. The records of 900 cases were collected (many more undoubtedly occurred) between January 15 and May 1. Previous to February 15 there had been numerous scattered cases of this disease in this region. These suddenly increased markedly during the week of February 15 in White Plains, and the following week in Mt. Vernon. In the week of February 22 there were 130 cases in Bronxville and Tuckahoe; this was the height of the epidemic and the numbers decreased week by week until the middle of April when they practically disappeared. Fifty-eight per cent. of the cases were among females—a peculiar incidence characteristic of this disease in almost every outbreak previously reported. The cases were pretty evenly distributed at all age periods, as has also been commonly observed.

In the Boston epidemic, the milk outbreak, as in this instance, was preceded by prosodemic spread and was followed by a similar extension by contact. In the Westchester epidemic there was a question as to the possible relation of the milk of one dairy with the outbreak, as during the period when it was at its height, 63 per cent. of the cases in Mt. Vernon, Bronxville, and Tuckahoe were in households served by one dairy; while before and after that period only 44 per cent. were in such households. In White Plains during this same three weeks, 62 per cent. of the cases were receiving this milk against 52 per cent. for the period before and after. But as the company in question supplies about 45 per cent. of the total milk supply of these communities, the increased incidence was not marked. It suggests that a small milk and cream epidemic may at this period have been superimposed upon a general prosodemic spread. The symptoms of the disease were quite the same as those which ordinarily are present in septic sore throat. It was not an epidemic, however, of great severity.

This has been briefly reported by Dr. C.-E. A. Winslow, Director of Public Health Education, and Dr. L. W. Hubbard, Sanitary Supervisor of the State Department of Health.

In May, 1915, a very extensive outbreak of what was recorded as scarlet fever, combined with an epidemic of septic sore throat, occurred in Poughkeepsie[24] and vicinity. This epidemic was carefully studied by Dr. Meader and Dr. Winslow of the State Department of Health, and by Dr. North, who made a full report on the outbreak to the Poughkeepsie Academy of Medicine. There were 212 cases of scarlet fever and 296 cases of sore throat. The two diseases occurred at the same time and in the same district and were apparently closely related to each other. Thirty-four deaths occurred, the larger percentage of these occurring in the earlier period of life and in the majority of instances after a very short illness of less than one week's duration. In this epidemic the evidence of the agency of milk in the distribution of the infection was unquestioned, and apparently there were several milk epidemics interwoven with each other with great prosodemic extension of the disease.

The outbreak in this district was preceded by a smaller epidemic of less severity and extent in the adjoining rural districts, especially in the town of Rhinebeck, and it seems probable that the extension to Wappingers Falls, Poughkeepsie, Hudson River State Hospital, and the adjoining territory was direct from cases in these adjacent towns occurring earlier.

There are three possible assumptions in connection with this outbreak; the first one—which in my judgment is the probable one—is that an epidemic of scarlet fever and an epidemic of septic sore throat prevailed at the same time, both probably the result primarily of milk infections. The second assumption—which Dr. North has accepted—is that this whole outbreak was one of septic sore thoat of unusual severity; and the third assumption is that this was an epidemic of scarlet fever throughout, and that the sore throats were simply mild types of scarlet fever in which the eruption was not recognized or was transient, or was absent entirely as is sometimes the case.

In the latter part of May and early in June, 1915, an epidemic of 150 cases occurred at West Winfield.[25] All of the families affected received milk from the R—— dairy, where the source of infection was easily found. One of the milkers had been ill for several days previous to the outbreak but had continued to work, although feeling very weak. His throat and that of his wife, who was also ill, showed unmistakable evidence of severe septic infection. Here, again, the children and young adults were not seriously ill, being confined to the house, as a rule, only two or three days. Those in middle and later life suffered severely, relapses and complications being a frequent occurrence. The complications were those usual in septic invasion—erysipelas, polyarthritis, pneumonia, nephritis, suppuration of cervical glands, and otitis media.

The symptoms present in most of the septic sore throat epidemics have been fairly uniform, although the disease varies greatly in its severity, and single cases may present hardly a single feature in common with each other. Any series of cases, however, show at once the characteristic features. The onset of the attack, is usually rapid, is often accompanied by chill and is followed by a rapid rise in temperature to 103 to 105°. A severe headache and general muscular pain and soreness are present in the more severe cases. The appearance of the throat is variable. There may be only general redness extending over the tonsils, pharynx, and soft palate, much like the scarlet fever throat. Later small isolated patches of membrane may appear on the tonsils, or the appearance may be almost typical of an acute follicular tonsillitis. Later in many cases there is an extensive pseudomembranous exudate, strongly simulating diphtheria. Frequently one tonsil is first infected and then the other. The cervical lymph nodes are almost always more or less involved and often are very much swollen. The first period of the disease lasts from three to five days and may be followed by rather rapid recovery in the mild cases or by secondary complications which are numerous and frequently severe. Marked prostration follows in all of the severe cases.

The commonest complications are peritonsillar abscess and suppuration of the cervical glands. Extension of the inflammation to the nose and ear

sometimes occurs, although the deeper tissues about the neck are more frequently affected. Diffuse cellulitis of the neck is common. More serious complications occur, the result of general infection. Of these perhaps the commonest are polyarthritis, erysipelas, nephritis, pneumonia, pleurisy, pericarditis, septicemia, peritonitis. The majority of deaths have occurred in comparatively old people from complications, the deaths in children being rather infrequent. The convalescence is unusually slow and tedious.

In all outbreaks a long chain streptococcus has been found which has nothing to specifically identify it or make possible the positive differentiation from other stains of streptococci.

It is quite clear that the only means of prevention of this disease lies in universal pasteurization of the milk supply used for drinking purposes. It would seem probable from such evidence as we have that the milk may be infected primarily in the cow, or that it may be secondarily infected from someone handling the milk who has the disease, or is a carrier. It is also possible that mastitis may be produced in the cow by transmission of the infection to the udder from a human being, and it is also quite clear that the infection is frequently transmitted from one case to another. It is not at all clear, however, as to whether this disease as it prevails in epidemic form, is really a new disease or whether it has not been previously recognized. Certainly extensive epidemics, such as these described have not been reported as the result of milk infection in this country until the last four years.

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Infantile Scorbutus.—J. Cornby reports the cases of twenty-six infants with this disease, none of whom were breast-fed or fed on fresh milk. He states that the most characteristic sign of incipient scorbutus is a pseudoparaplegia from pain. In addition to the use of fresh milk, boiled or not, he recommends the administration of orange juice in teaspoonful doses between feedings, and for children over a year old three tablespoonfuls of mashed potato during the day.—*Archives de Médecine des Enfants.*

SOME OF THE AUTOMATIC BALANCES IN THE HUMAN BODY.*

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EVER since the days of John Hunter it has been known that the controlling influence of the human will over the bodily functions and sensations may be immeasurably great. Tuke quotes Hunter in relation to the escape of the latter from the wiles of the mesmerizer. The mysterious power by which the will of one person is made by means of expectant attention or otherwise, temporarily subservient to that of another was then called animal magnetism, as I believe it is still designated by the so-called Christian Scientists.

Hunter, in his lectures on surgery in 1786-7, in treating of animal magnetism, relates an experience of his own. He had been persuaded to submit himself to the influence of the magnetizer, and speaks of the matter in this wise: "But considering that if any person was affected by it, *it must be by the imagination being worked up by the attention to the part expected to be affected*, and thinking that I could counteract this, I went, and acordingly when I went I was convinced by the apparatus that everything was calculated to affect the imagination when the magnetizer began his operations, and informed me that I should feel it first at the roots of my nails of that hand nearest the apparatus. *I fixed my attention on my great toe*, where I was wishing to have a fit of the gout, and I am confident that I can fix my *attention to any part until I have a sensation in that part.* Whenever I found myself attending to his tricks, I fell to working with my great toe, working it about, etc., by which means I prevented it (the attempted mesmerism) having any effect upon me."

Tuke says that the above excerpt really contains the gist of all that has been written on the influence of "expectant attention and the imagination" for the century following Hunter, and also added that the latter might have made as great a metaphysician as he was a physiologist. However this may have been, it seems wise that we should in the beginning of our study of the bodily balances, and the emotions, give a thought to the enormous power of the human will, which has hitherto for the most part, at least, been considered as an attribute quite apart from the physical characteristics of its possessor.

The tendency of modern teaching, however, points to a close, if not a causative relation, between the bodily functions and the will. Certainly the sensitive relations between the emotions and the body cells have received most striking proof from a number of recent investigations and many phenomena hitherto vaguely attributed to spiritual, or external influences, have been shown to be due to material changes in the state of the nerve cells. Cannon explains the so-called "ordeal of rice" as practised in India. It was early discovered that excitement or fear may inhibit the flow of saliva. Advantage was taken of this discovery in the trial of alleged criminals in the East Indies, and probably this primitive method of judicial procedure still obtains in that country. The suspected culprits were obliged to fill their mouths with the consecrated rice, which they were required to chew a short time

*Read before the Orange Mountain Medical Society.

and then spit out on the leaf of the sacred fig tree. If any of this ejected rice was found to be dry, the person who had chewed it without being able to insalivate it, was assumed to have had a "dry mouth" from guilty fear, and was adjudged guilty as indicted.

What is true of the salivary flow is also true of the secretion of gastric juice. And a curious difference between a hungry child with a gastric fistula and hungry dogs with gastric fistulæ has been noted. Pawlow showed that in the dogs the mere sight of the food caused the stomach juice to flow freely, whereas when the food was shown the boy, and then withheld, he grew angry and began to cry, and no gastric secretion appeared. Bogen also mentioned a case of a child with closed esophagus and a gastric fistula who sometimes fell into such a passion after longing in vain for food that even after he was pacified and given food no gastric juice would appear.

Another interesting case is cited showing the psychic inhibition of the gastric secretion in a dog with a gastric fistula and a side pouch of the stomach, which, as in Pawlow's experiments, opened only on the exterior of the body. In this animal "sham feeding"—that is, feeding by the mouth, none of the food reaching the stomach—excited a copious flow of gastric juice, a true psychic secretion, resulting from the pleasurable taste of the food. Five minutes of this sham feeding usually started a secretion lasting twenty minutes and amounting to 66.7 c.c. of pure gastric juice. When, however, a cat was brought into the room, the dog flew into a great fury. After the cat had been removed and his canine majesty had been calmed, he was given a sham feeding for five minutes. He was hungry and ate eagerly, but no gastric secretion worthy of mention followed; only 9 c.c. of an acid fluid, containing much mucus, was produced. On another occasion, after the flow of gastric juice had been well established by a sham meal, the cat was brought in, and the dog again lost his temper, with the effect of stopping the secretion of gastric fluid for the next fifteen minutes. A case of a girl is reported in whom the gastric secretion long outlasted the period of eating, although owing to esophageal and gastric fistulæ no food entered the stomach. It has been recently shown that psychic disturbances similar to those just shown will inhibit the secretion of the pancreatic juice and the flow of the bile.

Cannon asserts, just as there are psychic secretions, so there is probably a "psychic tone," or "psychic contraction" of the gastrointestinal muscles as a result of taking food. For if the vagus is cut *just before taking food* the usual gastric wall contractions do not occur, but if this nerve is cut *after* food has been eaten with a relish, the contractions which have already started continue without cessation. As both of the above operations had been done under anesthesia, the incidence of pain could not have influenced the results. In the absence of hunger, which in itself provides a contracted stomach, the pleasurable taking of food may therefore be a primary condition for the appearance of natural contractions of the gastrointestinal canal.

Pain produces the same change as the emotions of which we have just spoken, both in the external parts of the body and in the internal secretions. Wertheimer proved many years ago that stimulation of a sensory nerve in an anesthetized animal—such stimulation as in a conscious animal would induce pain—quickly abolished the contractions of the stomach, and Netschaiev showed that excitation of the sensory fibers of the sciatic nerve for two or three minutes resulted in an inhibition of the secretion of gastric juice, which lasted for several hours.

Emotional conditions or feelings may produce opposite effects on the alimentary canal, some favorable to digestion and some inhibitory. These opposing conditions are expressed through nerves which are correspondingly opposed in their influence on the digestive organs. The cranial nerves are the agents for psychic secretion in the salivary glands, and cause also dilatation of the blood vessels of these glands.

Pawlow has shown also that when the vagi are severed psychic secretion is abolished. These nerves tend strongly toward bodily conservation by contracting the pupils against intense light and slowing the heart rate, which gives rest to the cardiac muscles. They also provide for the flow of saliva and of the gastric juice and by supplying the muscular tone needed for the contractions of the alimentary canal, they bring about and regulate digestion and absorption. They form one of our bodily balances to build up the reserves and fortify the organism against stress and privation.

One of the striking features of a disordered metabolism which seems to be the underlying condition in diabetes, cancer, and insanity, as well as in many other dyscrasiæ, is glycosuria. Folin and Dennis found glycosuria in 19 per cent. of 192 insane patients, most of whom suffered from some form of depression, apprehension, or excitement, and Arndt has reported the appearance and disappearance of glycosuria in his patients concomitantly with the appearance and disappearance of alcoholic delirium.

Bohm and Hoffman produced abundant glycosuria in about one-half of a number of cats bound to a board having a tube in the trachea and another in the urethra. So long as the glycosuria lasted, in three determinations, the sugar in the blood was slightly above normal, but returned to normal when the sugar disappeared from the urine. This form of glycosuria caused by binding animals securely in a fixed position was dubbed Fesselungs Diabetes, which cannot be justly called emotional glycosuria, although it was found to depend largely upon the state of excitement of the animal. In three of the cats so bound no glycosuria followed pain, cooling, or bandaging. They remained calm and passive, although bound in the holder for four consecutive hours, but when confined singly in cages, and barked at for a half hour by an energetic dog, they promptly developed the sugar in their urine.

Nine medical students submitted their urine to a test for sugar before and after a hard examination. Four of them had glycosuria at the second test, though none of them had it at the first one. The same procedure was adopted before and after an easy examination, and then only one of the students showed the glycosuria. Twelve out of the twenty-five football players in the Harvard University team had glycosuria after the most strenuous game of the year in 1913. Of those showing sugar five were substitutes and did not get into the game. None of the twenty-five had any sugar in their water on the day before the game. An excited spectator also showed glycosuria after the game, which had disappeared on the following day. From these and a number of similar cases it is

shown that men, cats, dogs, and rabbits have a temporary increase of sugar in the urine, and coincidentally, in the blood, from emotional excitement.

Since artificial stimulation of the splanchnic nerves produces glycosuria, and since major emotions such as rage and fright, are attended by nervous discharges along the splanchnic pathways, glycosuria would be expected as a concomitant of excitement. How much the stimulation of the adrenal glands may contribute to this result has been a matter of dispute. Cannon, after careful experimentation, convinced himself that removal of the adrenals inhibits glycosuria. It may be noted in passing that the liberation of sugar and adrenalin at the moment when great muscular exertion is about to be demanded of the body is a significant instance of biological adaptation.

The first, because the sugar is needed in the unusual effort. The second, because the adrenalin directly stimulates muscular action and clears away the fatigue products (metabolites) and so revives the drooping strength. This property of adrenalin will be spoken of again under the heading "second wind."

As the abdominal arteries and veins are under the control of the splanchnic nerves and, as intimated above, states of excitement are characterized by discharges of energy through these nerves, so in violent effort the diaphragm and the muscles of the belly-wall are voluntarily and antagonistically contracted, in order to stiffen the trunk as a support for the arms and the abdominal muscles, which result forces the blood out of the belly and does not permit its return until the parts are relaxed. It is well known that blood pressure may suddenly rise from 110 mm. to 180 mm. during extreme physical effort, which shows that a larger quantity of blood than usual goes to the heart for distribution to the skeletal muscles and this blood as just pointed out is temporarily taken away from the great vessels of the abdomen.

Oliver and Schaefer were able to show by actual measurement that the viscera of the splanchnic area, the spleen, kidneys, and intestines suffer a considerable decrease of volume, when adrenalin is administered, whereas the limbs show a corresponding increase in size and the relative degrees of sympathetic innervations may be judged by the action of the adrenalin in a given case. In other words, at times of pain or excitement, sympathetic nerve discharges, probably aided by the adrenal secretion, simultaneously liberated, will drive the blood out of the vegetative organs of the interior of the body into the skeletal muscles.

There is one very important exception to the statement that adrenalin will empty the visceral vessels of their blood. As has been pointed out, adrenalin has a vasodilator and not a vasoconstrictor action on the cardiac arteries. It is also well known that this powerful agent has little or no effect upon the cerebral and pulmonary bloodvessels. Thus we see that the blood supply of the "tripod of life" is not diminished in physical stress; on the contrary, the heart actually has more blood to send to the muscles, borrowed from the viscera, which do not need it at the time, while the brain and lungs have an undiminished supply. This is an exceedingly significant and impressive biological fact.

It has been found that when adrenalin is set free in the circulation the blood will clot more rapidly. This is, of course, another safeguard developed by nature in animals as a preservative in times of conflict and injury. After long study of this question Cannon concludes that the property of causing a more rapid clotting of the blood does not reside in the adrenalin itself but in the liver, and that the action of the adrenalin is to force the liver to set free this blood-clotting agent in the bloodstream in greater abundance, in times of stress, than in ordinary conditions. This substance, whatever it may be, is continuously destroyed in the body and apparently as rapidly renewed in the liver. The above statement has not been yet conclusively proved to be correct, but there seems little doubt that the facts are as stated.

Another interesting phase of animal life gradually perfected through a long period of evolution is that correlated action of various functions which we know as reflexes. The most characteristic feature of reflexes is their "purposive" nature, or their utility either in preserving the integrity of the organism, or in safeguarding it from injury. When, therefore, we have discovered that among the automatic reflexes accompanying pain, fear, and rage, are the increased discharge of adrenalin and of sugar into the blood, we are led to inquire into the utility of this phenomenon.

To be of the most value to the economy in times of stress these reactions must be prompt. This we find to be the case. If the splanchnic nerve be stimulated below the diaphragm, a responsive secretion of adrenalin will occur in 16 seconds, and, within a few minutes after the stimulation of the same nerve, the sugar content of the blood is increased between 10 and 30 per cent. This discovery of the periodic increase of the blood's sugar content and its variation with the bodily demands is another recent physiological triumph. The importance of sugar as a readily assimilable agent in the promotion of muscular activity has been long known. But that it is supplied by the bloodstream to the laboring muscles in quantities suited to the demand, and the *modus operandi* of the procedure have only recently been determined. Here is another most significant biological balance. Fear and anger are both capable of stimulating the splanchnic nerves, hence they call forth promptly the secretions which enable the body to prepare itself for combat or flight.

As a further proof, of the consumption of sugar as glycogen in muscular activity, Cannon cites the fact that the carbon-dioxide output during severe exertion may exceed by twenty fold the output during rest. The storage of glycogen in muscle and the disappearance of this deposit from the muscles after great exertion, are well known. This same phenomenon is also observed in muscles that have been over stimulated by strychnine. Hence we may note, in passing, that strychnine is contraindicated in shock. The lessened capacity for work of muscles deprived of their stored-up glycogen is well known, as is the simple chemical reaction between sugar and lactic acid which is observed after repeatd muscular contractions. All these phenomena show that carbohydrate material (glycogen and sugar) is the elective source of energy for muscular contraction.

We cannot develop this aspect of our subject as fully as we would like, as this paper is already assuming formidable proportions. Let us, however, for a moment take up another fruitful aspect of the body reflexes. Asphyxia, whether due to ex-

ternal or internal agencies, like pain and excitement, not only liberates adrenalin, but, as might be inferred from this property, also mobilizes sugar. This accords with the observations of McLeod who says that the increased liberation of glycogen from the liver is produced by muscular exertion. Here again, we observe a purposive reflex as possibly associated with increased carbon dioxide in the blood. Zuntz also asserts that the asphyxia of great physical exertion may call out the blood sugar to such a degree that, in spite of its increased use in the active muscles, glycosuria may ensue. The evidence already given that adrenalin relaxes the smooth muscles in the bronchioles, taken with the fact that it is freely liberated in asphyxia, shows that, by means of this agent, relief is automatically provided for in the body.

Thus, the well-known phenomenon of "second wind" is explained, by which almost miraculous relief and increase of efficiency are afforded to a distressed and nearly asphyxiated person. In other words, the asphyxia has set in motion the mechanism by which it has cured itself. So, in the establishment of the "second wind," in a struggling man, we note the same group of bodily changes leading to greater bodily efficiency that we have observed in pain and excitement.

To recapitulate, there are increase of blood sugar, increased secretion of adrenalin, altered circulation (already dwelt upon) by which the heart and through it the skeletal muscles, get more blood and the abdominal viscera less, while the supply to the lungs and brain remains stationary. Add to these the more rapid clotting of the blood as an effect of increased output of adrenalin, and the phenomenon of relieving fatigue following the addition of adrenalin to the bloodstream, and the increasing dynamic power of the muscular fiber due to this same agent, and we have a similar series of protective bodily processes that we have observed to occur after the play of the strong emotions, fear, anger, and pain.

Evolution has produced in the human body a marvelously balanced machine, which fortunately we are at last beginning to comprehend. When William James, the great psychologist, speaks of "Reservoirs of Power" he uses the term figuratively, yet he is mentioning facts and alluding to entities that every human and animal body is supplied with. From our present knowledge we are led to regard the adrenal glands as the balancing governors of the bodily machine, particularly in all times of stress and strain.

We have had an inkling of the great hemostatic power of adrenalin for a long time but we did not realize, and probably do not yet appreciate, its wonderful value as a recuperative and regulating agent. That it prevents fatigue and overcomes nervous and muscular exhaustion, in a variety of ways, Cannon and others have beautifully demonstrated. They have pushed forward by their physiological researches the bounds of medical knowledge, and have started a train of inquiry which promises results of the utmost value.

Pyloroplasty, the Operation of Choice. — It is quite evident that the immediate as well as the final results from 100 gastroenterostomy operations and from an equal number of pyloroplasties are clearly in favor of pyloroplasty in the experience of Finney. The only indication for gastroenterostomy is the impossibility of pyloroplasty because of adhesions or thickening.—*American Journal of the Medical Sciences.*

WOMEN IN THE MEDICAL PROFESSION.

By MAUDE GLASGOW, M.D.,

NEW YORK.

IN ancient Egypt, about 11,000 years before Christ, women were engaged in the practice of medicine, which was at that time associated with the priesthood, and women were eligible to all positions in the priesthood, even the highest, and on exactly the same terms as men. As we might expect from the large number of physicians of the feminine gender, the infant mortality was very low. Egypt, the cradle of art, of science, and of civilization, the country from which Moses obtained his sanitary knowledge, was a country which owed its scientific knowledge perhaps quite as much to woman as to man. Queen, afterwards the goddess, Isis, was called the mother of medicine because she introduced the science to her country. Herodotus speaks of ancient Egypt as the healthiest of countries.

The Iliad and the Odyssee refer to the wonderful skill of the female leeches, praising the deft fingers which drew the barb from the flesh, dressed the wounds and alleviated by soothing potions the sufferings of the wounded warriors. The name of one of these women was Polydamna, which means subduer of diseases. Many Greek women, the Roman writer Hyginus informs us, devoted themselves to the diseases of women, the profession being legalized for them after the male physicians had endeavored to prevent them practising at all; but it was discovered that sick women were dying rather than consult men, and although the male physicians had succeeded in having Agnodice condemned to death for practising on her own sex, hers was made a test case through the opposition of the women citizens to the cruel decree. Many Greek women won distinction in medicine, Hippocrates, Galen, and Pliny making frequent reference to their work and their prescriptions. Origenia, Aspasia, and Cleopatra won special distinction for themselves in the field of medicine. Aspasia (not the wife of Pericles) first used and taught podalic version, as pointed out by Hergott, in those cases of cephalic presentations where the oncoming head cannot advance, and her method was used for centuries, then lost, to be revived in modern times. Metradora wrote a book on diseases of women, and her reputation was so great—so widely acknowledged—that a statue was erected in her honor at Flos, in Asia Minor, and a manuscript of her work is still preserved in Florence. Latin writers make frequent mention of medica, in their writings, and epigraphic monuments, not only in Italy and Greece, but also in France and Spain, are incontestable proof of the successful practice of women in the field of medicine, as well as that of obstetrical art. Victoria, Leopardia, and Theodosia, are the names of women who practised in Rome so successfully that their names are still preserved nearly twenty centuries after their death. Many women physicians are found among the early Christian martyrs.

Throughout the world women have taken the lead in founding hospitals, as well as in hospital reform. The idea of the hospital originated with Fabiola, who built the first hospital at Ostia, on the Tiber, then the port of Rome. This innovation excited a great deal of comment from contemporaries. In the fifth century Helena erected hospitals on the routes between Rome and Con-

stantinople, so that the suffering and wounded soldiers might receive the care and attention they needed; and the humane Isabella of Spain was the first to erect hospital camps on the battlefield. During the war with the Moors she had these tents furnished at her own charge, with medicines, appliances, and attendants. The camps were known as the "Queen's Hospitals," and were the forerunners of the army hospitals of civilized nations. We all recall that it was Florence Nightingale who cut through the swathes of red tape when wounded soldiers were dying by thousands through official bungling, how she brought comfort and care and life to dying men when the brains of her male compeers had "given signs of inanition."

It would be invidious to pass over our own Clara Barton, who founded the American Red Cross, and Dorothea Dix, who brought reform to our hospitals for the insane; Elizabeth Fry's work in prison reform needs no comment. Dr. Elizabeth Blackwell founded in 1861 the organization which developed into the Sanitary Commission, and raised $92,000 for sick and wounded soldiers. Dr. Blackwell voluntarily resigned from the organization she had founded because of the professional jealousy displayed by the male physicians with whom she was necessarily brought in contact, and she did not wish sex prejudice to obstruct the great work she had begun.

During medieval times many women became famous because of their medical and surgical skill. Of these perhaps the most remarkable was Hildegarde (born 1108), of Bingen on the Rhine. This lady wrote on many branches of science, and her writings are considered the most important of the kind written during the middle ages prior to the time of Albertus Magnus. Hildegarde wrote books on materia medica, pathology, physiology, and therapeutics. In her work, "Liber Simplicis Medicinæ," she shows her knowledge of science to be far in advance of her age, and in "Liber Compositæ Medicinæ," and another work consisting of nine volumes, she shows a medical knowledge as remarkable as it was profound. Several editions of her last work were printed in the early part of the sixteenth century. The late Rudolph Virchow declares this work curiously complete in spite of its age. One of Hildegarde's books has been published recently by Teubner of Leipsic, and attention has been directed to the fact that the author was acquainted with many subjects of which the male doctors of the middle ages were ignorant. Hildegarde was an abbess, and such medical knowledge as hers explains why convents were centers of healing, where reigned, not magic, but scientific knowledge. The hospitals connected with the convents were greatly superior to those erected later in the seventeenth, eighteenth and nineteenth centuries. The latter, instead of being centers of life, were often breeding places of death. They were devoid of light and sunshine, while the convent hospitals presided over by women possessed an abundance of good water, light, and air, and their records put to shame the boasted progress which was actually retrogression. The mortality of State hospitals from the seventeenth to the middle of the nineteenth centuries was often as high as 50 and 60 per cent., and as it was women who had originated hospitals and carried them to a high state of proficiency, so it was women who did so much to effect their reformation. It was Mme. Necker and Florence Nightingale, the superiors of nursing sisterhoods, and other women who relieved the distressing hospital conditions which had developed under male administration. What women are really capable of has been shown in one little spot of our world. There is at least one place where they have had equal opportunity, equal encouragement, and equal emolument. In such a place it is perfectly fair and just and right to make comparisons between the sexes. At Salerno on the Gulf of that name was the mother of medical schools, a part of the famous university. Salerno was about 600 years ahead of most of our institutions of learning. Here men ond women met on equal terms. To attain a medical degree in this school it was necessary to take a preliminary course of three years, followed by a five years' course in medicine, and completed with one year's work with a skilled physician. What was the result? Never in the history of the world was there such a galaxy of learned, able, and famous women. Many filled chairs in the university. And of these women was Trotula, author of a book on the diseases of women, written in the eleventh century, and published several times after the invention of printing. She was the first to describe the operation of perineorrhaphy, and advocated its performance as soon as the laceration occurred. It may be remarked that nine centuries later the neglect of this advice has caused untold suffering and disability. Contemporary professors of medicine quoted freely from the writings of women. One of the women graduates was licensed to follow her profession by no less a person than King Ladislaus of Poland. Some of the other famous women were Abella, Rebecca de Guarna, Mercuriade, and Francesca. The names of these women have survived about 1,000 years.

The school at Salerno was considered the fount of medical authority all over Europe, and questions were referred to it as late as the eighteenth century.

In 1292 there were eight women doctors in Paris, as well as those in other parts of France. Some were surgeons, and were called cyurgicæ. But the old spirit of greed and intolerance was as active in Paris in the thirteenth century as it was in ancient Greece, when Agnodice was condemned to death for practising medicine on her own sex. In 1220, while the medical women of Salerno were covering themselves with never-withering laurels, the Faculty of Medicine in Paris had succeeded in obtaining an edict prohibiting anyone but themselves from practising medicine. One of their first victims was Jacobe Felicie, a medical woman who had achieved remarkable reputation in caring for the diseases peculiar to her sex. Her skill, her humanity, her respectability was undeniable. She was haled to court, where witnesses expressed their deepest gratitude to her and their admiration for her work; yet she was condemned to pay an enormous fine, and her sex was prohibited from practising their profession. According to the faculty the crime of this woman consisted in putting "her sickle into the harvest of others." It mattered not that women refused to consult men with regard to their intimate ailments until it was too late to help them. The greed of wealth and power was uppermost in their minds, so vested rights crushed ruthlessly for gain all gratitude and womanly modesty, and women doctors received a crushing blow from which they had not recovered at the end of many centuries. "Isabella of Castile was not the first of the long list of victims who, for lack of a doctor of their own

sex have been sacrificed through womanly modesty, and more's the pity, she will not be the last."

In Italy, in the eighteenth century, Anna Morandi Mazzelini fashioned those wonderful wax models which are still the pride of the anatomical museum of Bologna.

In England there was an ecclesiastical law dating from the time of Edgar permitting women to practise medicine as well as men. This law was abolished in the time of Henry V, to be reenacted in the time of Henry VIII. This change was brought about because the grasping, selfish spirit of the male physicians was proving hurtful to society. In the words of the law, "The Companie and Fellowship of Surgeons of London myinding only their own lucres and nothing the profit or ease of the diseased or patient have sued, vexed, and troubled the aforesaid honest psones" who were henceforth to be allowed "to practyse without sute, vexation, penalty, or loss of their goods." Wherever men had power to prevent it, women were denied the privilege of such medical education as the times afforded, as well as legal right to practise their chosen profession, to hold lawful title or receive honor or emolument such as the men demanded for themselves. But there is always rebellion against injustice and unnatural laws obtained by force or fraud, so all over the continent of Europe, from the earliest times, women acquired a knowledge of the human body, of science, of natural laws and of the medicinal properties of herbs. They learned how to make decoctions, and extracts, and essences from the plants they had sorted and gathered, and the combined knowledge they had acquired they used to soothe and heal the human body. This medical knowledge descended from mother to daughter through centuries, with additions from age to age, and the skill of these "Wise Women" was widely acknowledged.

Paracelsus states with regard to his famous writings that they were but the compilation of knowledge obtained from the "Wise Women." It may be noticed that it is the women and not the men of primitive races, as a rule, who are learned in the healing properties of plants. The wise women were credited with unusual psychic knowledge and with ability in making scientific discoveries. Indeed, the unusual skill they had acquired was so remarkable that the ignorant and credulous populace thought this wonderful power must have been acquired in some uncanny way, perhaps from the devil himself, and when the persecution of witches began, even those who had been healed by the kindly offices of the wise women were ready to testify against them. It has been said that the so-called witches were the scientists of the age, though like Severus, and other scientific men, they paid for their skill and ability with their lives. Michelet makes the following statement in "La Sorcière: "The only physician of the people for a thousand years was the witch. The emperors, kings, popes, and barons had indeed the doctors of Salerno, then Moors and Jews, but the bulk of the people in every state, it might as well be called the world, consulted none but the 'wise women'." The term witch, is derived from *wekken*, to know, or to prophesy, the corresponding word in the Slavonic and German languages having the same signification. In the fourteenth century the church decreed that any woman who healed without having duly studied was a witch, and should suffer death; yet in 1517, at Basle, Paracelsus threw all his medical works into the fire, saying that he possessed no knowledge save that obtained from the witches.

The knowledge of drugs which these women possessed can be traced back between five hundred and a thousand years, and it is of great interest at the present time to note that they used anesthesia to mitigate the pains of childbirth. The drugs mainly used for this purpose were obtained from the Solanaceæ family, which includes belladonna and the famous scopolamine; the latter drug has recently been introduced into the United States largely through the instrumentality of two laywomen who have been roundly berated for their pains. The use of scopolamine therefore is but a revival of a method discovered and used by the wise women hundreds of years ago. Michelet says: "I make no doubt that this (Paracelsus') admirable work on the diseases of women . . . so large, so deep, so tender, came forth from his special experience of those women to whom others went for aid, the witches, who acted as midwives; for never in those days was a male physician admitted to the women. . . . In childbirth a motherly hand instilled the gentle poison, casting the mother herself into a sleep, and soothing the infant's passage after the manner of modern chloroform, into the world." The witch, it is said, "was the profoundest thinker and the most advanced scientist of those ages," so that the attack waged against the wise women was an assault upon wisdom and science, the usual thing in the dark ages. Accusations of witchcraft were common against the wise women. "Male physicians not skillful enough to cure disease would deliberately swear there could be but one reason for their failure—the use of witchcraft against them." The persecuted women were compelled to abandon their long-practised profession of medicine and surgery. They suffered torture and death because of their knowledge and skill, and unable to longer withstand the persecution, left the field for a time to their male competitors.

The Thracians named their State "Thracia," in honor of a noted woman physician who discovered the use of aconite, still a much used and valuable drug; aspidium, a drug we regard as indispensable in the treatment of tapeworm, was discovered by Mme. Mouffler, and was purchased from her in 1775 by Louis XVI for the sum of 1,800 francs. Edward Jenner obtained from an English milkmaid the information which he afterward used in vaccinating against smallpox, and Lady Mary Wortley Montagu introduced the practice of inoculation with smallpox virus as a prophylactic against the disease into western Europe. Our valuable specific against malaria—quinine—is obtained from cinchona bark, the use of which in Europe was made general through its introduction by the countess of Chinchon, vicereine of Peru. Lady Chinchon was cured of malaria herself in 1638 while residing in Lima. On her return to Spain she made the drug widely known. The name of the countess is now borne by eight score species of the trees which constitute the genus cinchona.

Mme. La Chapelle and M. Chaussure revived the use of belladonna during parturition, thus acknowledging the previous scientific skill of the wise women who were burned to death because of the envy and malice excited by their ability.

Louise Bourgeois was a celebrated midwife who was educated in the Paré school for midwives. It was Ambrose Paré who revived the practice of

podalic version discovered by the Greek woman physician, Aspasia. Louise officiated at the birth of many royal children, and has left interesting writings behind her. At this period men were not admitted to the lying-in room. Mme. Boivin practised at the Paris Maternité. She published a work on hydatid mole, after which she received an honorary degree—that of M.D.—from Marburg University.

Many midwives made themselves famous, and among these were Regina von Siebold, Carlotta, her daughter, and Theresa Frei. The first had the honorary degree of doctor of obstetrics conferred upon her by the University of Giessen in 1819. (Queen Victoria was one of her patients.) Her daughter also won an honorary degree in obstetrics from the same university, as well as Frau Frei. This university honored itself in honoring these self-made women, for these women owed nothing to college or school, but everything to their own ability. The first woman to win a doctorate in Germany was Dorothea Erxleben, but she received this as a special favor from Frederick the Great. Marie Bovin entered upon her career after the French Revolution. She introduced a number of improvements in the lying-in hospitals, and trained a large number of women in midwifery. Her writings on obstetrics secured for her a reputation which was unsurpassed by any. Her "Pratique des Accouchements," in three volumes, is based on an experience gained in 50,000 labors. This book was long regarded as a standard work, and exerted a remarkable influence in scientific and medical circles. Another of her books passed through several editions and was translated into several languages. These clever women were not admitted to classrooms or laboratories. They owed nothing to colleges or governments, and were obliged to overcome countless obstacles placed in their way.

Bologna afterward became a great center of science and learning, and here again was witnessed a blossoming of female genius. There is an extended list of the names of women in the honor list of Bologna, names famous throughout Europe, "the rivals, sometimes the superiors, of the ablest men among their distinguished colleagues."

Napoleon established a chair of obstetrics for Maria dalle Donne in her alma mater. She had been a poor peasant girl. The position thus created was filled until the lady's death in 1842.

Mme. Curie's discovery of radium, a substance of such scientific promise in the medical world, and the attitude of the medical members of the French Academy toward this genius when the question of admitting her to its membership came up, show the persistent and consistent refusal of men to recognize or reward unusual skill or ability when the possessor is a woman.

When women re-entered the field of medicine they found themselves in the country of an enemy. Men occupied exclusively the field which had been woman's when the race was in its cradle, and for thousands of years afterward. The opposition to be faced was as bitter as it was unceasing and unscrupulous. The doors of medical schools were closed in the woman's face. Medical men who dared to meet her in consultation were promptly disciplined. She was refused membership in medical societies and driven out of operating theaters where the patient under the knife was a woman. Hospitals where her sex received medical and surgical aid refused her admittance, while it welcomed women as nurses. Misrepresentation, intimidation, calumny, and abuse became familiar, as they are to all invaders of vested rights and to all those who would enter the enclosure of the trades unionist. There were notable exceptions, to be sure, but leaders in the profession were leaders in the tactics to which reference has been made.

Elizabeth Blackwell's entrance into the field of medicine in the middle of the last century was a distinctly epoch-making event. The initiative, energy, and intellectual power necessary to the successful pursuit of her object were phenomenal, and if instead of wasting her precious ability in fighting for a foothold, the door of medical opportunity had been open to her as it was to the most mediocre men, humanity would have been benefited. Yet, handicapped as she was, our first medical woman has left a name behind which will be remembered as long as the English language is spoken. Medical women are still handicapped, and so long as these handicaps are allowed to remain society is the loser. The public should insist that medical men and medical women shall enjoy precisely the same advantages, not only in college, but also in hospital and dispensary, for while women are denied the advantage of appointment on the visiting staffs of our hospitals, it is absurd to expect that they can rival the work of those who hold such positions. The critics who say "we have no famous women doctors or women surgeons" must be ignorant of the way skill in diagnosis and brilliancy of technique are acquired and developed. If the persons making such statements are not ignorant they are disingenuous.

Women have been so long in tutelage that perhaps it should not be considered strange that even the college woman who has studied seven or eight years should still be considered unfit to choose without assistance the branch of medicine for which she is best suited. But it is surely a distinctly unfriendly act to try to discourage her at the outset of her career, no matter how wise or altruistic the adviser may be. Nature's laws, however, have a way of asserting themselves to the very decided discomfiture of some biologists and scientists who have added a few laws of their own making to those of nature's creation. What women may achieve in medicine can never be known until she enjoys the same opportunities and the same encouragement as her brother. And what branch of medicine she is best fitted for will not be known, either, if she is pushed into this or that niche and advised with forcible kindness to stay there. Woman's sympathy and conscientiousness specially fit her to take up and pursue a profession which requires much sympathy, and which confers a great responsibility upon those who follow it. Less than half a century ago Britain tried by unjust and even brutal methods to keep women out of the field of medicine. To-day a joint appeal has been issued by the anti-suffragist Lord Curzon, Mr. Asquith, and Mr. Balfour for the training of medical women, so increasingly large numbers of women are studying medicine, and the Free Royal Hospital school is doubling its facilities to meet the demand. The Endell Street Hospital in London is entirely in the charge of women physicians, who have equal army rank with male doctors in other hospitals. They wear khaki uniforms, with the insignia of their rank. Contrary to expectation, we have a number of expert women surgeons. In the obstetrical field they have held the fort for thousands of years, and

he would be rash indeed who would say that here they should yield the right of way to man. England has two women surgeons in the field at present, Germany one, and Russia three, France has one woman surgeon to her credit on the field of battle.

That women desire physicians of their own sex is well known, when they know it is possible to have them, for many men and women even in our own city have never met a woman physician. Notice the dispensaries crowded with women patients where the attending physicians are exclusively women, though other more pretentious and impressive dispensaries abound.

Medical women are not begging for favors, but they desire a square deal—a fair field and no favor. Shall they ask in vain?

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FERMENTED MILK AND WHEY IN INFANT FEEDING.

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In a previous article[1] the rationale of feeding infants with fermented milk was considered in detail. Since then the smallest amount of water compatible with proper percentages has been used in the formulas, whey having been substituted for it as much as possible. This change has been made in order to take advantage of the saline constituents and the "vitamins"[2,3] of whey.

In the past, the objection to whey in milk modifications has been the necessity of heating it, before adding it to the milk, to a temperature sufficient to destroy the rennet without coagulating the whey proteins.[4] With fermented milk and whey mixtures no heating of the whey is required as the flocculent curds of coagulated casein in the fermented milk are unaffected by rennet. The whey can be conveniently prepared from the skimmed milk remaining in the bottle from which the top milk for the formula has been removed.

A series of analyses were made for me by Dr. Harris Moak of the Kings County Milk Commission to determine the composition of whey made from hand-skimmed milk. Dr. Moak removed the cream with a dipper from bottles of milk containing, respectively, 4 per cent., 4.40 per cent., 5.20 per cent., and 5.60 per cent. of fat. Whey was made from the resulting skimmed milk in the manner described in a subsequent paragraph. It was observed that a yield of 6 ounces of whey was obtained from each 8 ounces of skimmed milk employed.

As seen by the accompanying table, very little difference exists in the composition of whey made from skimmed milks originally of different degrees of richness. Hence, for all practical purposes we may take the average of these findings and consider the composition of whey made from hand-skimmed milk to be in all instances as follows:

Whey
(Made from Hand-Skimmed Milk)

Fat	0 03 per cent.
Proteins	0 85 per cent.
Sugar	5 18 per cent.
Ash	0 33 per cent.

The methods employed in determining the fat, proteins, sugar, and totals solids were the same as those used in the former analyses of top milks.[1]

The bacterial count of the milk is lowered in the process of making the whey as shown by two samples of skimmed milk with a bacterial count of 1,950 per c.c. and 3,150 per c.c., respectively. Whey made from these showed a count of only 1,090 per c.c. and 930 per c.c., respectively. This probably is due to the proteolytic effect of the pepsin.

Milk sugar has replaced the malt sugar recommended in the previous article,[1] the best brands of the former having been found, upon analyses, to be very pure products. One ounce by volume of most milk sugars represents approximately one-half ounce by weight and has been so considered in calculating the accompanying formulas. However, as this does not hold true for all brands, the weight of an ounce dipperful of the one selected should be ascertained.

The addition of bicarbonate of soda to the fermented milk to decrease the acidity and thereby make it more palatable, has been discontinued. The milk is sufficiently palatable without it and the greater acidity is desirable, being more antagonistic to pathogenic bacteria. The germicidal effect of lactic acid in milk has recently been emphasized by Heinemann[6] of the Department of Bacteriology and Hygiene at the University of Chicago.

The ideal temperature for fermenting the milk has been found to be 98 deg. Fahr., in which temperature a sufficient amount of lactic acid to destroy harmful bacteria is most speedily produced.

The armamentarium has been increased, consisting in its entirety of the following: the semi-circular metal compartment described in the previous article,[1] lamp, thermometer, Kreamer No. 8 wash boiler in which to sterilize the utensils, large-sized enameled skimmer to remove small articles from the boiler after sterilization, Chapin one-ounce cream dipper, fine-meshed strainer, six one-quart Lightning preserve jars with rubber washers, two one-pint glass tumblers, two three and a half quart enameled pitchers, enameled pot to be used for the water bath in making the whey, a long-handled fork, eight one-foot square pieces of the finest-meshed cheese cloth, two enameled pans, one to be

Whey Made from Hand-Skimmed Milk.

4.00 Per Cent. Fat Milk.					4.40 Per Cent. Fat Milk.					5.20 Per Cent. Fat Milk.					5.60 Per Cent. Fat Milk.				
Per Cent. Fat	Per Cent. Proteins	Per Cent. Sugar	Per Cent. Ash	Per Cent. Total Solids	Per Cent. Fat	Per Cent. Proteins	Per Cent. Sugar	Per Cent Ash	Per Cent. Total Solids	Per Cent. Fat	Per Cent. Proteins	Per Cent. Sugar	Per Cent. Ash	Per Cent. Total Solids	Per Cent. Fat	Per Cent. Proteins	Per Cent. Sugar	Per Cent. Ash	Per Cent. Total Solids
0.02	0 839	5 07	0 355	6.80	0 02	0.811	5 18	0 325	6 87	0.02	0 778	5.13	0.338	7 15	0.08	0 998	5.40	0 375	7 05
0.07	0.829	5 20	0.319	7.18	0 015	0.873	5.36	0 326	7 43	0.015	0 797	5 11	0 327	6 92					
					0 05	0.908	5 04	0 325	6.99										

used as a sterile receptacle for the small utensils while preparing the mixtures and the other to be kept filled with boiling water to quickly sterilize any article that may become contaminated while in use, and a No. 50½ Chattilons straight spring balance scales graduated in quarter pounds and weighing up to thirty pounds.

In estimating the depth of the cream layers, measurements as small as quarter dipperfuls have been found practical. Hence, the following has been adopted to secure greater accuracy in judging the richness of a given bottle full of milk:

4.00 Per Cent. Fat Milk	4.40 to 4.80 Per Cent. Fat Milk	5.20 to 5.60 Per Cent. Fat Milk
Cream layer, less than $5\frac{1}{2}$ dipperfuls	Cream layer, $5\frac{1}{2}$ to $6\frac{1}{4}$ dipperfuls	Cream layer, more than $6\frac{1}{4}$ dipperfuls

In preparing a formula in which only top milk is used, the richness of a given bottle full of milk may be determined as follows:

Dip off the top 4 dipperfuls into a pint tumbler. Dip off the 5th dipperful into a second pint tumbler. Dip off the 6th dipperful into a one-half pint tumbler to avoid confusion. Dip off and discard the 7th dipperful. Note the amount of cream removed. Depending upon the amount of top milk required, use the 4 dipperfuls in the first tumbler; the 4 dipperfuls in the first tumbler mixed with the 1 dipperful in the second tumbler; or, the 4 dipperfuls in the first tumbler mixed with the 1 dipperful in the second tumbler and the 1 dipperful in the third tumbler.

In preparing a formula in which whole milk is used, it will be more convenient to adopt the following procedure:

Dip off the cream from the bottle from which the whole milk is to be taken and note the number of dipperfuls removed. Mix the cream thus dipped off with the rest of the contents of the bottle from which it was taken.

The majority of healthy infants will require at the different ages the percentages of proteins given in the accompanying formulas. However, we must individualize. A child progressing favorably with a given formula may continue upon it longer than indicated in the schedule. Conversely, a failure to steadily gain should prompt us to advance to a stronger formula earlier than there directed. During the first six months a weekly gain in weight of eight ounces together with normal stools (two or three yellow, mushy, homogeneous stools daily) is desired.

Infants feeble from prematurity, sickness, or previous faulty feeding should, on account of the low ebb of their assimilative functions, be given for a time mixtures with a lower protein content than that indicated by their age, the subsequent use of richer ones being permitted with the return of full absorptive powers, as will be shown by the continuance of normal stools under such advance.

Feeble infants should also, because of their gastric intolerance, be given for a short time a low percentage of fat, the subsequent advance to the highest percentage being as rapid as possible on account of the value of the butter fat *per se* and the "vitamins"[2,3] associated with it.

The formulas, the calculations by which they are obtained, and the method of their preparation are shown herewith.

(MIDDLING INFANTS)
AGE: 6 TO 8 MONTHS — 4.40 TO 4.80 % FAT MILK

	% Fat	% Prot.	% Sug.	% Ash	Parts	% Fat	% Prot.	% Sug.	% Ash
Top, 5 oz. after fermenting	23.90	2.71	3.39	0.55	=1	23 90	2.71	3.39	0.55
Whole milk, 3 oz. after fermenting	4.60	3.20	4.11	0 70	= ⅗	2 76	1 92	2 46	0.42
Whey, 15 oz	0.03	0.85	5.18	0.33	=3	0.09	2.55	15.54	0.99
Water, 1 oz					= ⅕				
					4⅘)	26.75	7.18	21.39	1.96
The above 24 oz. will thus contain						5.57	1.49	4 45	0.40
6.50%−4.45%=2.05%=percentage of additional sugar needed.									
24 oz.×2.05%=approximately ½ oz.=amt. of sugar required by weight.									
1 oz. of milk sugar by volume=approximately ½ oz. by weight. Therefore replacing ½ oz. of water with 1 level dipperful (½ oz. by weight) of milk sugar adds approximately 2.05%.								2.05	
Composition of complete mixture						5 57	1.49	6 50	0.40

(MIDDLING INFANTS)
AGE: 6 TO 8 MONTHS — 4.40 TO 4.80% FAT MILK

Dip off into a pitcher the cream from a quart bottle full of milk that has not been disturbed. Note the number of these dipperfuls in order to determine the richness of the milk. Pour the rest of the contents of the bottle into the same pitcher. Pour the entire amount back into the bottle. Again pour the contents of the bottle into the pitcher and back into the bottle; that is, four pourings in all.

Dip off into the empty pitcher 3 dipperfuls of this mixed milk.

Skim off the top 5 dipperfuls from another quart bottle full of milk that has not been disturbed and add these to the above milk in the pitcher.

Add either the contents of a vial of the Bulgarian bacillus culture (add this every fourth day) or ½ teaspoonful of the preceding day's fermented milk.

Pour into a quart preserve jar. Seal it and stand without disturbing in 90 deg. to 100 deg. (best 98 deg.) F. for 24 hours.

Rub through a fine meshed strainer to make the flocculi small enough to pass readily through the hole in the nipple. Be sure to leave none on the strainer.

Excepting every fourth day take ½ teaspoonful of this and add it to the next milk to be fermented.

Add to the above fermented and strained milk 15 dipperfuls of whey, ½ dipperful of cold water, and 1 level dipperful of milk sugar.

Pour the completed mixture into two quart preserve jars. Seal them, immediately place in the ice chamber of a refrigerator next to ice and there keep them until needed. At feeding time shake well, pour out the required amount, then immediately reseal the jar, and replace it on ice. The amount poured out should, without delay, be warmed and fed.

The method by which the amount of the above mixture may be doubled is obvious. It may be increased by one-half as follows:

Dip off into a pitcher 4½ dipperfuls from a bottle full of mixed milk.

Skim off into a pint tumbler the top 5 dipperfuls from each of a second and a third quart bottle full of milk that has not been disturbed. Pour these 10 dipperfuls int o another pint tumbler, then back into the first tumbler, and repeat this procedure once; that is, four pourings in all. Add only 7½ dipperfuls of these to the above milk in the pitcher. Add 1½ times the above amounts of the other ingredients.

The following are imperative: Use Certified Milk.

The bottles of milk when received from the dealer and the jars containing the completed mixture, should immediately be placed in the ice chamber of a refrigerator either in the middle of the chamber with a cake of ice on either side of and in contact with them, or what is better but usually impractical, in a pail full of cracked ice. They should be kept in an upright position until needed.

Use a Chapin cream dipper, that has been accurately made to hold exactly one fluid ounce, to measure the milk, whey, water, and milk sugar. The first dipperful from a bottle full of milk should be removed with a teaspoon to avoid spilling.

A dozen vials of a culture of Bulgarian bacilli should be purchased as often as required direct from the laboratory of the manufacturer, immediately placed in the ice chamber of a refrigerator next to the ice and there kept until used.

The water used in the formulas should be cold and should have been either distilled or boiled for 5 minutes.

All utensils should be boiled for 5 minutes just before using them.

Feedings should be warmed by standing nursing bottle containing same in water not hotter than hand can bear, as too great a heat will toughen the curd.

Use a medium sized nipple with a single opening. Make opening the proper size by running through it the red hot point of a No. 7 sewing needle, the eye end of the needle being inserted into a cork to protect the fingers. After each nursing

Formulas for Very Feeble Infants

Age in Months	4.00 Per Cent. Fat Milk. — Cream layer, less than 5½ dipperfuls							4.40 to 4.80 Per Cent. Fat Milk. — Cream layer, 5½ to 6¼ dipperfuls							5.20 to 5.60 Per Cent. Fat Milk. — Cream layer, more than 6¼ dipperfuls.						
	oz. Top Milk	oz. Whole Milk	Vials of Culture or Teaspoonfuls of Fermented Milk		oz. Whey	oz. Water	oz. Milk Sugar	oz. Top Milk	oz. Whole Milk	Vials of Culture or Teaspoonfuls of Fermented Milk		oz. Whey	oz. Water	oz. Milk Sugar	oz. Top Milk	oz. Whole Milk	Vials of Culture or Teaspoonfuls of Fermented Milk		oz. Whey	oz. Water	oz. Milk Sugar
1st	Top 4	1	1	½	13	4⅓	1¾	Top 5	3	1	½	10	10¾	2½	Top 6	..	1	½	18	7	2
1– 2	Top 4	4	1	½	10	7¼	1½	Top 5	3	1	½	13	8	2	Top 6	2	1	½	16	9	2
2– 4	Top 4	5	1	½	10	7	2	Top 5	4	1	½	14	7	2	Top 6	6	1	½	10	15½	3½
4– 6	Top 4	8	1	½	7	5	2	Top 5	6	1	½	14	7	2	Top 6	6	1	½	15	10⅔	2¾
6– 8	Top 4	13	2	1	3	12⅔	2¾	Top 4	11	1	½	7	11⅔	2¾	Top 6	10	1	½	12	14½	3
8–10	Top 4	14	2	1	9	6¾	2½	Top 4	14	2	1	11	7¾	2½	Top 6	14	2	1	16	11½	3
10–12	Top 4	18	2	1	11	4	2	Top 4	18	2	1	14	5	2	Top 6	20	2	1	18	10⅓	3½
12–13	Top 4	23	2	1	15		2	Top 4	21	2	1	18	1	2	Top 6	28	3	1½	18	11	4
	Approximate Composition of Formulas: Fat 4.50% in each. Proteins 1.04% in 1st, 1.16% in 2nd, 1.23% in 3rd, 1.36% in 4th, 1.50% in 5th, 1.69% in 6th, 1.91% in 7th, and 2.12% in 8th. Sugar 6.50% in each. Ash gradually increases from 0.30% in 1st to 0.50% in last.							Approximate Composition of Formulas: Fat 4.50% in each. Proteins 1.05% in 1st, 1.14% in 2nd, 1.23% in 3rd, 1.35% in 4th, 1.48% in 5th, 1.70% in 6th, 1.91% in 7th, and 2.07% in 8th. Sugar 6.50% in each. Ash gradually increases from 0.27% in 1st to 0.50% in last							Approximate Composition of Formulas: Fat 4.50% in each. Proteins 1.04% in 1st, 1.16% in 2nd, 1.25% in 3rd, 1.36% in 4th, 1.48% in 5th, 1.69% in 6th, 1.90% in 7th, and 2.08% in 8th. Sugar 6.50% in each. Ash gradually increases from 0.29% in 1st to 0.47% in last.						

Formulas for Feeble Infants

Age in Months	4.00 per Cent. Fat Milk — Cream layer, less than 5½ dipperfuls							4.40 to 4.80 per Cent. Fat Milk — Cream layer, 5½ to 6¼ dipperfuls							5.20 to 5.60 per Cent. Fat Milk — Cream layer, more than 6¼ dipperfuls						
	oz. Top Milk	oz. Whole Milk	Vials of Culture or Teaspoonfuls of Fermented Milk		oz. Whey	oz. Water	oz. Milk Sugar	oz. Top Milk	oz. Whole Milk	Vials of Culture or Teaspoonfuls of Fermented Milk		oz. Whey	oz. Water	oz. Milk Sugar	oz. Top Milk	oz. Whole Milk	Vials of Culture or Teaspoonfuls of Fermented Milk		oz. Whey	oz. Water	oz. Milk Sugar
1st	Top 4	..	1	½	13	2½	1	Top 5		1	½	13	5¼	1½	Top 6	..	1	½	13	9	2
1– 2	Top 4	1	1	½	14	1½	1	Top 5	3	1	½	10	8	2	Top 6	..	1	½	18	4¼	1½
2– 4	Top 4	4	1	½	8	6¼	1½	Top 5	3	1	½	13	5¼	1½	Top 6	2	1	½	15	7	2
4– 6	Top 4	5	1	½	9	5¼	1½	Top 5	4	1	½	13	5¼	1½	Top 6	4	1	½	14	8	2
6– 8	Top 4	8	1	½	6	7	2	Top 5	6	1	½	12	5¼	1½	Top 6	6	1	½	13	8¾	2½
8–10	Top 4	13	2	1	3	8¾	2½	Top 4	11	1	½	7	8	2	Top 6	10	1	½	15	7¾	2½
10–12	Top 4	14	2	1	9	3¼	1½	Top 4	14	2	1	11	4	2	Top 6	14	2	1	17	5¾	2½
12–13	Top 4	18	2	1	10	1¼	1½	Top 4	18	2	1	14	1¼	1½	Top 6	20	2	1	17	5⅔	2⅔
13–14	Top 4	23	2	1	8	2	2	Top 4	21	2	1	14	¼	1½	Top 6	26	2	1	18	5½	3
	Approximate Composition of Formulas: Fat 5.00% in each. Proteins 1.04% in 1st, 1.17% in 2nd, 1.24% in 3rd, 1.35% in 4th, 1.49% in 5th, 1.70% in 6th, 1.91% in 7th, 2.11% in 8th, and 2.24% in 9th. Sugar 6.50% in each. Ash gradually increases from 0.32% in 1st to 0.51% in last.							Approximate Composition of Formulas: Fat 5.00% in each. Proteins 1.02% in 1st, 1.17% in 2nd, 1.26% in 3rd, 1.33% in 4th, 1.48% in 5th, 1.68% in 6th, 1.90% in 7th, 2.11% in 8th, and 2.24% in 9th. Sugar 6.50% in each. Ash gradually increases from 0.29% in 1st to 0.53% in last							Approximate Composition of Formulas: Fat 5.00% in each. Proteins 1.02% in 1st, 1.17% in 2nd, 1.25% in 3rd, 1.36% in 4th, 1.47% in 5th, 1.69% in 6th, 1.90% in 7th, 2.11% in 8th, and 2.24% in 9th. Sugar 6.50% in each. Ash gradually increases from 0.26% in 1st to 0.49% in last.						

Formulas for Middling Infants

Age in Months	4.00 per Cent. Fat Milk — Cream layer, less than 5½ dipperfuls							4.40 to 4.80 per Cent. Fat Milk — Cream layer, 5½ to 6¼ dipperfuls							5.20 to 5.60 per Cent. Fat Milk — Cream layer, more than 6¼ dipperfuls						
	oz. Top Milk	oz. Whole Milk	Vials of Culture or Teaspoonfuls of Fermented Milk		oz. Whey	oz. Water	oz. Milk Sugar	oz. Top Milk	oz. Whole Milk	Vials of Culture or Teaspoonfuls of Fermented Milk		oz. Whey	oz. Water	oz. Milk Sugar	oz. Top Milk	oz. Whole Milk	Vials of Culture or Teaspoonfuls of Fermented Milk		oz. Whey	oz. Water	oz. Milk Sugar
1st	Top 4	..	1	½	10	3½	1	Top 5		1	½	10	6¼	1½	Top 6	..	1	½	10	9	2
1– 2	Top 4	..	1	½	13	⅔	⅔	Top 5		1	½	14	2½	1	Top 6	..	1	½	14	5¼	1½
2– 4	Top 4	1	1	½	13	⅔	⅔	Top 5	3	1	½	8	7¼	1½	Top 6	..	1	½	16	3½	1½
4– 6	Top 4	4	1	½	8	4⅓	1⅓	Top 5	3	1	½	11	4⅓	1⅓	Top 6	2	1	½	14	5¼	1½
6– 8	Top 4	4	1	½	12	½	1	Top 5	3	1	½	15	½	1	Top 6	2	1	½	18	1⅓	1⅓
8–10	Top 4	8	1	½	8	3¼	1½	Top 5	6	1	½	15	½	1	Top 6	6	1	½	16	3¼	1½
10–12	Top 4	12	1	½	7	3¼	1½	Top 4	11	1	½	9	3¼	1½	Top 6	10	1	½	16	3	2
12–13	Top 4	14	2	1	9	⅓	1⅓	Top 4	14	2	1	11	1¼	1½	Top 6	14	2	1	16	3	2
13–14	Top 4	18	2	1	8	¼	1½	Top 4	18	2	1	11	¼	1½	Top 6	20	2	1	16	3	2
	Approximate Compositon of Formulas: Fat 5.50% in each. Proteins 1.02% in 1st, 1.16% in 2nd, 1.25% in 3rd, 1.36% in 4th, 1.52% in 5th, 1.69% in 6th, 1.91% in 7th, 2.11% in 8th, and 2.26% in 9th. Sugar 6.50% in each. Ash gradually increases from 0.30% in 1st to 0.52% in last.							Approximate Composition of Formulas: Fat 5.50% in each. Proteins 1.00% in 1st, 1.15% in 2nd, 1.24% in 3rd, 1.35% in 4th, 1.49% in 5th, 1.68% in 6th, 1.91% in 7th, 2.09% in 8th, and 2.28% in 9th. Sugar 6.50% in each. Ash gradually increases from 0.27% in 1st to 0.54% in last.							Approximate Composition of Formulas: Fat 5.50% in each. Proteins 1.04% in 1st, 1.18% in 2nd, 1.24% in 3rd, 1.35% in 4th, 1.47% in 5th, 1.69% in 6th, 1.90% in 7th, 2.07% in 8th, and 2.27% in 9th. Sugar 6.50% in each. Ash gradually increases from 0.25% in 1st to 0.50% in last.						

FORMULAS FOR ROBUST INFANTS

Age in Months	4.00 PER CENT. FAT MILK — CREAM LAYER, LESS THAN 5½ DIPPERFULS							4.40 TO 4.80 PER CENT. FAT MILK — CREAM LAYER, 5½ TO 6¼ DIPPERFULS							5.20 TO 5.60 PER CENT. FAT MILK — CREAM LAYER, MORE THAN 6¼ DIPPERFULS						
	oz. Top Milk	oz. Whole Milk	Vials of Culture	or Teaspoonfuls of Fermented Milk	oz. Whey	oz. Water	oz. Milk Sugar	oz. Top Milk	oz. Whole Milk	Vials of Culture	or Teaspoonfuls of Fermented Milk	oz. Whey	oz. Water	oz. Milk Sugar	oz. Top Milk	oz. Whole Milk	Vials of Culture	or Teaspoonfuls of Fermented Milk	oz. Whey	oz. Water	oz. Milk Sugar
1st....	Top 4	..	1	½	8	4	1	Top 5		1	½	8	6¼	1½	Top 6	..	1	½	7	10	2
1- 2..	Top 4	..	1	½	11	1½	⅔	Top 5		1	½	11	3½	1	Top 6	..	1	½	11	6¼	1½
2- 4..	Top 4	2	1	½	8	3½	1	Top 5		1	½	13	1½	1	Top 6	..	1	½	13	4⅓	1¼
4- 6....	Top 4	5	1	½	3	7¼	1½	Top 5	3	1	½	8	5¼	1½	Top 6	..	1	½	16	1½	1
6- 8..	Top 4	5	1	½	7	3⅓	1⅓	Top 5	3	1	½	12	1½	1	Top 6	2	1	½	16	1½	1
8-10....	Top 4	8	1	½	4	5¼	1½	Top 5	5	1	½	13	½	1	Top 6	8	2	1	6	10	2
10-12....	Top 4	8	1	½	9	½	1	Top 5	8	1	½	12	½	1	Top 6	8	2	1	13	3¼	1¼
12-13...	Top 4	14	2	1	4	3¼	1½	Top 5	13	2	1	10	1¼	1½	Top 6	12	2	1	13	3	2
13-14.....	Top 4	17	2	1	4	2¼	1½	Top 5	18	2	1	8	2	2	Top 6	16	2	1	11	4	2
	Approximate Composition of Formulas: Fat 6.00% in each. Proteins 1.01% in 1st, 1.16% in 2nd, 1.26% in 3rd, 1.36% in 4th, 1.53% in 5th, 1.68% in 6th, 1.88% in 7th, 2.11% in 8th, and 2.28% in 9th. Sugar 6.50% in each. Ash gradually increases from 0.29% in 1st to 0.51% in last.							Approximate Composition of Formulas: Fat 6.00% in each. Proteins 1.01% in 1st, 1.14% in 2nd, 1.23% in 3rd, 1.36% in 4th, 1.51% in 5th, 1.69% in 6th, 1.89% in 7th, 2.12% in 8th, and 2.29% in 9th. Sugar 6.50% in each. Ash gradually increases from 0.26% in 1st to 0.52% in last.							Approximate Composition of Formulas: Fat 6.00% in each. Proteins 1.03% in 1st, 1.17% in 2nd, 1.24% in 3rd, 1.34% in 4th, 1.52% in 5th, 1.70% in 6th, 1.89% in 7th, 2.10% in 8th, and 2.26% in 9th. Sugar 6.50% in each. Ash gradually increases from 0.23% in 1st to 0.48% in last.						

turn the nipple inside out, scrub clean and place in borax water (one heaping teaspoonful of borax to a cupful of cold, boiled water).

The whey is prepared as follows:

Skim off from the bottle from which the top milk for the formula has been removed enough additional dipperfuls to make a total of 8 dipperfuls removed from that bottle.

Pour the resulting skimmed milk into a quart preserve jar.

Add 3 teaspoonfuls of a good essence of pepsin and stir.

Seal jar and stand in a kettle full of water as hot as hand can bear for one-half hour.

Break up the curd with a long-handled fork.

Strain through two thicknesses of the finest-meshed cheese cloth one-foot square placed on a strainer over a pitcher.

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300 SUMNER AVENUE.

THE CONNELLAN-KING DIPLOCOCCI INFECTIONS OF THE THROAT, WITH ESPECIAL REFERENCE TO RHEUMATISM.*

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My attention was first directed to this diplococcus when it was found in the crypts of the tonsils of one of the physicians on the House Staff of the Hospital for Ruptured and Crippled about one year ago.

This patient was reported in my preliminary report on the Connellan-King diplococci, on March 24, 1915, before the Nose and Throat Section of the Academy of Medicine, and published in the *Laryngoscope*, April, 1915, as follows:

The first case was that of a physician who was first seen by me on November 27, 1914. He complained of sore throat and pains over the body. His temperature was 105.6° F. He was delirious and in a severe chill. Both tonsils had the appearance of a follicular tonsillitis. He was exceedingly toxic. Urine had albumin, hyaline, and granular casts. A gram negative diplococcus, which has since been called for lack of a better name—the Connellan-King diplococcus, was isolated from the deep crypts of each tonsil. Notwithstanding treatment, his nephritis, elevation of temperature, and toxic appearance persisted until he had received three injections of an autogenous vaccine.

This diplococcus was next found in the tonsils of another physician. He had a mild attack of tonsillitis in April, 1914. After a few days local treatment all symptoms disappeared. About three months later he developed acute arthritis of ankle and knee, and then acute endocarditis, myocarditis, and nephritis, with albumin, hyaline, and granular casts in the urine. He was confined to his bed for twelve weeks. In the fall of 1914 he was able to get around, but was not considered well.

In December, 1914, the Connellan-King diplococcus was isolated from the crypts of his tonsils. Three injections of autogenous vaccines cleared up all infection. In January, 1915, his tonsils were enucleated under local anesthesia at the New York Eye and Ear Infirmary. He made a good recovery from his operation, and has gained about forty pounds in weight since. He has had no arthritis nor rheumatic pains, and he says this is the first time in fifteen years that he has gone through a summer without them. His physicians report that his heart is normal, and he has been attending to his usual large practice in Atlantic City since he recovered from his tonsillectomy.

One other patient mentioned in the preliminary report had a similar history. She had a severe attack of tonsillitis in February, 1914. Three weeks later she developed a severe arthritis in ankles and knees. She was confined to her bed from Febru-

*Read before the New York County Medical Society, Oct. 25, 1915.

ary, 1914, to May, 1914. From May until August she was up and around in a wheel chair. She could walk with the aid of her nurse, a crutch and a walking stick; but the pain was persistent. She first consulted me in December, 1914, when the pain was still present, and she had to use the crutch and stick in walking.

The Connellan-King diplococcus was found in the crypts of her tonsils. Autogenous vaccines were prepared, and her physician in Kane, Pa., gave them to her under my direction. After seven injections the pain had ceased and she has no further use for her crutch and stick. A few days ago her brother informed me that she has had no further trouble, and had not been so well in years as she has been since her treatment with the autogenous vaccines.

In the preliminary note sixteen patients were reported. All were private patients except the one whose condition simulated a sarcoma of the tonsil. In all the Connellan-King diplococcus was isolated from the deep crypts of the tonsils. Two had such severe arthritis that they were confined to bed for periods of twelve and fourteen weeks respectively. Two had grave nephritis. All of the sixteen except two received autogenous vaccines. One of them who did not receive treatment with the autogenous vaccines has since been operated upon in Boston for calculus in bladder. Two of the series who did not receive treatment until many months after their first attack of tonsillitis suffered most severe complications. In one, the arthritis has been entirely relieved by the autogenous vaccines, and another has been so much benefited that she is able to get along without the use of her crutch after five injections. All of the fourteen who have received the autogenous vaccines are gratified with the great benefit received from their treatment. Some of the patients treated from the onset of their throat infections have had serious complications which were relieved by the autogenous vaccines, while two in whom the diplococcus was not isolated until many months after the initial tonsillitis were very ill for nearly a year.

Since the first report I have had sixty-two other patients in whose tonsils the Connellan-King diplococcus was found, making a total number of seventy-eight patients. The following representative types are from my private and hospital records:

Case I.—F. G., a boy of 11 years, admitted to Gouverneur Hospital May 20, 1915. Previous history not important, except that two years ago he was treated in Gouverneur Hospital for rheumatism for three weeks. From that time he has been well up to about May 10, 1915, when he developed pain and tenderness in left knee, left ankle, and right shoulder. The joints on admission were swollen, red and painful. Physical examination revealed nothing except a soft blowing systolic murmur of the heart at the apex and transmitted to the axilla, and the above-mentioned condition of the joints. Temperature on admission, 100.5° F.

On May 24 the mucosa of the pharynx and tonsils was of a distinctly purplish hue. The tonsils were moderate in size, and submerged behind the pillars. The Connellan-King diplococcus was isolated from them, and a vaccine made from the culture. Other laboratory findings, such as von Pirquet, blood count, blood culture, and urine examination negative, except for a small amount of indican in the urine.

He received ½ c.c. autogenous vaccine, representing 100,000,000 of the Connellan-King diplococci, on May 31, without any reaction except an increase in the pulse rate to 120-130. On each of the following dates, June 5, 11, 20, 24, he received by hypodermic injection 200,000,000 Connellan-King diplococci vaccine. No other treatment given.

Result: Gradual remission of temperature and pulse to normal. The pain, swelling and tenderness in joints entirely disappeared. His general condition greatly improved, gaining 10 or 15 pounds in weight. His heart murmur still persisted, but was improved. Discharged from the hospital in splendid condition, July 4, 1915.

Case II.—A. B., a strapping young fellow of 27 years, admitted to Gouverneur Hospital, March 23, 1915, for treatment of chronic articular rheumatism. He had been treated at home for the past seven months for rheumatic pains in his large joints, especially the ankles and knees, by a private physician without improvement. On admission to the hospital he had severe pains in all large joints, especially the knees and ankles, and they were swollen and tender on palpation. Temperature about 101° F. Physical examination otherwise negative.

Laboratory findings: Urine, negative; Wassermann negative; complement fixation negative for gonorrhea; blood cultures negative; leucocytes 13,600; polynuclears 65 per cent.; lymphocytes 35 per cent.; throat culture, Connellan-King diplococci.

Treatment: In addition to seven months' treatment at his home for rheumatism, he was treated in Gouverneur Hospital by the medical staff for fifty-three days without improvement. He was running a septic temperature during this time, and was kept in bed. His medication in the hospital consisted in the internal administration of sodium salicylate, sodium bicarbonates, and the external application of oil of wintergreen. He was baked every day for twenty days. The temperature of apparatus on entering was 170° F., and gradually increased up to 320° F. on leaving. He was kept in the apparatus for twenty minutes each day.

I was asked by the medical staff to investigate his throat condition on his fifty-third day in the hospital, and it was then that the little gram-negative diplococcus was found in his tonsils. All other treatments and medication were stopped, and the Connellan-King diplococcus autogenous vaccines were begun. His first injection of 200,000,000, on May 15, produced a marked reaction, with elevation of temperature to 102.6° F. A second injection of 250,000,000 was given him on May 19, with less reaction than the first. After the second treatment he was decidedly more comfortable, and his temperature gradually receded to normal. Two other injections of similar strength were given him at intervals of four days. He was discharged from the hospital, after a stay of eighty-five days, on June 16 as cured.

Case III.—Mrs. A. K. T., age 56 years, referred to me on July 24, 1915. She was markedly anemic, due to sepsis of the tonsils and Rigg's disease. The tonsils were large, the crypts filled with caseous material, and the color may be described as leathery—an unhealthy appearance. The Connellan-King diplococcus was isolated from the crypts, and treatment begun with the autogenous vaccines by hypodermic injection. Her blood examination on July 29 is given below, and I report this case merely to show the improvement in her blood picture after five injections of autogenous vaccines, which she received between July 29 and September 10.

Blood Examination.

July 29.		Sept. 10.
78	Hemoglobin	78
4,480,000	Red Cells	5,360,000
7,900	Leucocytes	9,800
	Differential 500 *Leucocytes.*	
34 per cent.	Polynuclear	64 per cent.
2.4 per cent.	Transitional	4.8 per cent.
57.4 per cent.	Lymphocytes, small	21.2 per cent.

Other elements about normal in each examination.

Her general appearance has improved, and I believe that the blood changes, increase in leucocytes, and the polynuclear count, indicate an increase in her resistance.

Case IV.—Miss E. S., age 26, referred to me July 15, 1915. Briefly stated her history is: An attack of tonsillitis five and a half years ago. One month later arthritis developed in feet and knees. It has been progressive in spite of almost constant treatment, including four or five trips each of one month's duration to Mount Clemens, Mich.

Examination: Joints of hands and knees very much swollen and deformed, and continual pains in them. Valvular disease present, with a distinct mitral regurgitation. Tonsils moderate in size, purplish hue. Culture from them revealed Connellan-King diplo-

coccus. She was treated with the vaccines with great improvement.

On September 8, 1915, I enucleated her tonsils at the New York Eye and Ear Infirmary. She made an uneventful recovery. Her joints are now almost normal in size and free from pains. Her heart murmur persists, but is softer in character, and I believe improved. Her color and general condition are greatly improved.

Case V.—T. N., male, age 11 years. Admitted to the Hospital for the Ruptured and Crippled, August 3, 1915. Family and personal history unimportant. Present illness: The knees are swollen, tender and painful. Three weeks previously he was struck by a wagon and fell upon his knees. Was treated by a private doctor at his home for rheumatism for three weeks. Upon admission to the hospital, temperature 100° F. Unable to walk or to straighten out his legs. Joints aspirated, and a straw colored fluid obtained. Culture made from this fluid was negative. Culture from tonsils showed Connellan-King diplococci and *Staphylococcus albus*. Up to this time he had received salicylate of sodium and sodium bicarbonate without improvement; that is, he had the ordinary rheumatic remedies for four weeks, including three weeks' treatment at home by a physician, and six days' treatment at the Hospital for Ruptured and Crippled, where he was kept in bed.

On August 8 he was given 100,000,000 Connellan-King diplococcus vaccine, and all other treatment stopped. On August 14 and 18 he received other injections of the vaccine. His pain and inflammation gradually subsided. Since that time improvement continued until he felt perfectly well. On September 2, his tonsils and adenoids were removed by Dr. O'Brien, the house surgeon, and on September 10 he was discharged as cured.

For the privilege of seeing the next case I am indebted to Dr. Austin, of Tuckahoe, and take this opportunity of expressing my thanks to him and to the staff of the Lawrence Hospital in Bronxville for the courtesy extended to me at the time.

Case VI.—C. S., aged 54, janitor, was admitted to the Bronxville Hospital, April 7, 1915. Present illness: About March 1 had a cold in head and mild attack of tonsillitis. March 14 had to quit work on account of pains in feet, ankles, hips, and hands. This attack confined him to his home for ten days. He then felt well enough to return to work. Two days later he had to be carried home again on account of a similar condition. From March 29 until admitted to the hospital he suffered with pains in almost all joints and along nerve tracts of the thigh. When admitted to the Lawrence Hospital on April 7, he complained of pains in all joints and along thighs.

Examination on admission: Temperature, 100.2° F.; pulse 84; respiration 22. Tonsils red with crypts filled with cheesy deposits. Pharynx a purplish hue, much darker than normal. Joints at fingers, wrists, knees, and ankles swollen, red, and painful. Arteries, lungs, and abdomen, negative. Soft systolic blowing murmur heard at apex, not transmitted to axilla but heard best midway between apex and ensiform cartilage. The diagnosis of subacute articular rheumatism with acute endocarditis was made.

Laboratory findings: Uurine negative; two blood cultures negative. Differential leucocyte count negative, except for 4 per cent. eosinophiles. Culture from tonsils presented Connellan-King diplococcus (about April 15).

Treatment: Usual treatment for rheumatism at his home for about two weeks before entering hospital. After entering hospital his treatment consisted in the internal administration of aspirin, salol, and sodium salicylate, codein for the relief of excruciating pains, and hot applications to the joints. This treatment was continued until April 23, when he received his first injection of autogenous vaccine. From this time on he received no medication except elixir iron, quinine and strychnine, cathartics as needed, and 1 c.c. (equal to 200,000,000 Connellan-King diplococci) of vaccine by hypodermic injection every fourth day until discharged.

Course of illness: From April 7 to April 23 his temperature was irregular, ranging from 98.2° to 102° F. Pulse ranged from 78 to 100, usually being from 84 to 90. He had numerous exacerbations of symptoms in spite of medication. His pains were so severe at times that he would scream out on movement of the affected parts. He was in such agony that he was unable to help himself and had to be fed. From April 20 to April 26 his condition was very bad from excruciating pains and exhaustion. He was frequently delirious, and seemed as though he might die at any time from exhaustion and toxemia.

On April 23 he was given 1 c.c. of Connellan-King diplococci vaccine by hypodermic, with no apparent result. On the third day after his first injection of the vaccine his temperature reached 102.8° F. The next day he received the second injection of vaccine, when his temperature was 100.6° F. It receded after this injection to 98.4° F., rising again the next day to 100.6° F. It rose next day to 99.6° F., and fluctuated between 98.4° F. and 99.4° F. for the next three days. On the day following the third injection he felt so much better that he was able to get out of bed, and was in a wheel chair in the sun parlor most of the day. On May 7, 13, 18, and 24 he received injections of the vaccine. His temperature and pulse rate rapidly became normal after the third injection. He gained in weight, his color and general condition were improved, and he was absolutely free from pain in all joints after three injections. The appearance of the joints became normal. After taking seven injections of the vaccine he felt so well and strong that he refused to stay longer in the hospital and went home in good condition. His heart murmur still persisted, but it is recorded on his chart as improved. He said on leaving the hospital that he never expected to feel as well as he did then.

Conclusions: 1. Every case of septic arthritis, commonly called rheumatism, is caused by a focus of infection somewhere in the body. It may be in the tonsils, ear, accessory sinuses, gastroenteric tract, genitourinary tract, or in the teeth.

2. The most frequent focus is found in the mouth; and the tonsils, due to their crypts (and histology), harbor the focus more frequently than any other gland or organ.

3. A very simple tonsillitis may be followed by complications (nephritis, endocarditis, myocarditis, arthritis, etc.) so serious as to endanger life.

4. The infection may become latent, and produce serious trouble weeks or months later at a point far removed from its original site.

5. In view of an occasional general sepsis coming on after a tonsillectomy, it is necessary where possible to clear up the infection before operation with autogenous vaccines. In this way the danger of a general sepsis following tonsillectomy is eliminated.

6. Where the focus of infection in arthritis exists in the tonsil (in the case of arthritis, nephritis, endocarditis, appendicitis, etc.), the treatment should consist in the injection of autogenous vaccines until all infection is cleared up, and then the removal of tonsils by enucleation.

7. The complications are caused by an absorption of chemical toxins, rather than by a bacteriemia.

8. The blood changes seem to be in the Connellan-King diplococci infections—a simple anemia and in a few cases a slight increase in the eosinophiles 4-6 per cent.

9. In some cases symptoms other than those for which treatment was instituted have disappeared. For instance in one patient with arthritis and marked ethmoiditis, the culture was obtained from the throat. After two weeks' treatment with autogenous vaccines the arthritis was only slightly improved, but the ethmoiditis and pus in the nose had entirely disappeared. Another patient with severe gastric disturbance, who had to remain on a strict diet of certain things, was able to eat almost everything after she had taken treatment with the autogenous vaccines.

10. The treatment with the vaccines have been eminently satisfactory in a very high percentage of

all cases treated. Seventy-eight patients have now been treated by me, and there is only one who has not been markedly improved.

All of the bacteriological and laboratory work has been done by Mr. John J. Connellan of the Higgins Laboratories, and I take pleasure in expressing my great appreciation of his excellent work.

40 East Forty-first Street.

RECTAL OPERATIONS.

CONCLUSIONS DERIVED FROM A SERIES OF FIVE HUNDRED PERFORMED WITHOUT GENERAL ANESTHESIA.

By WATERS F. BURROWS, M.D.,

AND

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NEW YORK.

Rectal diseases are usually minor conditions, requiring simple surgical relief. Pain with common rectal surgery should be absent or of slight degree, the patient's life should at no time be in jeopardy, whether from ether or chloroform or from immediate or remote complications. However, the exceptions in rectal surgery to what might be reasonably expected regarding comfort and danger, have led many to dread rectal operative relief. The operations, performed under ether anesthesia are followed by pain, often severe, usually demanding morphine for its control. Deep general anesthesia is required or otherwise the rectal reflex causes, during the operation, spasm of the anal and contraction of the general skeletal muscles. Moreover, in plethoric patients or in others due to an unnatural position upon the operating table, ether anesthesia is unsatisfactory and leads to delays and dangers, which are avoided when local (novocain) anesthesia is used. Following ether anesthesia, in rectal surgery, pain occurs, voluntary urination is frequently impossible, and catheterization, with dangers of cystitis, required.

We desire, therefore, to present our experience in 500 operations upon the rectum, performed by new methods under local anesthesia. The advantages of local anesthesia in any field of surgery where applicable are obvious. Pain during the operation and after pain are avoided and detention of the patient in home or hospital even for a short time is the exception. The complications and dangers of a great part of the surgery as performed under general anesthesia do not occur, convalescence is not delayed and takes place with the patient free to attend to his usual duties. Whereas following a general anesthetic catheterization is found necessary in approximately 25 per cent. of the cases, the writers, in rectal operations performed under local anesthesia, find it unnecessary to use the catheter and urination is normal.

The rectal conditions for which operations have been performed under local anesthesia by the writers may be given in the order of their frequency, as follows: Hemorrhoids; fissure; cryptitis and ulceration; constipation, pruritus ani, fistula, abscess, prolapse of rectal mucosa; stricture of anal canal; tuberculous ulceration, fistula, or skin involvement; solitary and multiple polyps. Frequently the lesions are associated and constipation is a frequent concomitant of a number of painful and obstructive rectal affections.

Hemorrhoids, external and internal, are the most common lesions. With the latter there may be bleeding at stool, accompanied or not by prolapse of the piles and these may be voluntarily or by means of pressure forced back within the rectum. Mucus and moisture will often keep the perianal tissues soft and chronically infected, leading to burning and itching, which are increased by the congestion accompanying the trouble. Constant discomfort or rectal neuralgia is not unusual, but except in the case of prolapse, strangulated or gangrenous piles, acute pain is absent. A new method of treating hemorrhoids will shortly be described in full and needs no further attention here except to note that it is practically the only method we use and thereby clamp and cautery, needle and thread, ligature, and simple excision are relegated to the past.

Fissure, cryptitis, and ulceration in the anal canal are met with frequently. They occur as a result of trauma produced by the passage of hard bowel matter, or from the inflammation following frequent irritating movements. The characteristic feature of the affection is pain, often severe, coming immediately after a bowel movement and persisting a variable time, frequently for several hours. Streaks of blood may accompany the evacuation and complications, such as abscess, proctitis, and constipation are common. Division of some fibers of the anal sphincter, or, if multiple fissures, cryptitis, or ulceration is present, excision of the affected area will result in a permanent cure.

Constipation is a frequent accompaniment of anal lesions and a symptom rather than in itself a disease; however, local anesthesia permits the eradication of many rectal affections leading to it. Allowed to exist, even though primarily of rectal origin, it leads to back pressure upon the bowel above. The rectum and sigmoid are at first stretched and their reflex action interfered with, resulting in a residue of bowel contents and a sensation of incomplete evacuation. The former would be of sufficient gravity were it to remain an irritant in the lower bowel, but it does more, for through causing an exudate the bowel contents are softened and then forced back in considerable quantity into the colon. Thus chronic invalidism from absorption, appendicitis, and incompetency of the ileocecal valve may result. A primarily rectal affection may thereby become a source of intraabdominal disease.

Pruritus ani or itching is a frequent anal affection. It may have a basis in a constitutional disease, but is usually an indication of a local condition. It may result from anal, rectal, or bowel abnormality leading to a catarrhal or irritating discharge. With continued maceration and irritation of the perianal structures and the implantation of a chronic infection, which soon follows, the skin becomes depigmented, swollen, and thrown into folds, the creases hold moisture and bacteria, and the itching, which results from the congestion and irritation of the nerve endings in the skin, may become almost unbearable, especially at night. The writers' modification of the Ball operation, severing affected nerves subcutaneously, and the eradication of causative lesions elsewhere cure this most annoying and chronic affection.

Fistula in ano will not occur in the normal anal canal. It is an indication of previous diseased conditions which have been neglected or unrecognized. When once produced it consists of a sinus or sinuses, usually complete, extending from skin to anal canal. Either end of this tract may close spontaneously, usually temporarily, but the remainder will persist as a source of constant irritation and discharge,

causing inflammation of the rectum, anus, or surrounding skin, or, becoming blocked, small painful abscesses are formed and the tracks become more numerous and multiple openings may appear upon the skin. The condition is not usually tuberculous. Operated upon before complications have set in, fistula is a suitable field for local anesthesia and by excision or incision of the track, passing through its internal or rectal opening, cure results.

Ischiorectal abscess likewise indicates that a preexisting rectal abnormality has been present, whereby deep infection of surrounding tissues has taken place. Early incision of the abscess will usually prevent later fistula formation, but the anal abnormality primarily at fault should also be treated.

Prolapse of the rectal mucosa may be associated with piles or follow mutilating procedures, such as the Whitehead operation for hemorrhoids. Cicatricial stricture of the anal canal also frequently accompanies the same operation but may follow the use of clamp and cautery or result from extensive denudation of perianal skin and infection of these tissues. Prevention is always possible if rectal operations are properly performed, but when occurring the prolapse may be treated as a pile or the cicatrical anal ring divided.

Tuberculous ulceration, fistula, and skin involvement may be of long duration, extensive, and progressive, and the use of the actual cautery may be safest, since in eradicating lesions it seals temporarily lymph spaces and destroys tuberculous infection. General anesthesia is then demanded, but in the present age, when physical neglect is not as frequent, the deplorable tuberculous rectal infections formerly observed are the exception and the writers ordinarily use local anesthesia for such cases.

Solitary or multiple polyps, originating in rectal mucosa or anal papillæ, may attain large size, protrude from the rectum, and be mistaken for piles. Both are best operated upon under local anesthesia.

Local anesthesia is indicated in 95 per cent. of all rectal surgery. It permits painless operations free from danger, obviates the after pain of the general anesthetic, does not confine the patient to bed, but, on the contrary, interferes least with his usual routine. The time saved the patient is an important item and the proper use of the method will place rectal surgery upon a higher plane than heretofore, when, under ether anesthesia, it has often resulted in a destructive major operation.

17 East Thirty-eighth Street.

Medicolegal Notes.

Malpractice — Newly Discovered Evidence Necessitates New Trial.—In an action against surgeons for malpractice in connection with an attempted operation for the removal of a goiter, it appeared that after an incision was made the operation was discontinued, and it was the defendants' claim that this was necessary, because of the discovery of a vein in such a condition that it could not be ligated or closed by usual methods, and that it was necessary to stop the flow of blood by means of packing inserted into the incision. There was evidence for the plaintiff that the wound made by the incision had not yet healed at the time of the trial. After a judgment for the plaintiff, an operation was performed by another surgeon, who testified, on a petition for a new trial, that he discovered a malignant cancerous condition, and that this would have kept the wound from healing, and could not have been discovered by the incision made by the defendants. It was held that this was material and newly discovered evidence, entitling the defendants to a new trial, as the jury evidently believed that the failure of the wound to heal was due to the defendants' negligence or unskilful methods, while such evidence tended to show that it was due to the cancerous condition. The fact that the surgeons defended on the theory that an incision made by them was progressing nicely and would have healed if the plaintiff had remained at the defendants' hospital or given it proper attention did not prevent them from obtaining a new trial for the newly discovered evidence. —Mason, Evans & Keys vs. Meloan, Kentucky Court of Appeals, 177 S. W. 435.

Practising without License. — The Montana Statute, Rev. Codes, § 1587, provides that any person wishing to practise medicine or surgery must secure a certificate from the State board of medical examiners. Section 1591 provides that every person practising without such certificate shall be guilty of a misdemeanor, defines practising medicine or surgery, and provides that the section shall not restrain any legally licensed osteopathic practitioner. Laws 1901, p. 51, § 11, declares that the practice of osteopathy shall not be deemed the practice of medicine or surgery. In an action for practising medicine without a certificate it was held that the act relating to the practice of medicine and surgery is not unconstitutional as constituting class legislation discriminating in favor of osteopaths; they being excluded from the practice of medicine. Rev. Codes, § 1605, providing that every person shall be deemed practising osteopathy within the meaning of the act who shall treat, cure or relieve any disease, or cure or relieve any fracture or abnormal condition, by any treatment by the use of the hands or mechanical appliances, does not authorize an osteopath to practice medicine or surgery, but confines treatment to the use of the hands or mechanical appliances.—State v. Dodd, Montana Supreme Court, 149 Pac. 481.

Physical Examinations of Plaintiff Suing for Personal Injuries—How Conducted.—In an action for personal injuries the Tennessee Supreme Court was called upon to decide whether a trial court has the right to compel the physical examination of a plaintiff suing for personal injuries. Although the right is denied in Illinois, Montana, South Carolina, Utah, Texas, and in the Supreme Court of the United States, the weight of authority is to the effect that it be allowed, and the Tennessee court agreed with this opinion. In New York, New Jersey, and Florida it is authorized by statute. But in the cases which recognize the doctrine it is applied with great restraint. The plaintiff must first be asked to submit to an examination. If he refuses the court may be applied to. It must be shown that the examination must be necessary so that justice may be done to the defendant and that it can be done without danger or serious pain to the plaintiff.

If the application is granted the plaintiff cannot be required to submit his body to the examination of a physician or surgeon selected by the defendant. The physician or surgeon must be selected by the trial judge, and he must be one of competent skill and indifferent between the parties. While the expense must be borne in the first place by the defendant making the application, the fee should be fixed in advance, and paid into court, to be paid to the expert when he files his report. The expert should file a report stating in detail the result of the examination. This report should be open to the inspection of counsel on both sides, but not for use as evidence except in cross-examination of the expert, in case he should be introduced as a witness by either of the parties.

In the conduct of the examination, the privacy of the plaintiff's person must be preserved as far as possible. In the case of a woman, there should be female physicians if they are accessible. If application be made therefor, the plaintiff's own physician should be permitted to be present at the examination.—Williams v. Chattanooga Iron Works, Tennessee Supreme Court, 176 S. W. 1031.

Malpractice—Sufficiency of Evidence.—A physician and surgeon was employed to treat an infant for bronchial pneumonia. In an action for the child's death the evidence for the plaintiff showed that the defendant inserted a rubber tube in an incision made by him, leaving it unsecured, so that it slipped inside the body, and that the tube was allowed to remain there for some time. It was held that, if these matters were not the cause of the patient's death, or if the defendant's conduct was that of a reasonably skilful physician and surgeon, it was for him to put in his proof, and as he offered no evidence the jury was warranted in finding for the plaintiff.—Sontag vs. Ude (Mo.), 177 S. W. 659.

MEDICAL RECORD.

A Weekly Journal of Medicine and Surgery.

THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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THE PROBLEM OF NEPHRITIC EDEMA.

THE edema of nephritis as well as that resulting from cardiac decompensation cannot be considered apart from changes in the blood, changes in the capillary wall, and changes in the tissues. The explanation of the genesis of both types of edema is rendered more difficult by the fact that there are types of edema that are not dependent upon renal or cardiac factors; for instance, the angioneurotic and the cachectic edemas. An interesting clinical and experimental study of this subject is contributed by Leo Hess to the *Zeitschrift für klinische Medizin*, Vol. 82, Nos. 1 and 2. At the outset he notes that the edemas occurring in nephritis are not all of the same origin. There may be an edema resulting from stasis and resembling in its course and in its occurrence in the dependent parts of the body the edema of cardiac insufficiency. In a general way the presence or absence of edema in nephritis is associated with the anatomical type of this condition, in the one instance with the parenchymatous and in the other instance with the interstitial form of nephritis. The similar rôle played by different etiological causes is illustrated by the fact that in the nephritis of pregnancy and in that following scarlet fever there frequently occurs a most pronounced edema. The nephritis following pneumonia may or may not be accompanied by edema. The question arises whether there may not be some constitutional factor that determines the presence of edema in cases of chronic nephritis. A review of the various theories that have been advanced to explain the origin of edema shows that none is entirely satisfactory for they fail to take into account all of the factors that are involved. The most important of these appears to be the capillary wall. Hess bases this conclusion upon experimental evidence. The two renal poisons, uranium and chromium, have the same action upon the epithelium of the convoluted tubules. Chronic uranium intoxication produces almost always a transudation into the serous cavities, which is not the case in poisoning with the chromium salts. It would appear, therefore, that the cause of the transudation that occurs in nephritis, at any rate, in the experimental nephritis produced by uranium, is to be sought in some extrarenal factor. Magnus demonstrated that the capillary wall during life interposes a barrier to the transudation of fluid, and that this barrier is broken down by injury or by the action of certain poisons. Hausmann showed that fluorescent substances, such as hematoporphyrin, when injected into white mice that are subsequently exposed to the light, give rise to a general edema. This effect is attributed to an injury of the peripheral blood vessels. Although uranium poisoning in rabbits causes a transudation into the serous cavities without any accompanying edema of the subcutaneous tissues, if in addition to the uranium intoxication there is produced a direct attack upon the blood vessels by means of intravenous injections of adrenalin, there results a genuine edema of the hind limbs. This experiment proves that injury of the vascular wall is a necessary factor in the development of edema.

The substances, such as chloral hydrate, chloroform, ether, and phosphorus, that are known to injure the capillary wall, belong, as a rule, to the group of so-called "lipotropic" agents, which are capable of dissolving or of being dissolved in fats and fatty bodies. The increased permeability of the capillary wall, which is the result of the above injury, is possibly to be attributed to the abstraction of some important constituent of protoplasm, such as lecithin. In the toxic anemias produced by pyrodin and m-toluylenediamine an edema of the face is an accompanying phenomenon. These poisons are soluble in lipoids as is also the aromatic amine, oxyphenylethylamine, which is found in the feces in cases of obstinate constipation accompanied by urticaria. It has been found experimentally that imidazolethylamine, which is probably a metabolic product, gives rise to local edemas. All of the above toxic types of edema are independent of any cardiac or renal factor and are probably the result of an injury of the lipoid constituents of the cells of the capillary wall.

In addition to the above analysis of the experimental studies on edema, Hess contributes the results of an important clinical study of his own on this subject. He observed a series of five cases in which the edema could not be accounted for during life entirely on the basis of renal or circulatory impairment and in which at autopsy there was found distinct evidence of an abnormal narrowness of the arterial system, or the presence of the status thymicolymphaticus. In all of these cases the edema differed from that characteristic of nephritis. It had an acute onset, persisted in spite of all treatment, and resembled in its localization the edema of cardiac insufficiency, but examination of the heart revealed either no impairment of the latter or not sufficient impairment to account for the edema. The conclusion was drawn that the condition of the vascular wall was the important factor in the production of this edema. Even in cases in which there is an obviously close connection between the edema and cardiac or renal insufficiency, the localization of the edema suggests that the condition of the vascular wall plays an important rôle. In illustration of this statement there are cited the palpebral edema of trichinosis, the pulmonary edema of Bright's disease, the premenstrual and climacteric edemas, the cerebral edema of chronic plumbism, and angioneurotic edema. One striking phenomenon frequently present in cases of nephritic edema is the persistence of this condition

in spite of a relatively good diuresis. This fact furnishes additional evidence in support of the view that the condition of the vascular wall is the important factor in the genesis of edema.

THE TOXICOLOGY OF TOILET PREPARATIONS.

EVEN to the remotest confines of the regions reached by the printed word some hint of the perniciousness of the patent medicine has spread. To be sure, potential purchases of the gold brick still throng cityward, the evasive pea refuses to stay put, the immortal come-on springs into being at the rate of sixty an hour according to a well-known authority, and farmers' wives who have done the household drudgery for a family of ten and cooked three meals for a hungry horde of hired hands continue to pinch out enough from the egg money to purchase something for "that tired feeling." But he who runs may read the death sentence of the great American fraud being slowly spelled out, letter by letter, word by word, on the wall of publicity. When we compare the restrictions under which this business is obliged to operate to-day with the license of a few years back we are justified in optimistic prophecies.

And while we are in the altruistic and probably thankless business of protecting the public against itself let us splinter a lance against another enemy, the toilet preparation fraud. Not, to be frank, that we care greatly whether my lady pays five dollars a pound for Epsom salts put up under a fancy trade name as a face bleach and bought by the trade at five cents a pound or not. If the public is sufficiently gullible to pay seventy-five cents for a shampoo the cost of production of which is about one and a half cents, what care we? Our withers are unwrung. But when toilet preparations contain deleterious substances of various kinds included because they are cheap or because they are stronger or more rapid in their actions than more innocuous substances, then it is time for us to step into the arena.

In an article on "Cosmetics as Drugs," in *Public Health Reports* for October 15, 1915, Mr. Martin I. Wilbert of the Hygienic Laboratory has pointed out a few interesting facts. His enthusiasm seems rather to carry him away in his opening sentence when he says, "Of the many and varied abuses of drug products there is none in which fraud, deception, and a wanton disregard for human health and even life are so clearly evidenced as in connection with the manufacture, sale, and use of so-called 'cosmetics.'" This is somewhat too sweeping a statement. How about the cancer and consumption "cures," the remedies for "female troubles" and all the rest of the vampire crew? But, anyway, Mr. Wilbert makes out a good case against the manufacturers of cosmetics and if he is a little too vehement in his denunciations it is a fault that savors of virtue.

One of the chief crimes of the producers of these articles is the inclusion of wood alcohol in the formula. We are all of course familiar with the toxicology of this chemical. In two States quoted, out of 147 samples of various lotions 27 were found to contain methyl alcohol. Some States even expressly permit its use in preparations intended for external use. Lead, mercury, and zinc and their salts are extensively used in face washes, enamels, etc. This in spite of the fact that much money and time are being spent to prevent poisoning from these various metals in their industrial use. It seems to be true, moreover, that these heavy metals, especially lead, are more readily absorbed through the skin by females than by males and consequently disease syndromes may arise which are difficult to recognize owing to failure to suspect their source. Wilbert mentions the investigations of LaWall, who examined sixteen samples of so-called rice powder; he found that only two were pure and that only six contained any rice powder at all. The substitutes used were chiefly talc, starch, and zinc oxide.

He concludes as a result of his studies of cosmetics that women are more susceptible than men to the injurious substances used, that wood alcohol and the salts of heavy metals should be banned entirely in the manufacture of toilet preparations, and that cosmetics should be classed as drugs and subject to the same restrictions as drugs. This seems indeed to be a logical way of considering the question. It is well known that drugs may be given by inunction and while this method does not enjoy a great deal of favor nowadays it is because of its inconvenience rather than on account of any lack of faith in its efficacy. It is noteworthy, too, that the drug which we usually think of in connection with inunction, *i.e.* mercury, is found in a great many toilet preparations intended for more or less prolonged application to various parts of the body. Those physicians who have had to place their sole reliance in mercury before the days of salvarsan and are therefore familiar with its vagaries are asked to picture the following: We will suppose a young lady about to retire for the night. She applies to her face a paste containing among other things mercuric ammonium chloride, and she uses a hair tonic containing bichloride of mercury. Her daily program includes two douches of a bichloride solution, and on this particular night, because she has not been feeling very well, she takes a rather large dose of calomel. While this is of course a heightened picture, it is undoubtedly true that ointments and lotions of various kinds containing preparations of mercury are used freely on the skin and allowed to come into contact with abraded areas. The drug is very readily absorbed under these conditions and the prodromal symptoms of ptyalism appear to the bewilderment of the physician who of course does not suspect the patient of taking mercury in any form. Plumbism occurring in the same way is even more difficult to diagnose, especially when the drinking water is absolved from suspicion.

PARATYPHOID FEVER.

THE distinctions between typhoid and the two varieties of paratyphoid fever are not as yet so marked or at any rate so generally recognized as might be desired. As a matter of fact a very considerable degree of confusion exists with regard to the diag-

nosis of the two varieties of paratyphoid fever. Dr. Henry Robinson writes on the subject in the *Lancet*, of Oct. 16, 1915, and supplies some notes on the clinical characteristics of cases treated as paratyphoid fever.

Eighty-nine cases were observed and the conclusions reached were that notwithstanding marked differences in the duration and severity of the symptoms in these 89 cases, the evidence suggested that they were manifestations of a definite clinical entity. The writer, confining himself to 47 cases in which a paratyphoid organism was isolated from the feces, blood, or urine, thought it safe to formulate the following conclusions:

(1) Paratyphoid fever, A and B, in the British Expeditionary Force, is a disease much shorter and milder than typhoid fever as met with in civilian practice and in the South African campaign. (2) Its onset may be gradual or moderately sudden. (3) Headache and abdominal pain are the most constant symptoms. (4) Shivering at the onset, cough, pains in the limbs and back, diarrhea, constipation, nosebleed are the next most common symptoms; all these are met with in about 30 to 60 per cent, of cases. Vomiting at onset and sore throat later are by no means so common. (5) Definite rose spots in successive crops are found in about 60 per cent. of cases. The abdominal reflex is absent in rather under 50 per cent. (6) The pulse rate is extraordinarily slow, even more so than in typhoid fever. (7) Relapses of brief duration are not uncommon. Several complications occur more rarely and are counterparts of those associated with typhoid fever. (8) The paratyphoid bacillus, A or B, is frequently isolable from the feces, but in many cases not until after the symptoms have subsided; one negative finding should not be accepted as conclusive. It is also occasionally isolable from the blood, urine, and metastatic abscesses. (9) Distinct help in diagnosis is obtainable from repeated quantitative Widal reactions, but much experience is required for their interpretation, and they must be read in conjunction with the clinical evidence and with the history of previous inoculation. (10) On the assumption that this disease is of the enteric group, the same precautions as in the case of the typhoid fever are indicated against its spread. In particular, carriers must be watched, for bacilli may be present in their urine and feces long after all symptoms of disease have subsided.

AN IMPORTANT EDUCATIONAL OPPORTUNITY LOST.

It is reported, as noted in our news columns, that Columbia University was unable to raise the million dollars necessary to take up the option on the property which had been selected as a desirable site for the proposed combined medical school and hospital of Columbia University and the Presbyterian Hospital, New York. This is much to be regretted, for the purchase of the property would furnish an opportunity, which can hardly occur again, to erect a great teaching and research institution on a site admirable in situation and sufficiently large for future expansion. With the growth of the city, Washington Heights will gradually become the center of population of Greater New York, and a vast clinical material would thus have been made available, for the Mayo Clinic at Rochester, Minn., has demonstrated that patients will travel any distance if they are assured of special opportunities. It is a pity that the wealthy men of New York could not in some way have met the needs of the great university in their city, and it is to be hoped that some one may yet come forward before the plot is broken up into building lots and sold. If the call had been made in San Francisco, Chicago, or Pittsburgh, it is probable that mere civic pride would have guaranteed the obtaining of the sum when it was needed.

The time is ripe for a demonstration of what can be done in the way of modern hospital construction and the scheme for the very close geographical union between the medical school and the hospital was admirable in its conception. Very few boards of trustees seem to be aware of the fact that, after all, the real laboratories of the medical school are the hospital wards, and that the hospital is more important for the achievement of scientific research in medicine than roomy laboratories and showy equipment. There is never any question when a veterinary school is started that a certain number of domestic animals are essential to the proper instruction of the pupils; but in medicine in this country the necessity for free access to the actual teaching material in the form of human beings has never been fully recognized, nor have the possibilities of such a combination as was proposed really reached their highest development. New York has long been medically less important than it should have been for this reason. It is to be hoped, therefore, that some public-spirited citizen will very promptly place Columbia in possession of sufficient funds to make it possible to obtain this remarkable site, the last plot of sufficient size available in the city.

Butter's Cancer.

Not many clinical forms of cancer have been named for individuals, although there have doubtless been plenty of opportunities for eponyms in this field. In a session last May of the Nurenburg Medical Society and Poliklinik reported in the *Münchener medizinische Wochenschrift*, Voit describes a case of so-called Butter's cancer, *i.e.* cancer of the hepatic flexure of the colon. The diagnosis was difficult. A man aged 39 complained of vague morning pains in the abdomen, relieved by eating. Appetite remained good and there was no loss of weight. Stools normal. The diagnosis was duodenal ulcer, made only after prolonged and thorough examinations. Treatment for ulcer was without benefit. Occult blood could be found at any time. Röntgen examination gave negative results. The alternative diagnosis was cancer of the right flexure which could be palpated after many attempts. Exploratory incision gave confirmatory results. The growth was no larger than a walnut and was readily extirpated. The inference from this case is very plain. If occult blood persists after the patient has been on a strict ulcer diet for a reasonable length of time, we should suspect the presence of a Butter's cancer.

A Physical Token of Epilepsy.

Experienced clinicians of past generations had certain personal criteria of suspected epilepsy such as the so-called sugar-loaf cranium. More recently a series of somatic anomalies has suggested this possibility of the so-called degenerative stigmata, with special emphasis on asymmetries of the skull and face. This has in turn lost much of its force because conspicuous asymmetry occurs in non-epileptics and even in normal subjects. Complete symmetry is in fact unknown. At a recent session of the Royal Imperial Medical Society of Vienna (*Berliner klinische Wochenschrift*, June 28) Benedikt drew a contrast between ordinary and epileptic asymmetry. The normal skull is hyperplastic to the right in the retroauricular portion of the temporal and parietal bones and the ear is placed slightly to the rear. When this arrangement is disturbed we have an anomaly, and in epilepsy this region instead of being prominent may show a flattening. Again in the normal subject the distance between the occipital protuberance and the vertex is the same as the distance between the vertex and bregma, while in the epileptic the entire distance between the occipital protuberance and bregma may be shorter than the normal by 3 cm. When a shortening of 3 cm. is obtained the subject is very probably an epileptic.

Fatal Hemorrhage as a Result of Quinsy.

One of the bugbears of the medical student of a generation ago was the supposed danger of arrosion of the internal carotid artery in consequence of peritonsillar abscess. It was on a par with the alleged risk of wounding the same vessel while opening the abscess. That such accidents did and do occur at times is, of course, not disputed. There should, however, be some particular mechanism for such happenings, and as a matter of fact such mechanism is closely associated with the formation of aneurysm of the vessel in question: Does an aneurysm of the carotid preexist in these cases, or is it the result of suppuration? It is probable that both mechanisms may be present. At a session last spring of the Gesellschaft für Natur- und Heilkunde, in Dresden (*Muenchener medizinische Wochenschrift*, August 31), Hoffmann reported a fatal case of arrosion aneurysm of the internal carotid in a boy of 13, as a complication of peritonsillar abscess. The sense of the meeting seemed to be that rupture of a preexisting aneurysm might occur in quinsy without the intermediation of suppuration, *i.e.* mere distention due to peritonsillitis could bring about rupture of an aneurysmal sac.

A Catatonic Phenomenon in the Normal Subject.

If a man stands close to the wall, an arm extended parallel to the trunk with the back of the hand pressing hard against the wall with all the muscles tense, and maintains this attitude for about a minute; and if then he turn his body a little so that the arm can move laterally, the limb automatically ascends from 0° to an angle of from 45° to 120°. The patient meanwhile feels convincingly that some one other than himself has lifted his arm. Kohnstamm made this statement at a meeting last winter of the Frankfort Medical Society (*Muenchener medizinische Wochenschrift*). He said he first had his attention called to the phenomenon by a patient, an aviator, who had discovered it in his own person. Similar phenomena can be induced in other muscular groups. In the arm experiment it is probable that the conscious volition has produced a tetanus of the extensors. The equilibrium of the muscles has been shifted, and when the arm has free play to move some of the extensors elevate it; the will impulse is outlasted by the automatic act which has the force of an inhibition. The author has not yet tested this phenomenon upon a genuine catatonic, and until this is done the relationship between the physiological and pathological phenomena cannot be determined.

News of the Week.

Doctors Sail for Germany.—A second detachment of physicians and nurses sent for relief work in Germany and Austria by the American Physicians' Expedition Committee sailed from New York on November 26 for Copenhagen. The party consisted of Dr. Frederic Kammerer, Dr. Kurt Sauer, and Dr. Frank D. Gorham, and six nurses. Dr. Frank Paschal, also a member of the expedition, sailed a few days later. The nurses will superintend a voluntary staff of nurses to be raised in Germany and Austria. The party will have an outfit sufficient to equip a hospital of 300 to 400 beds.

Hospitals for France.—Two committees have recently been formed in New York for the purpose of supplying the French Government with portable hospitals which can be carried on automobiles. The equipment in each case will consist of five machines carrying apparatus that in three hours can be set up so as to form a field hospital capable of rendering efficient service to a whole army division. One car will carry the parts of a portable operating room; another a powerful electric lighting and heating plant; a third, a laundry outfit, and a fourth and fifth, installation for couches, disinfection, destruction of vermin, and sterilization of water, shelter tents, etc.

Melba Home Hospital.—Mme. Melba, the opera singer, announced in Cleveland on November 21 that she had just arranged to give the use of her apartment in Paris for an army hospital. It will be known as the Melba Home Hospital, will accommodate 200 beds, and will be operated for the benefit of soldiers of any nationality.

American Doctors in Serbia.—Efforts are being made through the American and Bulgarian Consulates in Serbia to obtain the release of four American physicians who remained at Uskob after the Bulgarian occupation. They are Dr. S. S. Osborne of Peabody, Mass., Dr. C. E. Fox of Baltimore, and Dr. George Baehr and Dr. Harry Plotz of New York, who went to Serbia to study typhus fever.

Committee of American Physicians for the Relief of the Belgian Profession.—The treasurer, Dr. F. F. Simpson, 7048 Jenkins Arcade Building, Pittsburgh, Pa., reports a contribution of $2 from Dr. M. J. Morrissey of Hartford, Conn. The total receipts have been $7,873.84 and the total disbursements $7,310.04, leaving a balance of $563.80.

Medical Brotherhood.—Prof. Thorkild Rovsing of Copenhagen has issued an appeal to all Danish doctors to join the Medical Brotherhood organized in this country last August by Dr. S. J. Meltzer of New York, the object of which is the promotion of international comity through closer association of

medical and scientific men. The organization already has 9,000 members. No effort has been made to introduce the movement among the nations now at war, as the organization wishes to keep clear of the issues involved, with the hope that after the war is over it may be able to bring into amicable relationship the medical men of all nations and thus aid in the re-establishment of good feeling.

Health of the Canal Zone.—During the month of September, 1915, the employees at the Panama Canal numbered 34,827, and the total number of admissions to hospitals and quarters was 892, giving a rate of 307.34 per thousand, as compared with 335.44 for the preceding month and 365.70 for the corresponding month of last year. The total number of deaths among employees was 18; of these, 14 were due to disease, or 4.82 per thousand, as compared with 5.31 for the same month of 1914. Among the general population of the Canal Zone, numbering 30,219, the death rate from disease was 12.31 per thousand, or nearly a point less than for the same time last year. During the same period 49 births were reported, a rate of 19.45 per thousand, the white children numbering 16 and the colored 33; while there were among colored infants under one year of age 13 deaths, and among white children only one. The general death rate in Panama City for the month was 32.79, and that in Colon 21.27 per thousand. One case of yellow fever from Buenaventura, Colombia, developed while the patient was in the Balboa quarantine station, and death occurred a few days later. With this exception no cases of yellow fever, smallpox, or plague originated on or were brought to the Isthmus during the month.

New York's Death Rate.—The Department of Health announces that during the week ending November 20 there were reported in New York City 1,332 deaths, giving a death rate per thousand of 11.97, as compared with 1,244 deaths and a rate of 11.62 during the corresponding week of 1914. The increase in the mortality was due to diarrheal diseases, organic heart diseases, pulmonary tuberculosis, and renal diseases. The number of deaths due to contagious diseases of childhood during the week was exceedingly low, there having been but one from scarlet fever, three from measles, and five from whooping cough. The death rate for the first forty-seven weeks of 1915 was 13.57 as against 13.71 per thousand for the corresponding period of last year.

Chicago's Death Rate.—The number of deaths reported in Chicago during the week ending November 20 was 546, or 25 less than during the corresponding week of last year, the respective rates being 11.6 and 12.4 per thousand. Three deaths were reported from pellagra against one last year, and three from influenza against none last year; but in practically all other causes of death a decrease was noted.

Columbia's Option Lapses.—As a result of the failure of Columbia University to raise the sum of a million dollars by November 20, the project for establishing a great medical center on Washington Heights, New York, in conjunction with the Presbyterian Hospital has received a serious setback. The hospital and the university had together held an option, which expired on that date, on the old American League ball grounds on Broadway, between 165th and 168th streets, comprising ten and a half acres, and had the money been available for its purchase this would have been used as the site for the building of the combined College of Physicians and Surgeons and Presbyterian Hospital. Because the efforts of the university to raise its share of the purchase price were unsuccessful, the option was lost and the project has been abandoned, temporarily at least. It had been estimated that in all fourteen and a half millions would be required to carry out the plans for building and equipping the hospital, lecture rooms, student, and research laboratories, clinics, dormitories, etc., and it was felt that the plot selected was in every way suitable, as providing for future as well as present needs.

Columbia University in Brooklyn.—Beginning in September, 1916, Columbia University will give one year of college work in science and language at the Long Island College Hospital. This medical school has heretofore given a pre-medical course in physics, chemistry, biology, and a modern language, which it has required for admission to the four-year medical course leading to the degree, M.D. This course will be discontinued and Columbia University will give one year's work each in physics, chemistry, biology, French, German, and English, and these courses will have full university credit. This is in connection with the Faculty's plan to require two years of college work for admission to the medical course.

Cornell Medical College.—Cornell University Medical College has recently reorganized its surgical service at Bellevue Hospital by appointing a "visiting surgeon in charge," with a continuous service, and two associate visiting surgeons who are on a full-time salary basis, each having the care of one-half of the service and the assistance of four junior surgeons who are also surgeons to the Out-Patient Department. There are also two visiting surgeons who have a continuous service limited to some special subdivision of general surgery. In addition, there has been established a laboratory of surgical pathology and a laboratory of experimental surgery, each under the charge of a full-time salaried man. These laboratories are open to all members of the staff, who have the privilege of working on their individual problems. All the members of the hospital staff also hold positions in the Department of Surgery at the College, and the students take a portion of their surgical ward work under this organization. The essential changes from the system formerly in vogue consist in the single head, the continuous service, the full-time salaried surgeons, and the laboratories under the immediate jurisdiction of the surgical service, all of which tend to efficiency in both teaching and research.

Memorial to Dr. Blackwell.—There has recently been placed in the New York Infirmary for Women and Children a beautiful tablet as a memorial to Dr. Emily Blackwell, who with her sister, Elizabeth, founded the hospital. The bronze medallion on the tablet is the work of Victor D. Brenner of New York, who has executed bas reliefs of many prominent Americans.

Honor Their Veteran Colleagues.—The Plymouth District Medical Society, on November 23, gave a dinner at Brockton, Mass., in honor of five of its members who had practiced medicine for fifty years or more. The five were Medical Examiner A. Elliot Paine, Brockton; Dr. Calvin Pratt, Bridgewater; Dr. Samuel H. Durgin, Duxbury; Dr. Edward Cowles, Plymouth, and Dr. Horatio F. Copeland, Whitman. All are veterans of the Civil War.

Women and Medical Education.—The trustees of the University of Maryland now have under consideration the question of whether or not women

shall be admitted to the Medical School, a number of applications from women having been received. Since 1910, when the Woman's Medical College of Baltimore became extinct, there has been an increasing demand in Baltimore for a medical course for women with entrance requirements not so high as those of the Johns Hopkins Medical School. The University of Maryland at present requires one year of academic work for admission to the Medical College, and has already opened to women its courses in dentistry and pharmacy.

Twilight Sleep Films Fail.—The attempt made by the Motherhood Educational Society, Inc., to educate the New York public in regard to Twilight Sleep by the means of moving pictures, ended in the bankruptcy court recently. The society had planned to send the films around the country in charge of a physician from Freiburg, Germany, who would deliver a lecture while the pictures were being shown.

New Home at Sea Breeze.—The New York Association for Improving the Condition of the Poor has recently opened a new convalescent home for wage-earners at Sea Breeze, Coney Island. Opportunity will be given here for rest and complete recovery for wage-earners who might otherwise be forced to return to work before a cure was effected.

Decrease in Typhoid Fever.—The number of cases of typhoid fever in New York State during the month of September, 1915, the time of year when the high water mark for the disease is generally reached, was 833, which is a lower figure than that recorded for the same month of any year for which records have been kept, according to an announcement of the New York State Department of Health.

Vaccines in Typhoid Fever.—The Evans Memorial for Clinical Research of the Massachusetts Homeopathic Hospital, Boston, is collecting statistics concerning the efficiency or non-efficiency of bacterial vaccines in the treatment of typhoid fever, and is prepared to furnish blank forms upon which reports of cases so treated may be made. Application for these forms should be made to Dr. W. H. Watters, 80 East Concord street, Boston, Mass., who will be glad to hear from any physician having experience along this line, whether in few or many cases.

Health Board Supreme.—An important decision as regards the powers of the Department of Health of New York City was rendered by the Court of Appeals recently, in the case of an appeal against the enforcement of the dog muzzling order. In upholding the ordinance, the Justice said in part: "A statement of the sections of the charter, necessarily brief and epitomized, enforces two conclusions—the one, that the Legislature empowered the Board of Health to enact and enforce regulations and ordinances, in order that the public health and comfort should be protected and promoted, in relation to very many subjects and matters over which the Board of Aldermen or other municipal body are given by charter regulative power and control; the other, that the lawful regulations, ordinances and orders of the Board of Health are superior and paramount."

The Production of Radium.—Five grams of radium, it is announced by the Secretary of the Interior, have already been extracted from American ores at the Denver experiment station of the Bureau of Mines, and half of it has been delivered to the General Memorial Hospital in New York and half to Dr. Kelly's hospital in Baltimore, for the purpose of carrying on experimental tests of its therapeutic value. The cost of production of the radium was about $37,000 a gram.

Dispensaries for the Insane.—The New York State Hospital Commission has decided to establish an additional number of dispensaries in connection with the State Hospitals for the Insane, and to employ adidtional field agents as a means of curbing the spread of insanity and provide a cure. The Commission feels that it must place greater emphasis than previously on out-patient observation, after care, and preventive work, in connection with the State Hospitals, and the plans have the indorsement of Governer Whitman, who has agreed to the establishment of at least one dispensary with an active field worker for each State Hospital as soon as it can be brought about.

New Home for Convalescents.—As a memorial to her husband, Mrs. I. L. Rice of New York is preparing to build and equip a home to be known as the Isaac L. Rice Hospital for Convalescents, which will be administered by the Beth Israel Hospital Association and will be used chiefly as a home during convalescence for the patients of that institution. The estimated cost is $1,000,000. Tentative plans have been drawn and a suburban site has been selected. Although not an integral part of the Beth Israel Hospital, the home will be in close connection with it and its physicians and nurses will be drawn from the hospital, and the memorial building will make possible the limitation of the work of the Beth Israel to the treatment of acute cases. Work has already been begun on the new ten-story building for the latter institution at Livingston place and Sixteenth street which, as previously announced, will have accommodation for 500 patients.

Personals.—Dr. ROBERT BÁRÁNY of Vienna, the winner of the Nobel Prize in medicine, is reported a prisoner in Russia. He had been in charge of a field hospital at Przemysl, and was held when the Russians captured that stronghold last March.

Dr. KARL H. VAN NORMAN, former first assistant at the Johns Hopkins Hospital, has accepted a captaincy in a Canadian regiment.

Dr. WILLIAM H. WELCH of Baltimore, Dr. Simon Flexner, director of the Rockefeller Institute for Medical Research, of New York, and Dr. Wallace Butterick, director of the China Medical Board of the Rockefeller Foundation, were the guests of honor at the dedication recently of the new Sleeper-David Memorial Hospital at Pekin, China. The hospital is a five-story structure erected by the Methodist Episcopal Church at a cost of $180,000.

Dr. GEORGE G. EITEL of Minneapolis was the guest of honor at a dinner given at the Minneapolis Athletic Club on November 17 by a hundred of his friends.

Medical Society Elections.—SECOND COUNCILOR DISTRICT OF THE OHIO STATE MEDICAL ASSOCIATION: The annual meeting of this society was held at Dayton on November 15 and 16, officers being elected as follows: *President*, Dr. W. B. Patton, Springfield; *Secretary*, Dr. A. O. Peters, Dayton; *Treasurer*, Dr. W. F. Prather, Dayton.

PENOBSCOT COUNTY (ME.) MEDICAL ASSOCIATION: The annual meeting was held in Bangor on November 16, the following officers being elected: *President*, Dr. E. B. Sanger; *Vice-President*, Dr. J. B. Thompson; *Secretary-Treasurer*, Dr. H. J. Milliken.

HARDIN COUNTY (KY.) MEDICAL SOCIETY: At the annual election held at Elizabethtown recently

the following officers were chosen: *President*, Dr. M. S. Allen, Stithton; *Vice-President*, Dr. C. W. Rogers, Rineyville; *Secretary*, Dr. W. F. Alvey, Elizabethtown.

The Idaho-Oregon District Medical Society was oganized at a meeting held in Ontario, Ore., on October 30, when the following officers were elected: *President*, Dr. R. O. Payne, Ontario; *Secretary*, Dr. W. J. Weese, Ontario.

St. Louis County (Minn.) Society: Annual meeting at Duluth on October 14. Officers elected: *President*, Dr. D. L. Tilderquist, Duluth; *First Vice-President*, Dr. N. D. Kean, Coleraine; *Second Vice-President*, Dr. L. Q. Greeley, Duluth; *Secretary*, Dr. L. A. Barney, Duluth.

The Montana-North Dakota Medical Society was organized at a meeting of physicians from counties in northwestern North Dakota and northeastern Montana in Williston, N. D., on October 25, the following officers being elected: *President*, Dr. M. E. Trainor, Williston; *Vice-President*, Dr. C. Hagen; *Secretary-Treasurer*, Dr. F. W. McManus; *Directors*, Dr. L. B. Docterman, Dr. J. Drake, Mondak, Mont., and Dr. F. O. Brigham, Stanley, N. D.

The Late Dr. Huddleston.—At a recent meeting of the New York Academy of Medicine, the following minute was adopted:

"The New York Academy of Medicine has learned with sincere sorrow of the untimely death of Dr. John H. Huddleston. For three years assistant secretary, ten years recording secretary, and for the last three years trustee of this institution, Dr. Huddleston served the Academy of Medicine in the wholehearted, faithful way in which he did everything which came to his hand, performing not only the regular duties of his office, but giving much time, thought, and energy to the many committees on which he was appointed. His lovable personality and genial manner endeared him to those Fellows with whom he was brought into intimate contact, while his scholarly attainments and broad grasp of the principles of medical science commanded the respect of the whole Academy. To the trustees and to the council his sound judgment and firmness of character were of inestimable value, while their deliberations were enlivened by his genial companionship. In his death this academy and the medical profession have suffered a great loss, and it is but fitting that we record the affection and esteem which we felt for Dr. Huddleston by spreading this resolution on our minutes and sending a copy to his family and to the medical press."

The Late Dr. Trudeau.—The medical staff and the patients of the Workmen's Circle Sanatorium of Liberty, N. Y., at a meeting held to commemorate the death of Dr. Trudeau unanimously adopted the following resolutions:

Whereas, The medical staff feels that by the death of Dr. Trudeau the medical profession has been deprived of a great scientist, pathfinder, and pioneer in the sanatorium treatment of tuberculosis, and,

Whereas, The patients and medical staff deeply regret the loss of a great physician to whom an innumerable host of afflicted owe their usefulness, and,

Whereas, The patients and medical staff deem it their duty to honor the name of the great philanthropist and humanitarian, one who, though himself tuberculous, had for thirty-one years worked untiringly and unselfishly in the interests of the consumptive working men and working women, be it

Resolved, That we express our appreciation of his great work by conferring upon our hospital building the name "TRUDEAU," and, be it further

Resolved, That copies of the resolutions be sent to the medical press and a copy also be sent to the family of the deceased.

Signed, Dr. B. S. Antonowsky,
Medical Director, Pro Tem.
Dr. Julius Halpern,
Visiting Physician.

Obituary Notes.—Dr. Benjamin Joy Jeffries of Boston, Mass., a graduate of the Harvard University Medical School, Boston, in 1857, a member of the American Ophthalmological Society, the New England Ophthalmological Society, and the Massachusetts Medical Society, and formerly ophthalmologist to the Massachusetts Charitable Eye and Ear Infirmary, and consulting ophthalmologist to the State Hospital at Tewkesbury and the New England Hospital for Women, died at his home on November 21, aged 82 years.

Dr. Ira Morton Martin of Green Bay, Wis., a graduate of the Kentucky School of Medicine, Louisville, in 1891, and a member of the State Medical Society of Wisconsin and the Brown-Kewaunee Counties Medical Society, died suddenly at his home, from heart disease, on October 24.

Dr. Norton Jerome Sands of Port Chester, N. Y., a graduate of the College of Physicians and Surgeons, New York, in 1868, a member of the American Medical Association, and the New York State and Westchester County Medical Societies, died at his home after a short illness, on November 13, aged 70 years.

Dr. William Francis Knox of McKeesport, Pa., a graduate of the University of Pennsylvania, Department of Medicine, Philadelphia, in 1854, and a member of the American Medical Association, the Medical Society of the State of Pennsylvania and the Allegheny County Medical Society, died at his home on November 12, aged 84 years.

Dr. Charles A. Church of Passaic, N. J., president of the American Association of Orificial Surgeons, a graduate of the New York Homeopathic Medical College and Hospital, New York, in 1871, surgeon and chief of the gynecological staff of St. Mary's Hospital, and a member of the American Institute of Homeopathy, the Academy of Pathological Science, the New Jersey Medical Club, and the New Jersey State Homeopathic Medical Society, of which he was also president, died at his home, after a short illness on November 13, aged 75 years.

Dr. Howard J. Lee, formerly of Cleveland, Ohio, a graduate of the University of Wooster, Medical Department, Cleveland, in 1876, and a member of the American Medical Association, died at his home in St. Johnsbury, Vt., suddenly, on November 5, aged 64 years.

Dr. Oswald Wayne Smith, superintendent of Harper Hospital, Detroit, Mich., a graduate of Washington University, Medical Department, St. Louis, in 1902, formerly superintendent of the St. Louis City Hospital, an authority and writer on the subject of hospital management, died from apoplexy, after a brief illness, on November 12, aged 39 years.

Dr. Harry Daniel Reutter died at Duncannon, Pa., on October 30, at the age of 54 years. He was graduated from Jefferson Medical College in the class of 1884.

Dr. J. R. Sample of Summit, Miss., a graduate of the New Orleans School of Medicine in 1866, died at the home of his daughter in Jackson, Miss., from acute indigestion, after a brief illness, on November 8, aged 74 years.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

GENERAL MEDICAL COUNCIL — RECIPROCITY WITH COLONIES—FUTURE SUPPLY OF PRACTITIONERS—REGISTRATION CORRECTIONS—EDUCATION IN ETHICAL RELATIONSHIPS—WAR HONORS—OBITUARY.

LONDON, Nov. 12, 1915.

THE General Medical Council has just held its one hundred and second session. A new member was Prof. Harvey Littlejohn. Absent members, Sir C. Ball (on account of illness), Sir Isambard Owen and Dr. Russell (on public duties elsewhere). The meeting was held rather earlier than usual. The new building is approaching completion and it is hoped may be partially ready for occupation next month. So it may be assumed that the last session has been held in the premises which have served for half a century. No change has occurred in the membership, but Sir T. Fraser is about to retire after representing the University of Edinburgh for ten years. He took an important part in the preparation of the new pharmacopœia, which has been generally adopted throughout the empire and attained a circulation of some 25,000 copies. Professor Littlejohn, one of the new members, will take Dr. Fraser's place. Dr. Saundby's term of office having expired, he was reelected. Arrangements have been concluded for sitting members to continue in office to the end of 1916, in order that in future the elections of direct representatives may recur at regular intervals of five years. Even if an unexpected vacancy should occur no isolated election need be held in 1916, so that the council will be spared the expense and registered practitioners the distraction of such election in the coming year. Under the authority of the Privy Council the next term of office of each of the six direct representatives will begin with the year 1917, and if no casual vacancies occur succeeding elections will again come into line.

Sir Donald MacAlister, president, remarked on the medical problems of the war as pressing on the thoughts and energies of the profession as more men and still more answer the call of the King, more surgeons being needed for military service, as during the next few months it is anticipated that every qualified man of suitable age and fit for work in the medical corps will be needed. The medical war committees in England and Scotland have undertaken the organization of the profession to this end, and are making progress in their difficult task. They are calling on the young practitioners to give up private practice for war service, on those who remain behind to undertake additional work and responsibility, that the civil population may not suffer. Local medical committees are endeavoring to promote equitable agreements between those who go on active service and their colleagues who remain at home. It is on every ground desirable that such arrangements be generously adopted, and no doubt it will be by the great majority, for failure would be regarded as dishonorable. The country looks for unselfish cooperation of all classes in the common task, and the medical will not be wanting. As to the future supply of qualified men, the reciprocal arrangements with Canada are making good progress, but applicants for registration should be notified that they must not only hold the recognized diploma of their provincial university or college, but must be legally entitled to practise in that province. This is a condition of reciprocity by both imperial and colonial law, and neglect to observe it will cause delay.

There has been much talk, both inside and outside the colleges, as to the duty of students—should they interrupt their curriculum and enlist, or steadily pursue their studies until qualified to practice? Many young men are leaving the schools and enlisting, and a prospective shortage of practitioners is probable. Probationers have been employed to a considerable extent in the naval service, and have done much good work, but it is obvious that they would be of more service if qualified, and after their experience in the fleet it is to be hoped every facility will be afforded them for taking a diploma. The usual requirement of eight months' work as a messer may be thought fulfilled by the service of a probationer. The absence of civil practitioners who have gone to the front has led to fuller employment of certificated midwives, and an extension of the course of instruction for them has been submitted by the Central Board and transmitted to the Privy Council for approval. In some cases of misconduct names have been erased from the register, and it has been discovered that persons thus disqualified have removed to another part of the empire and there practised, obtaining local registration from their forfeited qualifications. The Colonial Office transmits copies of the erasure list for confidential use by Government officers in the oversea dominions, but it appears that in some cases the list had not arrived.

Part 2 of the Medical Act, 1886, having been extended to Ontario, the president has exercised the powers it confers upon him, and registration is now being carried out of the qualified practitioners in the Province. In regard to Saskatchewan, there was a good deal of correspondence involved, but it eventuated in the registrar being instructed as to the license to practise granted in the province being admitted to the colonial list of the registrar under Part 2 of the Medical Act.

Dr. Saundby, on reelection to the council, was reappointed a member of the committees on examinations, penal cases, prevention of unqualified practice, and on the national insurance act. Applications for registration took up a good deal of time. Some of these arose from the applicants' neglect to take the step until after the appointed day and continuing to practise while unregistered. It might be considered not unfair to increase the fee in such cases. There was a long discussion on the resumed consideration of the motion that "it be remitted to the education committee to report on the education of medical students in the ethical relationships of practitioners to the State, to their patients, and to each other." After defeat of several amendments, the resolution was carried.

The Distinguished Service Order has been awarded to five medical officers at the front, and the Military Cross to nine others.

Four medical officers and twenty-eight nurses have gone from London to Petrograd to serve in the Anglo-Russian Hospital there.

Dr. Addison died on the 27th ult. at Colchester, where he had practised for nearly thirty years.

Dr. Dent has died at the age of 48 at Woodford, where he had practised for about twenty years and was on the staff of the local hospital.

Progress of Medical Science.

The Boston Medical and Surgical Journal.

November 18, 1915.

1. Address. The Midwife Problem. A. K. Paine.
2. The Pregnancy Clinic and the Midwife: A Comparison. James Lincoln Huntington.
3. Clinical Records in Relation to Teaching and Research. Eugene S. Kilgore.
4. The Nomenclature and Classification of Diseases. James L. Whitney.
5. Gemmatous Cervical Adenitis. William Pearce Coues
6. Local Anesthesia in the Radical Cure of Hernia. Albert Ehrenfried.
7. Studies in Speech Disorder. Walter B. Swift.

1. **The Midwife Problem.**—A. K. Paine analyzes the information which he has secured on this subject through an extensive communication with various people interested in the midwife problem throughout the United States, including leaders in the practice of obstetrics, officials whose work brings them into close contact with obstetrical problems, boards of registration in medicine, boards of health, and various local organizations. From the impressions gathered from this wealth of material the writer concludes as follows: 1. Education in obstetrics in the various medical institutions in this country is considerably below the standards achieved in other branches of medicine. 2. The practice of obstetrics generally is very materially below the standards of general medicine and surgery, due first to the educational deficiency in this subject; second, to a low type of midwife service, the result of a practical absence of regulation; and third, due to the fact that the general attitude of the public at large toward the practice of obstetrics is not in keeping with the dignity of that subject. 3. That no comprehensive and far-seeing plan is generally being developed to cope with the situation as it presents itself. 4. That there is a distinct tendency in many quarters to adopt the midwife as an institution, after the manner of its conduct in the countries of Europe. 5. That, while the whole subject of the proper obstetric care of patients needing this service is one of great economic importance to the State, there is practically no attempt at meeting this situation by the State. 6. That it would seem that our method of government is not adapted to the rigid requirements which the properly regulated midwife demands. 7. That the State should assume the management and control of this work, which is of the greatest economic importance, as readily and as well as it assumes the burden of caring for such of its citizens as are incapacitated by ill health or age.

2. **The Pregnancy Clinic and the Midwife: A Comparison.**—James Lincoln Huntington outlines the difficulties that would have to be surmounted before the midwife could be educated in Massachusetts. While it would not be difficult to establish the machinery for licensing the midwife, such a law under present conditions would be futile. All the women practising as midwives are breaking the law now, yet very few are prosecuted annually. Again, law that is not backed by public sentiment is futile and public sentiment in Massachusetts is absolutely indifferent as to whether midwives practice or not, or whether they are or are not licensed. Furthermore, by developing a midwife system a dual standard is established in obstetrics. We have been told that the immigrant cannot be weaned from the midwife, but that she not only can be, but had been, weaned from the midwife can be seen by the casual observer who will visit the pregnancy clinic of the Boston Lying-in Hospital. This institution was started in 1911 and there are now three similar clinics in Boston, besides others in smaller cities. All patients are urged to come to the clinic as early in their pregnancy as possible, and every year more patients are coming before the fifth month. During 1914 there were 2,067 women under the care of this clinic. The work of such an institution is educational. The writer says: "We teach the community to appreciate good obstetrics, teach our patients how to obtain this care, and our students how to provide it. We feel confident that this is the solution of the obstetrical problem in Massachusetts, offering far better results than could the midwife, no matter how well trained and regulated. By the increase in the number of such institutions we are encouraged to believe that the midwife will gradually disappear, being superseded by the modern obstetrical dispensary."

3. **Clinical Records in Relation to Teaching and Research.**—Eugene S. Kilgore reported, in connection with the reorganization of the University of California Hospital in 1912, his experiences in the cooperation of a university hospital, medical school, and training school for nurses, to promote accuracy and completeness of clinical records. He offers suggestions concerning the methods of recording certain data, which will be taken up in other articles. In addition to the usual diagnosis index, which should be made to include many more of the secondary diagnoses, a plan is described for indexing any clinical facts which cannot be included among the diagnoses. This is as simple as it can be and yet give the results, and it works well.

6. **Local Anesthesia in the Radical Cure of Hernia.**—Albert Ehrenfried finds that local anesthesia can be employed in the operative treatment of inguinal hernia with considerable satisfaction. He reports three cases, coming under his observation in a week in which general anesthesia was contraindicated and the results of local anesthesia were particularly gratifying. He finds in novocaine a simple and satisfactory means of inducing anesthesia for the radical cure of inguinal hernia. The technique adds something in the way of difficulty to the surgeon, who is not accustomed to the use of local anesthesia, but the advantages to the patient are sufficient to compensate for any extra care or labor required. The writer believes that if the line of incision is first injected endermically, the surface anesthesia will be more assured, much less solution will be required in the subcutaneous tissue, as a consequence of which there will be much less distortion of the field, and the incision can be started without waiting as soon as the injection is completed.

7. **Studies in Speech Disorder.**—Walter B. Swift discusses the vocal defects that persist after adenoid and tonsil operations, and points out that they are quite various. The treatment varies with every case. Even some cases with the same defects have to be approached differently from others because of their different dispositions. Otherwise the treatment consists in reteaching vocal expression through imitation and didactic instruction. Vocal drill by one trained scientifically in the understanding of speech disorder is the surest method to secure permanent relief and to attain a perfect articulation.

New York Medical Journal.

November 20, 1915.

1. The Study of Drug Action. Thomas J. Mays
2. Lymphatic Obstruction. A. L. Benedict.
3. Parapsoriasis. Fred Wise.
4. Kerion. Jacob Grossman.
5. The Artful Acarus. William P. Cunningham.
6. Proliferating Tuberculous Cystitis. Maurice Laverrière.
7. Chronic Urethritis, Gonorrheal and Post-Gonorrheal. A. Strachstein.
8. Acute Otitis Media. Clarence H. Smith.
9. Potassium Permanganate in the Examination of Cerebrospinal Fluid. A. I. Rubenstone.

3. **Parapsoriasis.**—Fred Wise discusses this disease from the clinical and diagnostic standpoint and reports five cases encountered during the past two years in private and dispensary practice in New York, so that

he concludes it can scarcely be said that the disease belongs to the very rare dermatoses. Unfortunately the nomenclature of these polymorphic cutaneous affections is in a chaotic condition. However, Brocq has introduced the name parapsoriasis for that group of diseases of the skin characterized by persistent, red, scaling patches, or lichen, planus-like lesions devoid of subjective sensations and resistant to therapeutic measures. Taking the five cases which he reports collectively the author finds that the changes depicted in them deviate hardly at all from those noted by Fox and Macleod which were characterized by dilatation of the subepidermal capillaries; flattening of the papillary bodies; edema affecting the fibrous stroma near the dilated vessels; edema and rarification of the collagen; infiltration of the small cells like lymphocytes with a few small polymorphonuclear leucocytes among them; thinning of the overlying epidermis; interepithelial edema and presence of leucocytes; edema of the granular cells. There was no stratum lucidum detected; the stratum corneum showed a tendency to desquammate; only here and there could imperfectly cornified cells be found retaining nuclear remains, and where these latter cells were present, the granular layer was deficient. The elastin did not stain well. As to the mode of production the consensus of opinion is that the alterations in the epidermis are of secondary character. The primary changes take place in the upper portion of the cornium. It is also believed that chronic vasomotor disturbances induced by toxic products play a dominating part in the pathogenesis of the disease. The history of the treatment in these five cases seemed to confirm the futility of ordinary measures; two of the cases seemed to show some response to serum therapy though it was too soon to state that they were definitely cured.

5. **The Artful Acarus.**—William P. Cunningham apologizes for retelling the oft-told tale of scabies, but states that the frequency with which this condition remains unidentified and uncontrolled is warranty enough for the revival, circumstantial description, and reiterated emphasis on this subject. The characteristic and in fact the only lesion produced by the acarus is the furrow and the reason it is not recognized is because it is not thought of. In order that treatment may be speedily effective it is necessary not only to destroy the parasite in the skin, but also in the clothing. Hence the underwear must be boiled before it can be worn again. Wristbands and collars of coats must be soaked in naphtha or the whole garment sterilized by heat. The patient must take a hot bath and rub himself vigorously with common brown soap to open up the furrows. He must soak in hot water for half an hour. Then he must rub in a parasiticide for half an hour longer. He must then put on a suit of underwear perfectly new or sterilized by boiling. Every night and morning he must rub in the ointment designed to destroy the acarus. At the end of the third day he takes another hot bath and puts on sterilized underwear. If he has been vigorous and faithful he will be cured. If any furrows have escaped the process must be repeated. Sulphur is the great acaracide. Storax and tar are likewise effective, and a combination of the three may be used with advantage.

8. **Acute Otitis Media.**—Clarence H. Smith reports a case of pyemia of otitic origin which is of interest because of the youth of the patient (seventeen months), the difficulties of diagnosis, and the measures of treatment. The child had been ill since May 22, 1915, with influenza, bronchopneumonia, tonsillitis, and double acute otitis. The ear symptoms were first noticeable on May 27, and the first metastasis was observed on June 1. There was an absence of symptoms of mastoiditis, and at operation there was found a freedom from pathological changes in the mastoid. There was an extensive sinus thrombosis, which certainly reached as far back as the torcular; how much further it was impossible to say as the distal end was not reached at the operation. Fortunately this was absorbed and did not act as a continuing source of infection. There was an abscess in the right great toe, one over the elbow, and over a dozen superficial ones in various parts of the body. Transfused blood was used to counteract the septic anemia, and proved of very material benefit in this instance, as after its use an immediate improvement in the color of the patient and the quality of the pulse was seen. The writer called attention to this transfusion as a measure hitherto not often used in aural surgery.

9. **Potassium Permanganate in the Examination of Cerebrospinal Fluid.**—A. I. Rubenstone says that in frank meningitis we already have enough diagnostic and corroborative methods to ascertain the type of meningitis without much difficulty, but meningeal irritation due to some toxic agent which is present in the body which finds its way into the cerebrospinal fluid may not give us chemical evidence of its presence in the cerebrospinal fluid. In such cases the writer has found the following test advocated by Boveri very useful: To 1 c.c. of cerebrospinal fluid in a test tube add 1 c.c. of 0.1 per 1000 potassium permanganate and shake well. Pathological spinal fluid produces a bright yellow color, while normal fluid retains a pinkish violet tinge. In an examination of over 100 specimens of spinal fluid by this test the author has found that by the use of double the quantities originally advocated the color reactions are much easier to interpret and that there is a definite ratio between the color changes and the abnormal state of the fluid. Fluid from undoubted cases of meningitis, tuberculous, syphilitic, or suppurative, almost immediately turned the reagent a bright yellow, while mild cases of meningeal irritation did not decolorize the reagent until two or three minutes after the admixture. The writer concludes that while potassium permanganate test is not of specific value in the diagnosis of pathological conditions of the spinal fluid, yet it should take a place as an addition to our list of reactions, because it is not only useful in corroborating other chemical tests of the severity of the disease process, but in doubtful cases may serve as a deciding factor in the differentiation between absolutely normal and mildly abnormal spinal fluids.

The Journal of the American Medical Association.

November 20, 1915.

1. The Relation of Rodent Plague to Human Infection. W. C. Rucker.
2. Urinary Antisepsis. A Clinical and Bacteriologic Study. Frank Hinman.
3. Late Results of Excision of the Transverse Process of the Fifth Lumbar Vertebra. Fred J. Fassett.
4. Analysis of Four Hundred Cases of Lobar Pneumonia. J. G. Cross.
5. Infectious Diseases. Their Administrative Control in Different Cities of the United States. S. Dana Hubbard.
6. Blood Cryoscopy and Blood Urea. A Comparative Study of Renal Function. Martin Krotoszyner and George W. Hartman.
7. Traumatic Separation of the Nerve Roots from the Spinal Cord. Report of a Case. Williams B. Cadwalader.
8. A Plea for Cholecystectomy. John W. Lane.
9. Viability of Bacillus Typhosus in Ice Cream. O. W. H. Mitchell.
10. Typhoid Fever Resulting from Infection of an Unpasteurized Milk Supply. Report of a Series of Five Cases. Don B. Lowe.
11. Destroying Limited Obstructive Glandular Growths in the Posterior Urethra by the High Frequency Current. Robert V. Day.
12. Anteversion of the Neck of the Femur in Connection with Congenital Dislocation of the Hip. Russell A. Hibbs.
13. Congenital Dislocation of the Hip Reduced by Manipulation Followed by Arthrotomy. James T. Watkins.
14. Structural Changes in Congenital Hip Dislocation. Wallace Blanchard.

15. The Significance of the Fixation of Certain Abdominal Organs in the Human Body. Robert C. Coffey.
16. Roentgen Observations of the Gallbladder and Hepatic Ducts After Perforation Into the Duodenum. R. D. Carman.

1. The Relation of Rodent Plague to Human Infection.—W. C. Rucker believes that the most essential factor in the control of plague during recent years has been the realization that it is essentially a rodent epizootic. The literature of plague contains reports of the disease in various animals, but many of these reports are not confirmed by convincing experimental evidence. The rôle of the rat in the pathogenesis is classical and there is a preponderance of evidence which proves that bubonic plague in man depends on the presence of the disease in rodents. The overwhelming fact in plague perpetuation and spread is that it is a rodent disease and it is interesting to study the relation of the distribution of human plague cases in their relation to rodent plague cases. Since plague is a rodent disease, if man is isolated from rodents he will not under ordinary circumstances contract the disease. It is manifestly impossible to kill all of the rats in a given community, much less in a whole country, or the entire world. If their migrations can be controlled, if they can be excluded from the places in which man lives and works, the maximum result has been accomplished.

6. Blood Cryoscopy and Blood Urea.—Martin Krotoszyner and George W. Hartman make a comparative study of the renal function with both tests and conclude that (1) blood cryoscopy and blood urea run parallel in cases with normal renal function; (2) in renal insufficiency pathological or high points are obtained with both tests; (3) the limited range between normal and pathological points, while rendering technique of cryoscopy more difficult, increases its delicacy and prognostic significance; (4) blood urea, while technically simpler, is, on account of the broad range of its normal and pathological values, prognostically less precise; (5) simultaneous application of both tests intensifies, in doubtful cases, the significance of findings.

9. Viability of Bacillus Typhosus in Ice Cream.—O. W. H. Mitchell says that the use of various frozen foods and confections in which milk and milk products serve as a basis or constituent has become so great as to demand serious attention from sanitarians. The persistence of the typhoid bacillus in milk and milk products is well known, and many cases and epidemics are recorded which have been transmitted by this food. The *Bacillus typhosus* survives in ice cream for varying lengths of time, in the recorded experiments from 12 to 39 days. It is plain, therefore, that ice cream may easily transmit typhoid fever. The findings emphasize the necessity of strict cleanliness in the manufacture of ice cream, and the importance of pasteurization of milk and milk products used in these mixtures.

10. Typhoid Fever Resulting from Infection of an Unpasteurized Milk Supply.—Don B. Lowe reports a series of five cases to emphasize the dangers of an unpasteurized milk supply and the necessity of reporting contagious diseases to the proper authorities.

11. Destroying Limited Obstructive Glandular Growths in the Posterior Urethra by the High Frequency Current.—Robert V. Day reports several cases occurring in the private practice of Dr. Granville MacGowan and himself. Out of 39 cases of intraurethral or bladder neck cautery operations during the past 13 months, 31 were by either the simple electric cautery or high frequency cauterization with flexible electrodes; 8 were done by the silica insulated wire needling and bipolar current. Only selected cases were chosen for this method. Of the 8 cases detailed there were 2 failures and 6 successful operations. In conclusion he states that a much greater amount of tissue can be cooked at a sitting than by ordinary high frequency methods; the point of application can be made to better advantage in some cases—especially when the urethra is somewhat choked; masses can be made to slough which could hardly be impressed by the usual procedures; and there is little fear of even slight hemorrhage and very little postoperative reaction.

14. Structural Changes in Congenital Hip Dislocation.—Wallace Blanchard says that experience with these cases seems to warrant the following conclusions: A shortened or twisted neck in a coxa valga position may look unpromising in the roentgenogram, and yet present no bar to a good reduction and ultimately to a good functioning joint. Eight months is the shortest time in which a dependable acetabulum reforms, and any radical change in the position of the leg interrupts the rebuilding process. The best functional result may be obtained in children from 3 to 5 years of age and with from 2.5 to 4 c.m. of shortening. There is no age limit upward; the older the child the greater the shortening, the more secure the replacement, if it can be made. The difficulty of reduction increases with the shortening after 4 c.m. have been passed. Reduction should be delayed in all cases of 3 years or younger and in those that show 2 c.m. or less of shortening. If the roentgenogram shows delayed ossification from rickets or other causes, the reduction must be postponed. Perfect or satisfactory function may be obtained in a large majority of the unilateral and a fair proportion of the bilateral cases.

15. The Significance of the Fixation of Certain Abdominal Organs in the Human Body.—Robert C. Coffey concludes as follows: 1. Prenatal fixation of the pancreas, duodenum, ascending and descending colon, and their mesenteries to the parietal peritoneum; of the liver to the diaphragm; of the omentum to the transverse colon; and the obliteration of the omental bursa, are evolutionary changes which help to fit man for the erect posture are not found in quadrupeds. 2. All cases of floating kidney with general visceroptosis are found in patients whose ascending and descending colon with mesenteries have failed to properly adhere to the parietal peritoneum. Surgical fixation of a floating kidney without fixing the colon is not based on sound surgical and anatomical principles; hence the failure of such operations in the past and necessity for surgical fixation of the colon at the same time. 3. Many cases of intestinal stasis are caused by the disturbed relations of the parts of the intestinal tract resulting from normal fixation of the ascending colon. While most of such cases are relieved by medical means, a few require surgical fixation. Surgical fixation of the ascending colon should be extended to the suspension of first portion of the transverse colon by the omentum, for purpose of preventing harmful angulation at the hepatic flexure. 4. Some cases of persistent stomach trouble are due to the weight of a distended mobile cecum dragging on the third portion of the duodenum, and are relieved by anchoring the ascending colon and suspending the first half of the transverse colon.

The Lancet.

November 6, 1915.

1. A Lecture on Wound Infections and Their Treatment. (Continued.) Almoth E. Wright.
2. The Bradshaw Lecture on Nervous Affections of the Sixth and Seventh Decades of Life. (Continued.) J. Mitchell Clarke.
3. Experiences in the Operative Treatment of Gunshot Injuries of Nerves. Frederick Eve and R. S. Woods.
4. The General Surgery of Gunshot Wounds of the Nerves. Wilfred Trotter.
5. Experiences in Serbia. J. T. J. Morrison.

3. Gunshot Injuries of Nerves.—Frederick Eve and R. S. Woods state that 28 cases were operated on at the War Hospital at Croydon, five for injuries of the brachial plexus, eight of the musculospiral nerve, one of the posterior interosseous nerve, five of the ulnar, two of the median and ulnar nerves together, and seven of the sciatic or external and internal popliteal nerves. The five cases of injury to the brachial nerve furnished many points of interest. They found that where a dense mass of cicatricial tissue had matted together all the cords of the brachial plexus and was adherent to the anterior aspect of the subscapularis muscle that by cutting combined with teasing by blunt dissection the various strands of the cord could finally be separated out and the cicatrical tissue removed. Boldness is justifiable in operating on these severe lesions, for the limb must remain useless unless restoration of conduction in the nerves can be restored by surgical measures. The chief point in the operative treatment of these nerve lesions is to determine whether simply to separate the injured nerve from the surrounding tissues or to resect it, and this is of greater importance owing to the fact that anatomical division is comparatively rare. A definite indication was usually afforded by inspection. In those cases in which resection was performed the fibrotic tissue or bulbous end was removed on the proximal side until the section showed well-defined nerve bundles, and the distal end was refreshed. The ends were pierced with a round shafted needle and united with one or, in the case of large trunks, two sutures of 20 day chromic catgut, 0 or 1 size. It was always found possible to get the ends of the nerves together by freeing the nerve above and below and flexing the nearest joint or adducting the upper arm. Where a portion of the nerve was thickened and appeared to be "hidebound" an incision was made into the thickened tissue. All of the cases except one had been tested electrically. In practically all instances the paralyzed muscles did not react to faradization. The Lewis-Jones condenser has been found of great assistance as it furnishes a numerical equivalent indicating the degree of interruption of conduction through the nerve and the condition of the muscle. The condenser also furnishes important indications as to the site and severity of the lesion. The disappointing feature of the treatment of nerve injuries is the long period required for the completion of the reparative processes, and so far very little information can be given as regards the results of this work, most of the cases having been operated upon after the beginning of August.

4. Gunshot Wounds of Nerves.—Wilfred Trotter states that a large experience is being acquired in the surgery of the peripheral nerves and that while it is too soon to arrive at definite conclusions they might gain something if they could agree upon the general lines of technique that their treatment should follow. The problem of restoration which an injured nerve presents is distinguished by certain peculiarities from all other similar tasks in plastic surgery. 1. The interruption of a nerve leaves a permanent effect in the physiological equipment of the body which cannot be overcome or compensated for by any other mechanism. 2. The restoration of a nerve to its normal anatomical continuity, although an essential preliminary to recovery, is by no means a guarantee of it. The writer classifies his cases in a broad way into (1) intradural nerve injuries, almost entirely injuries of the cauda equina, and (2) peripheral nerve injuries, which may be typical complete lesions of one or more nerve trunks; mixed lesions with complete division of some and incomplete division of other closely adjacent trunks, chiefly seen in the brachial and sacral plexuses, but especially the former; incomplete lesions without pain; incomplete lesions with pain; and pure pressure lesions, as from a prominence of bone or a foreign body. A discussion of the principles of operative treatment leads the writer to two conclusions: 1. Regeneration is dependent upon, and resisted by, the reactions between exposed nerve substance of a divided nerve and the surrounding tissues. Where such reactions cannot occur there is no regeneration, as in the spinal cord; where such reactions can occur regeneration is apt to be resisted by fibrosis and consequently at times to be greatly delayed or incomplete. 2. Regeneration involving a reaction between the nerve and the tissues is apt to lead to an irritation of the former which makes it hypersensitive. In some persons nerve may be divided and equilibrium between the outgrowing fibers and the encapsulating bulbous end be established satisfactorily and painlessly. In others equilibrium is never regained. Fortunately, in the majority of cases the irritating effect of the encapsulating fibrous tissue upon the nerve tends gradually to subside. The application of these principles leads to certain general conclusions. It is obvious that any attempts to secure regeneration of the cauda equina by suture must fail and this has been fully confirmed by the experience of the writer. In peripheral operations, which offer a hope of regeneration, a great deal of care should be given to securing the most exact coaptation possible of the sutured ends by the finest catgut. When the suture is complete the junction should be wrapped in a layer of subcutneous fat which may well be a quarter of an inch thick, and should extend, if possible, two inches on each side of the junction. As far as experience shows us at present the most important points in the technique of nerve resection are free excision, exact coaptation, careful insulation, and perfect asepsis. Muscular relaxation before and after the operation is perhaps equally important.

British Medical Journal.

November 6, 1915.

1. The Bradshaw Lecture on Nervous Affections of the Sixth and Seventh Decades of Life. J. Mitchell Clarke.
2. On Wound Infections and Their Treatment. Almroth E. Wright.
3. The Operative Treatment of Gunshot Injuries to Nerves. Frederic Eve and R. S. Woods.
4. Magnetic Property of German Bullets. Sinclair White.
5. Compound Dislocation of the Knee; Recovery with a Useful Limb. John Cropper.

1. Nervous Affection of the Sixth and the Seventh Decades of Life.—J. Mitchell Clarke says that these decades constitute a period of life which has certain marked characteristics. Many nervous diseases run a long course and we would expect to find that the nervous diseases of this period will be made up of some which began at an earlier age, and of others, fewer in number, whose incidence is contained within it. The diseases of the spinal cord are numerous and important between the ages of 50 and 70 years of age and are largely diffuse lesions of the posterior or lateral columns, mostly degenerative, those formerly grouped as "combined sclerosis." Caries of the spine, hypertrophic cervical pachymeningitis, and internal pachymeningitis, involving a great extent of the cord, and probably of syphilitic origin, are probably very seldom met with after fifty. Tabes dorsalis fairly maintains its frequency in the sixth decade of life, but shows a decided falling off compared with the periods of 30 to 50, and a very marked falling off after 60. The myopathic forms of muscular atrophy do not arise in the periods of life under consideration, but the myelopathic forms are relatively frequent after 50. Dis-

seminated sclerosis, syringomelia, and neuritis usually have their onset at an earlier period of life. Likewise meningitis due to pus-producing organisms becomes uncommon after 50, and tuberculous meningitis in persons over 50 is very exceptional. Cerebral tumors, cerebrospinal syphilis, the neuroses, epilepsy, hysteria, and neurasthenia are uncommon after 50 years of age. Vertigo is occasionally the chief symptom in an attack of late epilepsy and is one of the common and most distressing of the nervous affections of later life. Neuralgias due to gout, arteriosclerosis, various cachexias, and the presenile disturbances of nutrition are not uncommon. Paralysis agitans, though not a very common disease, is preeminently one of the period of life between 50 and 70 years. The writer concludes that a review of the nervous affections of the sixth and seventh decades of life shows that many nervous diseases do not occur at all, others are modified in their symptoms, and a few especially affect this time of life. Except for the nervous diseases dependent upon vascular disease this period of life comes out more favorably in comparison with other ages than one would perhaps have expected. Cerebral hemorrhage, thrombosis, and hemiplegia afford a very large proportion of the sufferers between 50 and 70 from all the diseases considered in this article. Further it has been shown that disease of the arteries materially affects the course of most of the nervous affections at this period. It is possible that the affections mentioned as characteristic of this period of life owe their origin to that process of premature senescence known as abiotrophy, and that this pathological process may occur at any age.

4. **Magnetic Properties of German Bullets.**—Sinclair White writes that it is not generally known that German rifle bullets are strongly attracted by an ordinary magnet, whereas the English bullet is quite devoid of this quality. The difference is due to the composition of the casings. The English bullet has a casing of 80 per cent. copper and 20 per cent. nickel, and this alloy in the above proportions is non-magnetic. The casing of the German bullet is a steel containing 3.36 per cent. nickel and low in carbon. With the highly successful methods of localizing war missiles in the body by the *x*-ray magnetic tests are no longer of any value for this purpose, but the magnetic attraction possessed by the German bullet may under certain circumstances be utilized to assist in its removal from the body.

Berliner klinische Wochenschrift.

October 11, 1915.

Whooping Cough.—Lange, a Danish physician, seeks to reduce this subject to aphorisms. We do not know just how the disease is contracted, nor does the author recognize the accused germ as the proved cause. We know the disease is contagious, and that it assumes an epidemic incidence. We know that it readily falls into the group of diseases which attack children and comprises measles, scarlatina, and diphtheria. That is, it begins locally and becomes generalized. But its local symptoms are so violent that a systemic infection seems hardly existent. Nevertheless, the latter is indicated by the three symptoms, leucocytosis, febrile reaction, and conferred immunity. Moreover, there is a marked nervous component, as shown by the convulsive nature of the paroxysms which appear to have an aura, actual convulsions in very young children, glottic spasm, and vomiting. The majority of practitioners undervalue this nervous component which the author almost regards as the solution of the riddle. The late, lamented Jochmann, a great authority on infectious diseases, was puzzled to find the influenza bacillus in the sputum of pertussis subjects and indeed in all stages. We know since the great influenza pandemic of 1889 that this disease can appear as a gastroenteritis and also in a nervous form. But influenza was hardly known to moderns before that pandemic. We now regard it as the most protean of all diseases. Whooping cough we know of old. Most of us have had it and obtained some immunity, at least as regards a bronchial infection. Let us distinguish between local and general symptoms. In whooping cough a child perhaps in full health has a tremendous seizure, which is almost enough to destroy it. A few moments later, apparently well, it has resumed its play and with no fear of another paroxysm. What is the efficient cause of such distressing phenomena? No matter how severe, how intense a laryngitis, tracheitis, bronchitis due to another cause no paroxysms like those of pertussis ever develop. This gives specificity to the disease. Can the Bordet-Gengou bacillus produce it and produce it alone? The disease is a so-called children's malady, although well known in adults. But while the former swallow the sputum, the latter expectorate. The amount of secretion is always small for a catarrh of the breathing tubes. The presence of ordinary influenza bacilli could hardly account for these paroxysms; hence we must investigate from this viewpoint the alleged specific cause. Thus far the proof that this is the Bordet-Gengou bacillus is lacking. Influenza is a disease of adults. When children contract it it is relatively simple in type. The author appears to reach the conclusion that the influenza bacillus found by Jochmann in the sputum of pertussis may be the true cause of the latter. He quite overlooks the fact that several distinct microorganisms can cause a typical influenza synchrome—the pneumococcus for example. In summing up he mentions the specific character of whooping cough, its catarrhal and convulsive stages, its nervous component—the latter a central irritability. Similarly in influenza the nerve centers may suffer, but no influenza cough ever has the violence seen in pertussis. No attempts are made in the direction of a umcistic conception, yet the author evidently regards the two affections as belonging to one group.

Münchener medizinische Wochenschrift.

October 12, 1915.

Anaerobe Sepsis.—Pribram uses this term for the severest forms of gas sepsis, characterized by a special type and fulminating onset. That obligate anaerobes in virulent condition can circulate in blood which contains oxygen, and is propelled by a properly acting heart will seem strange to some readers. Let us take the lesion known as subfascial phlegmon, in which the bacteria find their most approved culture bed in muscle tissue. The gas formed here is CO_2 from muscle glycogen, and is diffused so rapidly through all the neighboring muscle tissue that it ceases soon to possess any surgical interest. The entire musculature of the thigh, buttocks and small of the back. In the upper extremity the same kind of invasion is seen—invasion which is determined purely by muscle anatomy. Nevertheless, *when phlegmons form*, cure is possible, even though amputation cannot avail. A free incision may show streptococci and sporing anaerobes in association; but in a day or two later only the streptococci are seen in pure culture. The trouble is with those diffuse infiltrations of deep seated muscle, because the anaerobes then enter the blood and cause their peculiar type of sepsis. In such cases there is apparently no mixture of infection, no pyogenic cocci to enter the blood. So rapidly do the anaerobes act that

they infect the blood long before any of the aerobic causes of sepsis could arrive at the same destination. The first results of anaerobes in the blood is unusual thrombosis of the finer blood vessels. Division of such muscles is not followed by escape even of a drop of blood. The infected tissues must soon perish and then the anaerobes find their most welcome culture bed. We now see gas gangrene. In theory as in all gangrene extirpation involves cutting into tissues that bleed. Mere incisions and instillation of superoxides and oxygen have never rendered service at the author's hands. The swollen, algid tissues, however, may cause at first but little systemic reaction; but sooner or later dyspepsia sets in. The blood pressure drops and death occurs suddenly from cardiac failure. Before death the author has been able to cultivate the anaerobes from the blood. Death he attributes to acidosis, due to CO_2 produced from the muscles. The usual foamy appearance of the blood and pulpy organs is noted. The color of the liver is exactly that of cigar ashes. In anaerobe sepsis icterus may be a prominent symptom or it may be absent altogether. The anaerobes show considerable variety in size and shape, and the author makes no attempt to identify them.

Campaigns Against Flies and Mosquitos.—Seelhorst gives his experience with the fly plague in a military hospital. The first thing to do is to locate the breeding places. These should be screened off, while waste water should be drained away. Foods should be kept in closed vessels, chests, drawers, etc. Pits for dejecta can be made flyproof. Portable outfits should have all seams tightly calked, and vaults for the feces should be dug deep. Measures directed against the flies themselves are based largely on proper ventilation of rooms. In the daytime open windows and doors, especially with southern exposure, attract flies, but at dusk they tend to escape. In the daytime doors and windows must be screened. In regard to mosquitos Halberkann discusses tincture of pyrethrum, the powerful odor of which is thought to repel the insects. He himself believes they are attracted by it, and finds that none of the essential oils reputed as protecting against the mosquitos can make good on a large scale. Volatile oils cannot block their respiratory organs, and fluids offer the best hope. A mixture of tincture of pyrethrum, soap tincture, and glycerin is used by travelers.

Deutsche medizinische Wochenschrift.

October 7, 1915.

Vitamines and Accessory Nutrient Substances.—Two groups of phenomena of the physiology and pathology of nutrition are connected with the absence of certain substances in the diet. The first refers to the development of certain diseases like beriberi, scorbutus, and pellagra, either from the absence of some unknown substances essential to life, or from toxic substances due to imperfect metabolism conditioned by such absence. The second has to do with defects in inorganic articles of diet, so called mineral starvation, not necessarily due to absence from the diet of mineral matter but rather to inability to fix it in the tissues. Thus the type of the first class of cases would be beriberi, as due to a diet of polished rice, and of the other class rickets would be the chief representative. A material has been obtained from rice and yeast which can cure experimental polyneuritis in fowls and pigeons; and it has been assumed by Funk and others that we have here a substance essential to life. More recent efforts, however, tend to show that the metabolism of polished rice gives rise to toxic byproducts, so that the polyneuritis of beriberi is toxigenic like polyneuritis in general. However, the deficiency and toxic theories need not exclude each other, and in all forms of inanition, partial or total, there appears to be a toxic component. Infantile scurvy or Barlow's disease can be produced by a boiled milk diet, by certain cereals, flours, etc., when the child subsists entirely upon them. In recent years the laws of mineral metabolism are being studied. It is now believed that in deficiency diseases the missing substances are not themselvese molecular but enter into the formation of large molecules of protein substances as atoms or radicles. In other words they form a part in the regular syntheses of metabolism. We know of course that heterologous animal and plant albumin of the diet must be broken up by digestion and synthetized into homologous protein which must again be disintegrated before it can be eliminated from the organism. The minimum protein requirement of which we hear so much must of course be biologically sufficient. Recent research appears to have shown that neither meat proteins or casein have the theoretic value attributed to them. In other words when we reckon that we are getting 100 gm. of utilizable protein in this manner the real figure is much nearer 70 gm. In this respect these proteins are inferior to those of potatoes and rice, although much above those of wheat flour and maize. Highest of all in biological value is the protein of vegetables like cauliflower and fruits like cherries. Bread is richer in utilizable protein than the flour from which it is made, because of the added protein in the yeast. In regard to the protein molecule, the simplest of them do not have an exclusive nitrogen ring as a nucleus, the N atoms being associated with other elements. Upon certain kinds of nitrogenous fodder animals cannot maintain N-equilibrium; however, after certain mineral additions to the diet, the approach to N-equilibrium is considerable. The more variety in diet, the greater the possibilities of utilization—hence, to any nitrogenous article we should add simple carbohydrates, fats, lipoids, vegetable extracts, etc., in order that higher syntheses be favored. Whenever any class of foods is left out of the diet we have to think of a possible damage to nutrition.

Universal Pigmentation.—J. A. Nixon reports a case of this condition in a man, aged 33 years, in whom spontaneous universal pigmentation had developed during the last six years, until, at the time of the report the whole body was of a dark brown tint, resembling the skin of a native of India. The man dated his condition from an attack of dyspepsia, with neurasthenic symptoms, six years ago. Immediately afterwards he noticed a gradual bronzing of the skin which was exposed to sunlight; and exposure to the sun always increased the intensity of the pigmentation. During the winter, or whenever he stayed indoors, there was a slight fading. There was also staining of the mucous membrane of the cheeks and tongue. At present there were no other signs of disease about him; no syncopal attacks or asthenia, and no loss of weight. The exhibitor associated the condition with an attack of acute dyspepsia. Possibly there was an inflammatory lesion which involved the suprarenals and the solar plexus.—*Proceedings of the Royal Society of Medicine.*

Origin of Blood Platelets.—Dimond believes that the blood platelets are derived from azurophile bodies inside of the red blood cells. He has observed one of these bodies gradually occupying a protrusion of the envelope of a red blood cell; and later a flagellum from the body passing through the envelope. After a few minutes the envelope of the red blood cell seems to be retracted, leaving the platelet adherent to the outer surface of the red blood cell.—*Journal of Pathology and Bacteriology.*

Insurance Medicine.

Monetary Compensation for Disability Following Traumatism.—In a discussion of a paper relating to this subject and presented by Sir Thomas Oliver before the Assurance Medical Society, Dr. F. Parkes Weber showed how easy a matter it was to overlook fracture of the ribs in cases of pneumonia, pleurisy, and rapidly developing tuberculosis following an accident. In these cases where the symptoms show marked contusion of the lung tissue an *x*-ray examination should be made, and it is a safe precaution in any accident where the chest is involved. He cites his own case, when he had the misfortune to fall heavily on to a projecting bar. There was great pain in the chest afterward, but he was assured by an excellent surgeon that none of his ribs had been fractured. After he had completely recovered a Röntgen-ray photograph showed decided formation of callus, proving that one of his ribs really had been fractured. Recovery in such cases would be quicker perhaps if injured persons did not know that their ribs were broken.

With regard to tuberculosis of suspected traumatic origin, he points out that in cases which can be readily followed, and where there is no complicating question of damages, there is often the greatest difficulty in deciding the importance of the traumatic element, and how much effect it may have on the case.

For instance, one case, that of a little boy who showed signs of tuberculous meningitis after treatment for tuberculous bone-disease by scraping. This patient died of the tuberculous meningitis, and the necropsy showed, besides the meningitis, a caseous nodule in one lung, a caseous bronchial gland, and caseous nodules in the cerebellum. The boy, previously to the scraping, had just had measles, and measles combined with caseous bronchial glands is a well-known reputed source of tuberculous meningitis; therefore there is no justification in assuming that the operation of scraping had anything to do with the onset of fatal meningeal tuberculosis. He also suggests that the local tuberculous affections which sometimes develop after contusional injuries at the site of the traumatism may be compared to the local gummatous lesions which occasionally develop under the same conditions in apparently healthy but syphilitic subjects.

In regard to the special risks which, in the future, a private employer of labor will lay himself open to if he employs workmen without having them previously medically examined—especially those who, while they may appear healthy are syphilitic subjects or have some form of quiescent tuberculosis—he suggests that in a well-ordered State private employers should employ only those men who are medically certified as first-class, and that all second-class lives should, after medical examination, be left to the Government for the Government to employ, as suitably as possible, and for the Government to pay, as well as possible.

Dr. T. D. Lister considers that in traumatic phthisis probably most people have a latent focus of tubercle and a contusion of the lung may occur without fracture. This is exemplified in the case of pugilists who receive enormous blows upon the chest and injuries, yet few of them develop tuberculosis, due to the fact that they are absolutely healthy men. Perhaps the most acute injury the lung can suffer is the inhalation of noxious and irritating vapors, yet in a statistical investigation he was unable to find that the workers in chemical factories suffered more from tuberculosis than others. They had bronchitis, but they seemed to become attuned to the vapors they were compelled to inhale.

Dr. A. T. Davies presented the fact that pathology has accumulated enormous evidence to show that tubercle is universal. "The greater our civilization, the greater our syphilisation," and he also thinks that it might be truly said, "The greater our civilization, the greater our tuberculization," and therefore he would be prepared to accept as an axiom that if we have a case of tuberculosis occurring in trauma it is fair to conclude that there has been excited in that case an old tubercular lesion. This falls in with the pathology universally held today.

Dr. R. A. Young cited two or three cases observed in soldiers returning from the war who had been severely shaken by high explosive shells, one of them having been knocked over twice. This man had a very severe hemoptysis and a very active tuberculosis afterward.

Sir Thomas Oliver in the summation of the discussion announced that it was pretty well agreed that it is practically impossible for an injury to the chest to develop disease such as tuberculosis, which is so purely microbic; therefore, the germs of the disease must be in the body at the time. Whether there is that requisite peculiarity of soil in which the disease alone can develop one cannot say, but there is a lowered resistance after an injury, which he considers is largely an explanation of the traumatic tuberculosis. Pugilists are healthy men and do not develop tuberculosis, but another side of the question is presented in the men who work among the barges and boats on the River Loire. The labor of pushing the boats and rowing, the pressure of the rudder upon the chest, must have some harmful influence, for many of the men die from phthisis, and in larger proportion than men following other occupations.

With regard to the influence of noxious fumes on the lungs, while chemical workers do not suffer from phthisis to any great extent, they develop emphysema and bronchitis. The lungs of a man who has been exposed to the nitric fumes practically become burnt; there is intense congestion of the lungs, with engorgement of blood. These men nearly always die in the acute stage of the illness, so it is impossible to know to what extent the lesion would be followed by tuberculosis.

Accident Insurance: "Voluntary" and "Accidental."—Action was brought on a policy insuring against death, through external, violent, and accidental means, but providing that the insurer assumed no liability for death from the voluntary or involuntary taking of poison. The deceased's death was caused by medicine given him by a doctor, which contained strychnine. It was held that the insurance company was not liable, since, while the taking of the poison as distinguished from the taking of the medicine was unintentional, a thing is not "accidental" which is intentional and voluntarily done, and the word "voluntary" infers an act done with volition, knowledge, and intent, while "involuntary" is an antonym of "voluntary," and applies to an act done without volition and intention.—Riley v. Interstate Business Men's Acc. Assn., Iowa Supreme Court, 152 N. W. 617.

Book Reviews.

PHYSICAL DIAGNOSIS. By RICHARD C. CABOT, M.D., Assistant Professor of Medicine in Harvard University, Chief of the West Medical Service at the Massachusetts General Hospital. Sixth edition, revised and enlarged, with six plates and 268 figures in the text. Price, $3.25. New York: William Wood & Co., 1915.

THIS book has been entirely rewritten or revised in the parts pertaining to the diseases of the heart and to the diseases of the lungs. It is an account of the diagnostic methods of competent practitioners. It is unique in that the author limits the description of methods to those with which he is personally familiar. There are a few typographical errors and in some instances the references in the text to the illustrations are incorrect. There are also some instances of confusion and inconsistency in the text. For example, on page 194 the author stresses the point that violent exertion never produces acute dilatation in the previously sound heart; but on page 199 he states that great muscular fatigue, such as is produced by a hard boat race, may result in a temporary relaxation of the mitral sphincter or of the papillary muscles sufficient to allow regurgitation. It is true that he uses different words but the latter condition is what most clinicians understand as acute dilatation. On page 175 in giving a summary of the causes of diminution in the intensity of the aortic second sound the author mentions mitral disease alone in explanation of the general statement that the sound is diminished whenever the blood stream, thrown into the aorta by the left ventricle, is abnormally small; yet on page 222 absence or great enfeeblement of the aortic second sound is enumerated as one of the four cardinal signs of aortic stenosis. The inaccuracies in this book, however, are few and slight and do not detract from the value of the work. The criticism is made solely to emphasize the need of meticulous accuracy in books of this character. In general the author's style is particularly welcome because of his clearness and his use of the simple hospital or clinical vernacular rather than more heavy, technical language. For this reason it is a very readable book. It is well arranged for quick and ready reference. For the practitioner, for whom it is primarily intended, it is the best work we have on physical diagnosis.

CANCER: ITS STUDY AND PREVENTION. By HOWARD CANNING TAYLOR, M.D., Gynecologist to the Roosevelt Hospital, New York; Professor of Clinical Gynecology, Columbia University; Member of the American Gynecological Society, American College of Surgeons, American Society for the Control of Cancer, American Medical Association, New York Obstetrical Society, etc.; 12mo, 332 pages. Price, $2.50 net. Philadelphia and New York: Lea & Febiger, 1915.

WHEN one thinks of the enormous mass of literature devoted to the subject of cancer, one instinctively questions the need for another book on this subject which does not profess to offer any new theories as to the causation of cancer or present anything revolutionary in the way of treatment; but even the most casual examination of Taylor's work is enough to prove the fallacy of such an opinion. From an initial hostile attitude the reader soon becomes appreciative and is gradually impressed with the fact that Taylor's contribution furnishes a most thorough but remarkably concise and valuable review of the cancer problem in all its various aspects.

The word "cancer" is used in the title in its broad sense, covering all malignant tumors, hence in the body of the book sarcomata are discussed as well as the various types of carcinomata. The author has so arranged his material, statistical and otherwise, as to give one a good general grasp of the subject and to make the facts as to the type, relative frequency, clinical course, symptoms and diagnosis of cancer as it affects the various tissues and individual organs of the body easily accessible. There is no verbosity, there are no flights of rhetoric—merely a plain statement of the essentials together with the iteration and reiteration of one point that is, unfortunately, only too true, namely, that a very large percentage of the patients with cancer come or are sent to the surgeon too late for successful treatment. It is to awaken the profession at large to this state of affairs, to present the data in such a way as to stimulate interest and render easier the early recognition of cancerous involvement, and to make the general practitioner realize his responsibility if he is the one that is to blame for the patient's procrastination in seeking surgical relief, that Taylor has given his time and brains in the preparation of this work.

In the light of what we have already said extended review is unnecessary. Everybody, general practitioner and surgeon alike, should read this book, ponder over some of the statements it contains, and profit by a realization of what delay in the diagnosis and early treatment of cancer means to his patients.

DIARRHEAL, INFLAMMATORY, OBSTRUCTIVE, AND PARASITIC DISEASES OF THE GASTRO-INTESTINAL TRACT. By SAMUEL GOODWIN GANT, M.D., LL.D.; Professor of Diseases of the Colon, Sigmoid Flexure, Rectum, and Anus at the New York Post-Graduate Medical School and Hospital. Illustrated. Price, $7.50 net. Philadelphia and London: W. B. Saunders Company, 1915.

THIS volume presents a comprehensive exposition of the etiology, pathology, symptoms, diagnosis, and treatment of acute and chronic diarrhea and allied conditions. The numerous systemic and local diseases in which diarrhea is a prominent symptom are discussed in satisfying detail. The wording of the title of this book is not a particularly happy one: the terms "diarrheal," "inflammatory," "obstructive," and "parasitic" overlap one another in their connotation; and the large group of obstructive diseases comprised under constipation are not dealt with in this volume. Considerable attention is paid to the irrigation and to the surgical treatment of diarrheal conditions, the operations of enterocecostomy, appendicostomy, appendicocecostomy and appendico-enterocecostomy being described in detail. The illustrations are numerous and of a high order of merit. Among the many other excellent features of this book is the extensive formulary of prescriptions suitable for different types of diarrhea and at different age-periods.

INTERNATIONAL CLINICS, a Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, etc. Edited by HENRY W. CATTELL, A.M., M.D., Volume III, Twenty-fifth Series, 1915. Price, $2.00. Philadelphia and London. J. B. Lippincott Company.

IN this issue of the Clinics there are twenty-five articles on diagnosis and treatment, pediatrics, surgery, and borderland medicine. The most valuable and comprehensive is the one on the Treatment of Fractures of the Lower End of the Radius by J. B. Roberts. Two others are of very great interest, one on Medieval Medicine by C. G. Cumston of Geneva and the other on War Experiences by L. Rahm of Zurich. The remainder of the volume does not come up to the standard which we have grown to demand of this publication. There is nothing in them which is bad but they approach that dead level of mediocrity which is sometimes worse.

THE PRACTITIONER'S ENCYCLOPEDIA OF MEDICAL TREATMENT. Part I., Methods of Treatment. Part II., Agents in Treatment. Edited by W. LANGDON BROWN, M.D., F.R.C.P., Assistant Physician to St. Bartholomew's Hospital and Physician to the Metropolitan Hospital, and J. KEOGH MURPHY, M.C., F.R.C.S., Surgeon to the Miller General Hospital for South East London and to Paddington Green Children's Hospital; with an introduction by Sir THOMAS CLIFFORD ALLBUTT, K.C.B., M.D., F.R.C. London: Henry Frowde and Hodder and Stoughton, 1915.

THIS encyclopedia, as its name denotes, is really an encyclopedia and is full to repletion with the most modern methods of treatment and the agents now employed in treatment. However, although full of information, the fault of redundancy is adroitly avoided and the book is commendably concise in diction and always to the point. Sir Clifford Allbutt supplies a preface, which, charming from the literary aspect, draws attention to the fact that while empirical medicine is passing away, its decease is not yet; it lingers, and many a year will come and go before the scientific therapeutist becomes independent of the empiric.

The work before us reflects much credit on the joint authors and will serve as a valuable *vade mecum* to the busy practitioner who desires to be abreast of, or to refresh his memory with regard to, the latest methods of treatment and the agents used for this purpose.

Society Reports.

THE MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

Stated Meeting, Held October 25, 1915.

THE PRESIDENT, DR. HOWARD LILIENTHAL, IN THE CHAIR.

Second Report on Connellan-King Diplococci Infections of the Tonsils.—Dr. JAMES J. KING reviewed the histories of a number of cases which he had presented on a former occasion. (See page 958.)

Dr. JOHN J. CONNELLAN said that about two years ago, following the publication of the work by Smith and Bass on "Entameba of the Mouth," Dr. Hasbrouck, who made a specialty of teeth extraction, asked him if he would make bacteriological examinations of the cavities following extraction. The areas around the tooth before extraction were sterilized by means of tincture of iodine while the patient was under gas. All precautions possible were used in getting at the material following extraction. The warming stage methods for entameba were used with negative results. Plate cultures without exception showed almost pure cultures of large, yellowish tinged irregular colonies, with a tendency to subsurface development. Some of these cavities showed the presence of pus. Having in mind that many types of organisms generated toxins of questionable character and amounts, he was led to ask Dr. King if he would look into other parts of the mouth and throat for this organism. The first case, that from the deep crypts of the tonsils, showed a pure culture of this organism. He suggested a vaccine starting with 50,000,000 per cubic centimeter. The organism was a small Gram negative diplococcus on veal agar. On plain agar it had more the tendency to a coccus formation. It did not ferment any of the Hiss sugar serums, but formed acid and coagulation. On a litmus calcium carbonate lactose agar sugar, the field resembled somewhat that of the colon bacilli. On blood plates none of the characteristics of the streptococci group were present. Milk tubes cultures resulted in coagulation and acid without whey. Cultures taken from the ear and nasal tracts in these cases showed the absence of this organism.

Dr. PERCY W. ROBERTS said he had had the opportunity of using the vaccines in old chronic cases of osteoarthritis. The cases described by Dr. King were quite different from those with which he had been dealing. In twenty-five or thirty cases many of the cultures taken from the throat were positive. He gave the vaccines in doses of 0.1 or 0.2 c.m., starting by giving them every fourth day and then every second day. He thought these vaccines had been of value, although one should bear in mind that the class of cases he had treated were the long standing ones in which one did not look for very brilliant results, but was glad to avail himself of anything that promised any help whatever. There were three or four cases in which the clinical results were very striking. He stated that his private patients treated with autogenous vaccines had all shown a diminution of pain and showed a distinct change for the better. He felt that in the use of the autogenous vaccines Dr. King had found something in the way of a weapon with which to combat osteoarthritis.

Dr. W. P. CONAWAY of Atlantic City gave his personal testimony as to the efficacy of autogenous vaccines in conditions due to the Connellan-King diplococcus.

Dr. JAMES J. KING said that in taking the cultures he tried to get them from the deep crypts. He usually took cultures before removing the tonsil so that if any complication arose he would have an autogenous vaccine with which to combat it.

Tracheloplastic Methods and Results: A Clinical Study Based Upon the Physiology of the Mesometrium—Dr. ARNOLD STURMDORF said it was not the tear in the cervix, but the induced complications which brought the patient to the operating table. The dominating fundamental factor that established the morbidity of a cervical lesion was the incidence of infection. The functional integrity of any organ depended upon the maintenance of a uniformly circulatory equilibrium, and this was particularly true of the uterus. In the uterus, as elsewhere, every infection incited the greatest reaction in its lymphatic elements. The arrangement of the lymphatics made it clear how an infectious process of the cervix, inducing an ascending intramuscular lymphangitis, might splint and immobilize the elementary bundles by plastic infiltration of their sheaths. It was an axiomatic surgical principle in the control of any ascending lymphangitis to direct their therapeutic aim at the primary infectious focus, and hence the indications for and limitatons of trachelorrhaphy or cervix amputation must be governed by their relative efficiency in the elimination of the infectious cervical focus and the restoration of normal uterine functions. Simple trachelorrhaphy should find its cardinal and practically its only sphere early in the puerperium, during which so-called immediate or intermediate operation presented an effort of the highest prophylactic potency. Dr. Sturmdorf called attention to the disregard of the physiological and textural features of the cervical elements. The peripheral muscle fibers traversing the greater circumferential area were much longer than the central fibers that entwined the uterine cavity and hence on ablating the cervix in the usual manner all the muscle stumps were made to terminate at the same level, the longer peripheral fibers contracting to a higher plane than the shorter central fibers; this must tend to pull the vaginal and endometrial margin of the stump asunder, and furthermore the extreme friability of the endometrial edge rendered its suture purely transitory. These exposed stump surfaces healed by granulation and some never healed. Realizing some of the surgical shortcomings, many gynecologists had devised procedures to overcome them. Dr. Sturmdorf stated that after an extensive critical test covering a period of over three years he wished to present a procedure which he had originated and which fulfilled the physiological demands, met the pathological indications and obviated the shortcomings enumerated. This operation he described with the aid of lantern slides. It consisted briefly of outlining and free mobilization of an ample circular flap from the vaginal sheath of the cervix; complete excision of the entire cervical mucosa to the internal os, with preservation of its peripheral muscular envelope, sutural coaptation of the vaginal cuff of the denuded cavity. The dilator and the curette were absolutely excluded from the armamentarium for this operation. The object of the first step was the formation of an ample motile cuff of vaginal mucosa; with this object in view the incision was carried around the cervix closely skirting the demarcation between its healthy vaginal sheath and the diseased mucosa running parallel to the indented line at the lacerated points. The pouting everted cervical mucosa was circumscribed and cored out of its muscular bed as a hollow cone leaving a raw funnel-shaped cavity. The loose vaginal cuff was trimmed to serve as an accurate lining to the interior of the muscular funnel. Its retention was secured by beginning with the anterior segment of the circular flap; a long strand of heavy silkworm gut was passed on its vaginal surface, transversely through the free border of its central tip, one-eighth of an inch from the edge, like a mattrass suture, the entrance and exit of the strand embracing a quarter inch of tissue. The right free end of the suture was next carried into the cervical cavity at a point just above the internal os where, piercing all the tissues in a direction forward, upward and to the right it emerged from the vaginal surface at the base of the flap. The left free suture end was passed in the same manner forward, upward and to the left, so that the two free ends diverging in their transit reappeared on the surface of the anterior vaginal fornix, about one-quarter inch apart. The suture course for the posterior flap segment ran parallel to the above, but in a posterior direction, its free ends emerging on the surface of the posterior vaginal fornix. So by tightening the sutures the flap segments were drawn into the cervix, lining the whole cavity with vaginal mucosa. In directing the suture through the cervical tissues, a double curved Peasely needle should be substituted for the round needle, after engaging the tips of the flaps in the first stitch. A narrow strip of iodoform gauze introduced with the object of maintaining a flat uniform coaptation of all raw surfaces finished the operation. This procedure effected the complete elimination of the infectious focus by extirpation of the diseased cervical mucosa, preserved the normal arrangement, contour and functions of the cervical musculature, obviated the mechanical difficulties of the older operations and secured the permanence of accurate sutural evaporation of flap to stump.

Dr. J. RIDDLE GOFFE congratulated the Society on having had the privilege of listening to such a scientific,

original, and altogether admirable paper as that just presented. He stated that Dr. Sturmdorf had arrived at conclusions toward which they had all been drifting for some time, and hence this paper had come at a timely moment when they were prepared to accept it. Dr. Sturmdorf had drawn a picture of the results of destruction of the rhythmic contractions of the uterus and he compared these thythmic contractions to those of the heart; he was quite right in what he said, without these rhythmic contractions the uterus became a dead organ, the rhythmic contractions were its life. Dr. Goffe also agreed with Dr. Sturmdorf in what he said about metritis. They no longer recognized such conditions as chronic endometritis; the conditions formerly designated by this term were now compared to certain conditions preceding or succeeding menstruation. Curettage was also a procedure which was being eliminated, except perhaps for diagnostic purposes in certain cases in which malignancy was suspected and in which it was done for the purpose of obtaining a specimen in order to determine the true condition. Coming to the operation Dr. Goffe said he thought Dr. Sturmdorf had devised as complete and perfect an operation as it was possible to do; it preserved the peri-cervical and circumferential tissues, with their muscular fibers, in the proper proportional lengths of the various fascia, which was most important in retaining and restoring the rhythmical contractions and the health of the uterus. If one restored these functions he would get rid of infection in the lymphatics, since with the restoration of the contractions one would get pressure on the lymphatics which would gradually get rid of the infection. Another method of setting up contraction was that of packing the uterus with gauze. Dr. Goffe said that while he had not performed this operation himself, he had seen Dr. Sturmdorf perform it. The flaps were easy of adjustment and he would put the operation into practice himself at the earliest opportunity.

Dr. Albert M. Judd of Brooklyn agreed with Dr. Sturmdorf that changes in their method of attacking the cervix were necessary. This conclusion had been reached by following up cases after the operation of trachelorrhaphy had been performed and finding that frequently cystic degeneration had taken place. Dr. Sturmdorf made reference to the fallacy that a narrow cervical canal was responsible for sterility. In experiments carried out on monkeys it had been found that twelve drops of blood passed in every twenty-four hours during menstruation. From such evidence it seemed that they would have to give up the idea that stenosis of the cervical canal was a cause of dysmenorrhea, but, of course, there were clots from prolonged congestion and they would have to be taken into consideration. As to the curette, Dr. Judd said he felt at times that it should be relegated to oblivion or at least kept only for museum purposes. The rapidity of the operation that Dr. Sturmdorf had presented was one of its greatest advantages. He had performed the operation himself fifteen times and this had taught him that Dr. Sturmdorf's method was extremely practical. After the operation there was no granulating surface, and the method used in suturing gave results that were absolutely perfect save in one or two details. It seemed to him that with two sutures there was more liability to hemorrhage than if more sutures were used. The Peaseley needle also gave him some trouble since it did not seem to be sufficiently stiff when it passed down through the internal os, so he used one modeled on the Carsten plan by one of his associates, Dr. Wessenberg. He had also found that there was danger of entering the posterior cul-de-sac in making the posterior flap. In suturing, Dr. Judd said he used chromic and not silkworm gut, as he had not as yet the courage to use the plain gut which he used in all his other work. In doing the Emmet-Baldwin operation it was almost impossible to remove the sutures, and the chromic gut had an advantage in this respect as it did not require removal.

Dr. Emil Schwarz said that they had found a penetrating lymphangitis with dense submucous infiltration only in three out of a large number of cases. One case showed also a distinct lymphangitis of the corpus myometrium. In order to prove the presence of an ascending lymphangitis in those cases in which a submucous infiltration of the cervix was present one had to section the entire uterus. Even the presence of scars in the cervix was difficult to prove, so that the technical difficulties accounted primarily for the fact that ascending lymphangitis had been demonstrated in only a few cases.

Dr. Samuel W. Bandler said he must confess to a certain degree of surprise if any claim of originality or novelty were given to the surgical procedure just described. He said he doubted if, during the last twelve years, he had done more than three or four trachelorrhaphies, but he had done dozens of amputations of the cervix in the manner just described. The writer of the paper made no distinction between laceration, octropion, and erosion. An ectropion simply meant that the mucous membrane of the cervix was everted after a laceration. It was often associated with chronic inflammation and an inflammation of this sort frequently existed when the cervix was not torn or injured. An erosion was an entirely different thing from an ectropion, and was almost never present without chronic catarrh of the cervix. If a laceration was a slight one and there was no catarrh, there was no indication for doing any repair to the cervix; if, on the other hand, the laceration was a deep one, and if the infection of the existing ectropion was marked, or there was chronic incurable cervical catarrh, with hypertrophy of the cervix, then Dr. Bandler said he amputated the cervix. During all these years he had been amputating the cervix in the following way: An incision was made around the cervix through the vaginal mucosa and this was pushed back by the aid of the finger covered with gauze, posteriorly, anteriorly, and laterally, so that the cervix was literally skinned out of its vaginal covering. Then as much of the cervix as was desired was cut off in a transverse fashion. This left a vaginal flap which projected out over the raw lower end of the uterus, and it was easy, with four or eight stitches which were passed through the cervical canal and through the edges of the vaginal flap, to cover the cervix thoroughly and perfectly. Any one who examined one of these cervices several weeks after amputation could not tell by sense of touch alone whether the cervix had ever been amputated or not. In the drawings that were presented the condition was simply that of erosion and there was little if any laceration. Oftentimes there was a deep laceration on one side or the other, and one must then make a wide circumcision on the vaginal mucous membrane and a much higher amputation of the cervix. When a chronic cervical catarrh and inflammation was present, there was bound to be a corresponding upward extension, in most cases, into the uterine lining. It was from this uterine lining that an extension of the inflammation passed out into the structure onto the uterine fundus iself. The upward extension from a cervical catarrh, with or without erosion, ectropion, or laceration through the structure of the cervix into the musculature of the fundus itself was a rarity, except in acute cases of infection. Chronic cervical catarrh did not tend to extend upward through the muscles structure of the cervix into the uterus. It tended to spread out into the radiating lymphatics, that was, into the ligaments around the cervix, the uterovesical ligaments, the uterosacral, and the two broad ligaments. When the catarrh and inflammation involved the uterosacral ligaments, sclerosis of these ligaments took place and the uterus was pulled back into the hollow of the sacrum; this was called a retrodisplacement, and had nothing to do with retroflexion or retroversion as such. These two latter conditions were retrodeviations.

Sacral Suspension of the Uterus. — Dr. John Van Doren Young presented this communication. He stated that all corrective surgery must be based on a clear concept of the deformity to be corrected and that a multiplicity of operations for the relief of a deformity indicated a lack of this clear concept. He then reviewed the physics, dynamics, and mechanics of the pelvic organs, calling special attention to the fact that the axis of the uterus formed an acute angle to the axis of the vagina and not a right angle as had usually been taught. The operation which he had devised was directed to the relief of mechanical retroversion, leaving out of consideration all retropositions of the uterus due to post-inflammatory peritoneal contractions, and at the same time recognizing that periadnexal adhesions might complicate a mechanical retroversion, but were never its cause. In a study of a series of 6,134 gynecological cases at St. Luke's Hospital, he had found that 2,238 of these had retropositions of the uterus, and of these 50 per cent. were retroversions. After discussing the etiology and symptomatology of pathological retroversions of the uterus, Dr. Young said his treatment of these cases consisted in general care, instruction in the poise of the body, and local

treatment, before resorting to an operation. The pessary, properly fitted, would give satisfactory results in which the ligaments were not stretched beyond their elastic limits and in which there were no complicating periadnexal adhesions or birth traumas. This treatment should be tried in all cases in which there were contraindication to operation, objection to surgery on the part of the patient, and in all cases in which the retroversion followed immediately after delivery. The operative procedure which had given the writer the best results was as follows: If birth trauma was present, it was first repaired. A long conical, or a lacerated infected cervix, was operated upon by the tracheloplastic method just described, thereby shortening the cervical arm of the uterine lever. The pelvic diaphragm was repaired by the muscular interposition operation. The abdomen was then opened by the Pfannenstiel incision and the uterosacral ligaments shortened by the following procedure: The perisigmoidal adhesions were separated with scissors, while the gut was held in the left hand, allowing the most careful dissection in freeing the sigmoid; the resultant raw surface on the sigmoid and mesosigmoid was repaired by a fine catgut running suture. The round ligament peritoneal trauma was disregarded for the time being, it being cared for by operation on the round ligament after the uterosacral ligaments had been shortened. Peritoneal trauma to the infundibulo-pelvic, or broad ligament, was repaired in the same way. The uterosacral ligaments were cut about three-eighths of their length from the spinal attachment and five-eighths from the fundus of the uterus. Dr. Young described his technique by the aid of lantern slides and stated that he had performed 196 sacral suspensions. In this series there had been no mortality. One patient had since had four deliveries and her pelvic condition was normal. He had had one failure due to perisigmoidal adhesions and one patient was compelled to wear a pessary. He believed that had he recognized the perisigmoidal adhesions in these cases the results would have been different.

Dr. William M. Polk said that when he began to listen to Dr. Young's paper he did not think this subject would be very interesting as it had been so thoroughly threshed over that there seemed little in connection with it to which one could call the attention of the modern gynecologist. However, he found that Dr. Young had taken up a procedure which had been tried thirty or forty years ago and had been abandoned for lack of knowledge of certain anatomical features and for lack of operative technique. Dr. Young seemed to have surmounted the technical difficulties and had thereby evolved a perfect method of shortening the uterosacral ligaments.

Dr. F. C. Holden said he had fairly well-defined ideas on the subject of retrodisplacement of the uterus, none of which were original. The principal prerequisite to success in the cure of this condition was a thorough, painstaking preoperative study of existing physiological, anatomical, and pathological conditions in the individual case. The facts to be considered were the condition of the pelvic floor, presence of rectocele and cystocele, the size, condition, and position of the cervix, and whether there was a long or short invagination of the cervix, and whether the woman was past or in the child-bearing age. When these facts had been ascertained the operation should be fitted to the individual patient and not the individual to the operation. No one operation yet devised or to be devised would ever cure all types of retrodisplacement of the uterus. The woman was to be pitied who was so unfortunate as to fall into the hands of a surgeon who was obsessed with the idea of originality and had devised some operation or modification of some operation to which his name had been added and thought that this operation would cure all types and conditions of retrodisplacement of the uterus. The keynote to success in operations for retrodisplacement was the position in which the cervix was maintained and not so much as to what was done with the fundus. In selected cases the operation described and illustrated by Dr. Young should fulfil this purpose very satisfactorily.

Dr. Jerome M. Lynch called attention to the nerve supply, stating that the hypogastric plexus was the receiving and distributing station for pain and nerve impressions from both the rectum and the generative organs, and that, therefore, if there was a painful lesion in one of these locations the pain might be referred to the other. Hence when one had a patient with symptoms referred to either of these organs a thorough examination should be made to determine the site of the lesion. One frequently saw cases in which such symptoms as diarrhea, constipation, or frequent desire to empty the bowel were the result of uterine retroversion. Or, again, a rectocellulitis might involve the genital organs and simulate uterine disease. Every successful proctologist and gynecologist must have a full knowledge of both fields and be alive to every possible condition that might arise in either and to all possible operative procedures if he was going to overcome the obstacles that presented themselves; otherwise the obstacles would overcome him.

THE PRACTITIONERS' SOCIETY OF NEW YORK.

Two Hundred and Seventy-second Regular Meeting, Held Oct. 8, 1915.

Dr. John S. Thacher, President, in the Chair.

Septic Sore Throat. — Dr. Hermann M. Biggs of New York, read this paper (see page 945).

Dr. William H. Park said that Dr. Biggs had covered the subject very thoroughly. There were several points, however, in regard to these epidemics that might be of interest. He remembered one that was entirely of the scarlet-fever type. Ten years ago one had occurred as an outbreak in two boys' military academies, and a girls' school, just before the Christmas holidays. The pupils began to develop sore throat and the authorities of the boys' schools sent the pupils home. In twenty-four hours half the boys developed scarlet fever rash. Physicians considered the cases scarlet fever. It was brought to Dr. Park's attention by the resident physician, and he went up to discover the cause of the epidemic. No day scholars were found to have the disease, but one girl in the boarding school, who was on milk diet, developed a case. It was found, on examination, that one milk dealer, who had such a good reputation that his supply was not equal to the demand for milk, had taken milk from a farm where the sheds were dirty and unventilated. Two days before the epidemic a cow had come in after calving, it had a septic discharge from the vagina and the milk was like a pure laboratory culture of streptococci, there were so many organisms in it. At that time complement fixations were not being done. All of the cases affected developed rashes like scarlet fever, but were not ordinary scarlet fever, clinically. The farmer, his wife, and children were all apparently in good health. There were no deaths in that epidemic. The one Long Island epidemic was of typical sore throat, with no rashes. There were complications of peritonitis. In the cases with rashes, there were different opinions as to whether there were both septic sore throat infection and scarlet fever, and whether both were contagious. Some workers on the bacteriology of the disease, Dr. Park said, were sure that different streptococci made the different cases. He believed the cow first became infected through a person and that the epidemic was caused by the infected cow. It started with acute sore throat in the human, the cow took the same streptococcus, and the cultures from the epidemic showed the same organism. Sometimes the cows had so little the matter with them that it was hard to tell that they were not normal. Excessive care had to be taken that no person with a trace of sore throat should work in a dairy. So far no case had been traced to certified milk of the highest type, but it was quite possible that such might become affected.

Dr. J. W. Brannan said that Dr. Biggs had referred to the rarity of such epidemics. Unfortunately he, Dr. Brannan, had not heard the first part of the paper and did not know whether he mentioned the epidemic of septic sore throat which occurred in Boston and Cambridge some three or four years previously, which was, he thought, the first reported in this country. It was very severe, and many cases were fatal. The outbreak was sudden and difficult to explain, but the infection was finally traced to a dairy farm, which was considered to be one of the best in the country.

Dr. G. E. Brewer asked if in the epidemic that occurred in Eastern Masachusetts, where there were a number of cases in the schools, it was definitely traced to milk.

Dr. Biggs said yes; it was traced to one dairy farm milk; 70 per cent of the patients drank the milk, but the cow was not traced.

Dr. BREWER asked if there was not a type in which the lymphatic infection was very marked. There was an epidemic at Tuxedo, termed "lymphatic fever" which occurred at about the same time. Had that been investigated? At about the same time in New York also there had been a number of cases of sudden acute infection by streptococci of the lymph glands without previous sore throat. He had had no less than three young children to operate upon. The cases were very septic with a temperature of 104° or 105°. The lymph nodes were very edematous and later became necrotic with purulent infiltration. The children were exceedingly ill. The abdominal symptoms had been so prominent that Dr. Richardson believed one to be a case of appendicitis. It had appeared almost typical. Dr. Brewer had had a similar case at Tuxedo, in which he operated. On examination the appendix was found normal, but in the mesentery was a localized abscess. There was evidently a subacute infection from which the lymph nodes were involved. In some cases the abdominal symptoms were the only ones which attracted attention. In the epidemic about Boston there were a number of cases in which the chief involvement appeared to be in the abdominal cavity.

Dr. CHARLES H. PECK said he would like to ask the reader of the paper if these cases showed a bacteriemia. He said he was interested in the report of peritonitis coming as a complication. That was rarely seen in general surgical practice. Some years ago, he had had a patient who developed, at the subsidence of an attack of sore throat, a streptococcus peritonitis. It was recognized at the end of the first week. He believed that the organisms isolated then were identical with those that caused the sore throat, but such cases were rare in his experience.

Dr. M. ALLEN STARR asked if there were any seasonal relation to these epidemics. All seemed to have occurred in February, March and April. Were they common in the spring? He wondered if it were not possible that many isolated cases of septic sore throat had the same origin. He asked if, in view of the fact that many cases had been considered scarlet fever, would it not be possible to find out the relationship of scarlet fever to milk supply in small places. He thought these things were going on all the time, but that they were not recognized. He was not aware of the epidemic spoken of. There was an epidemic of mild sore throat at Mt. Kisco last spring. In cases of this kind, if proper attention were called to it, and the local health officer made sufficient inquiries, it might be found that cases were endemic and not epidemic.

Dr. ARNOLD KNAPP asked if the local health officers were physicians.

Dr. PARK said that some epidemics would never be reported if it were not for the sanitary supervisor.

Dr. JOHN S. THACHER asked if the supervisors went to Albany for instruction, and if so, did they have courses of any kind. He said he thought the relationship between scarlet fever and these septic sore throats was interesting. Were there any cases where the rash was indistinguishable from scarlet fever? He added that there was an idea in the old days that there was a relationship between scarlet fever and puerperal fever. What was the opinion of the meeting on that question?

Dr. CHARLES GIBSON said he remembered a case he reported to the Society of a patient admitted to the medical side of St. Luke's Hospital, which he had diagnosed as acute peritonits in the last stages. He had refused to operate. There was a history of sore throat several days previously. The patient died and a positive blood culture was found. At post mortem there was shown a generalized septicemia. He did not know whether this was due to milk infection. It was after the Boston epidemic.

Dr. BREWER asked Dr. Gibson if his impression was correct that in the abdominal cases, operated on in the Boston epidemic, all the patients died.

Dr. JAMES A. MILLER said that in connecton with the epidemic of scarlet fever at Paul Smith's, they had sixteen or seventeen cases, and there were many cases which were merely bad sore throat, which were not scarlet fever. He wondered whether that frequently happened in other infections. Was that due to streptococcus invasion or not?

Dr. A. A. SMITH said that early in his profession he had visited a great many cases of scarlet fever in children, and nearly always contracted a sore throat when he did so.

Dr. J. C. ROPER asked Dr. Biggs if the enlargement of the lymph glands was general or confined to the cervical glands. He asked Dr. Park if he thought that scarlatina was due to streptococcic infection.

Dr. W. M. POLK asked if there was any possible connection between glanders and this infection. At Tuxedo it was suggested that the infections were similar. He did not know that this was proven. He knew of one case in a friend of his, with sore throat, followed by mesenteric gland inflammation and later peritonitis. The patient had died. A connection had been established between the sore throat and the peritonitis.

Dr. HERMANN BIGGS in reply to the several speakers said that he did not think blood cultures were made; the lymphatic nodes were very much involved in these cases, very much more so than in ordinary sort throat, and extensive cellulitis in the neck was very often marked. As a rule the cases seemed to have occurred from January to June. He thought it probable that isolated cases had the some source. He had been much impressed with the many milk epidemics of various sorts in this State. Their supervision had greatly improved, and he doubted whether any of the three extensive epidemics would have been reported if it had not been for the supervisors. Scarlet fever, diphthera and typhoid epidemics had occurred and he presumed had been occurring for years, without being reported. They escaped report unless they occurred in a large city. In New York City, unless the epidemic assumed very large proportions, it would be hard to trace it. Whenever anything occurred in small places to direct attention to the fact, they had tried to find the connection between scarlet fever and the milk supply. Where a group of cases occurred they were investigated immediately. Now, under the State sanitary code, any infectious disease occurring at a dairy had to be immediately reported. They had had nearly 250 such reports the past year. Very little care was formerly taken about illness on an isolated dairy farm, and very many cases could start from such a focus of infection. In the country health officers had been making much more careful studies. Conditions in the State were rapidly improving, as reported by the sanitary supervisors. A year ago these men were comparatively untrained and their work had improved enormously in a year. He said that the local health officers were paid only 10 cents per capita in the country districts, and it was hard to get even this; if more were paid they could get better men and better work. The supervisors were under the direction of the division of communicable diseases. Many of them were men trained in health work in some of the larger cities. They worked for ten days in the laboratories under the direction of Dr. Wadsworth and then went to Cornell for a short course of instruction in dairy inspection. Cases of scarlet fever occurred often at the same time as septic sore throat, but without rash; that had occurred in scarlet epidemic. At Poughkeepsie a great proportion of the cases were scarlet fever and many more cases were simply sore throat. Attendants in scarlet fever hospitals contracted scarlet fever frequently, but rarely had sore throats without the other symptoms.

Dr. PARK asked if the meeting knew about the regulations for pasteurization. They required thirty minutes. It had been proved, by introduction of coloring matter into the milk, that in a shorter time some of the milk did not get pasteurized. In Baltimore three minutes was not found sufficient to pasteurize all of the milk, and they found that dealers would short circuit the holder if the inspector was not around. In the Long Island epidemic, blood cultures were made, but they were negative.

Case of Bullet in the Skull.—Dr. C. L. GIBSON presented this case. The *x*-ray of this skull showed apparently three bullets. The man had shot himself, he claimed, once. The policeman stated that the revolver was loaded with two cartridges and one had been fired. The *x*-ray expert insisted that the picture showed three bullets. At operation only one bullet was found, but this was split lengthwise into three symmetrical pieces.

Case of Anthrax in a Young Woman.—Dr. WILLIAM H. PARK presented this case. Ten days ago, he said, a physician of Middletown called him up about the case of a young woman who had edema of the face, following a tiny pustule like a mosquito bite. The edema spread to the chest. The chest was full of fluid and gave a pure culture of anthrax. There was no history of anthrax and no traceable source of infection. The patient died in a few days.

Dr. M. ALLEN STARR asked Dr. Park if he had an anthrax serum.

Dr. CHARLES L. DANA asked Dr. Park if he considered fur and rags the source of infection.

Dr. BREWER asked Dr. Park if it were not possible that it was communicated by flies from hides. He had had a case in a school girl which he had attributed to the bite of an insect.

Dr. C. L. Gibson said he had had two cases, both in 'longshoremen.

Dr. BREWER said he would like to ask Dr. Gibson what treatment he gave.

Dr. GIBSON said he incised and cauterized the lesions and both cases recovered.

Dr. BREWER said he made a wide incision, and used formalin dressing. The lesion was definitely localized.

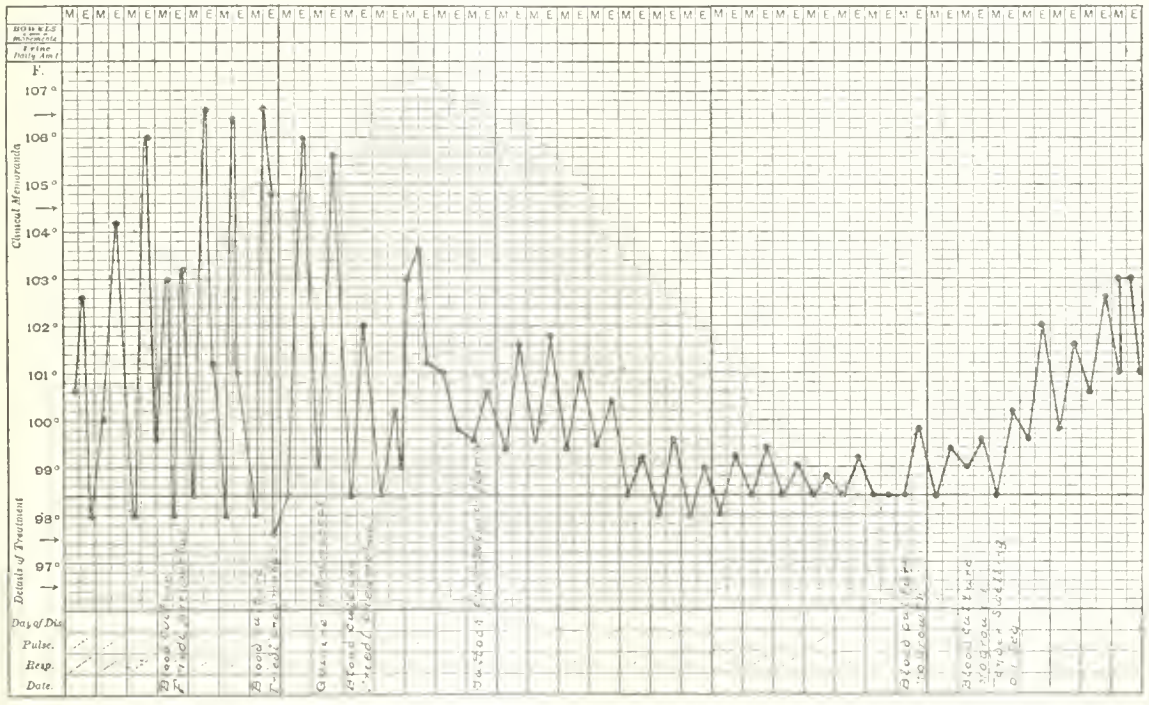
Dr. PARK said that an anthrax serum was made, but he was not sure of its efficiency. It was conceivable that flies might carry the disease.

Case of Typhoid Perforation.—Dr. A. A. SMITH presented this case. The patient was in Bellevue Hospital. He was a little more ill than the average, but not desperately so. The third week, one evening, he complained of very severe abdominal pain. He had no extra rigidity. He was nauseated, but had no particular signs except that he looked much more ill and was restless. A slight perforation was considered possible, and after long search a perforation was found; after repair a complete recovery ensued. The temperature, which was 105° before operation, fell to 101°. In cases such as these the patient should have the benefit of the doubt.

Dr. THACHER said he thought the operation rather seemed to do the patients good, even if one did not find anything. He had for some urged the advisability of operating in a case of doubt. He had had the unfortunate experience in two or three cases of suspected perforation in typhoid fever, which he had referred to the surgeons for operation, and they had refused to operate because they thought the signs of perforation inconclusive. Later they had operated and found the perforation, but the patients died.

Dr. SMITH said that in the third week the patient often had an active hemorrhage and improved afterwards. This brought out the question whether the old method of venesection had not someting in its favor. The look of increased illness of the patient often suggested perforation. In his case the abdomen was not distended and there was no increased rigidity.

Case of Sepsis from the Pneumobacillus of Friedlander.—Dr. JOHN S. THACHER reported this case, in which a cure seemed to have followed a so-called fixation abscess, or rather a sterile purulent infiltration. The patient was a tall, gaunt Greek, forty-five years of age, who said that he had been suffering for three weeks from chills and fever. These chills were severe, shaking chills, coming every second day, lasting two or three hours, followed by fever and then by profuse sweating. During the paroxysms of fever he had severe headache and felt very ill, but between the paroxysms he felt perfectly well. Entire confidence, however, could not be placed in his account, as he had a very poor command of English. After his admission to the hospital the patient's clinical picture was continued as before, except that the febrile paroxysms occurred daily, and not with entire regularity as to the hour of occurrence. The spleen was much enlarged, its edge hard and sharp. The tongue was furred and brown. The first blood count found 9000 leucocytes. A thorough physical examination of the patient, from the ear drums to the prostate, disclosed nothing further, and the case was confidently believed to be one of malarial infection. When the house staff reported that they were unable to find malarial organisms in the blood, they were jeered at and told to hunt again. After several searches for the plasmodia had been made, the patient was put upon quinine by mouth. Nevertheless for ten days after his admission the sharp paroxysms of fever continued, and on five or these days reached 106° or more. On the ninth day after his admission, an intramuscular dose of the hydrochloride of quinine and urea, 30 grains, was ordered. This was put into his left buttock. At about this time the pathlogocal laboratory reported that a culture made from his blood on the fourth day in the hospital showed an abundant growth of the pneumobacillus of Friedlander, or the *Bacillus mucosus capsulatus*. Cultures made on the seventh and ninth days showed the same growth. The diagnosis of malarial infection was therefore abandoned. The case was looked upon as one of sepsis from the pneumobacillus of Friedlander, and as this, so far as the reports of experience had gone, was an unusually fatal form of infection, the case was looked upon as practically hopeless and the treatment by quinine was stopped. On the day following his injection of quinine the temperature did not rise as high as it had been rising previously, and during the next few days the temperature was more irregular and not so high (see chart). The buttock became swollen and painful, and five days after the injection pain and other signs of inflammation were intense. After this time the temperature remained below 102° and in a few days steadily subsided, reaching normal on the tenth day after quinine had been put into the buttock. For twelve days the temperature remained normal and the patient, who insisted that he was perfectly well and was anxious to go home, was retained in the hospital only to await reports on cultures from his blood. Cultures made on the tenth and twelfth days of the non-febrile period failed to develop any bacterial growth. When the buttock was most intensely inflamed, a slight sense of fluctuation appeared and an exploring needle was in-



serted. No pus was obtained, but a serous fluid, containing blood and abundant leucocytes, but no bacteria, was demonstrated either in smears or in cultures. The inflammation in the buttock disappeared entirely without interference and without breaking down, and the patient seemed to be perfectly well. On the thirteenth day, however, after the temperature had become normal, a sore spot appeared on the lower part of the right tibia and the temperature again went up. A suppurating periostitis developed and later some erosion of the tibia and astragulus. Incisions were made by the surgeons, and the pneumobacillus of Friedlander was found in the pus. Under their care the leg recovered and the patient, seen five weeks after leaving the hospital, was evidently entirely cured and in excellent condition. This then was a case of profound general sepsis due to the pneumobacillus of Frienlander, a form of infection almost invariably fatal. In this instance prompt amelioration and ultimate cure followed an injection into the buttock which produced an intense purulent infiltration, and the interesting question arose, whether this belonged to that group of cases, reported some time ago by French observers, in which general sepsis was apparently cured by an intercurrent, sterile, so-called fixation abscess.

Dr. A. A. SMITH asked what was the explanation.

Dr. THACHER said that perhaps the great production of leucocytes produced a cure by phagocytosis.

Dr. BRANNAN asked if the spleen returned to its normal size.

Dr. THACHER said no.

Dr. PARK said that he saw by the chart that there was a sudden fall after the buttock injection. That suggested something of the kind. The fact that later he developed trouble in the periosteum suggested the process overflowed into the blood. With the present better technic, they often got positive cultures where they were not able to before.

Dr. STARR said that might account for the old-time procedure known as setons. Physicians used to make an open ulcer. They may have given benefit by increase of leucocytes. He remembered seeing patients with scars in the middle of their backs where they had had these ulcers. There wust have been some effect or they would not have been so frequent.

Dr. POLK said that was the old way of handling anal fistulas. They never touched the abscess. The patients said they felt well when the abscesses were discharging.

Dr. JAMES A. MILLER said the Health Department had sent him a tuberculous patient four years ago. She came in for examination of the lungs. She had a sloughing ulcer between the breasts. She claimed that she felt very much better with this and said that what she coughed up before now discharged from the ulcer.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

WEST VIRGINIA STATE BOARD OF HEALTH.

(*Concluded from page* 902.)

PRACTICE OF MEDICINE AND PEDIATRICS.

1. Give treatment of scarlet fever and its complications.
2. Give treatment of typhoid fever and principal complications.
3. Diphtheria, diagnosis, and treatment.
4. Give the cause, symptoms, and treatment of cerebrospinal meningitis; the symptoms of tuberculous meningitis.
5. What diseases may cause occlusion of the common bile-duct?
6. Describe the normal heart sounds and state the points on the chest where each is heard with greatest distinctness.
7. Describe briefly the following diagnostic signs or tests and name the disease or diseases in which they may be found, Koplik's spots; Romberg's symptoms; Argyll-Robertson pupil; Babinski's reflex; Kernig's sign; Stokes-Adams syndrome.
8. Give cause and treatment of "summer diarrhea" in children.
9. Describe the varieties of stomatitis, giving cause and treatment.
10. What diseases are most commonly found in the right iliac region?

SURGERY.

1. Give the morphological and clinical characteristics of sarcoma and its varieties.
2. Give the differential diagnosis between a subcoracoid dislocation and a fracture of the surgical neck of the humerus.
3. Give the symptoms and treatment of a fracture of the femur, about the middle, in a young child.
4. Give the clinical history of a typical case of osteomyelitis of the tibia in a child.
5. Give the differential diagnosis of a duodenal ulcer.
6. What must the surgeon do to prevent infection in his operative work in addition to careful aseptic precautions?
7. Give the varieties and discuss the etiology of ileus.
8. Describe in detail two methods of skin disinfection, and give the reasons for each step.
9. Give the treatment of burns.
10. What wounds are likely to become infected with the tetanus bacillus, and what prophylaxis is to be practised in the treatment of such wounds?

OBSTETRICS AND GYNECOLOGY.

1. What is the etiology of eclampsia? Discuss treatment.
2. Describe method by which the diagnosis of presentation and position can be made?
3. What is the treatment of threatened, and of inevitable, abortion?
4. Describe the changes in the mucous membrane of the uterus incident to pregnancy.
5. What are the rules governing the introduction of the blades of forceps?
6. Describe phantom tumor and give treatment.
7. What is the mesosalpinx and what does it contain?
8. What is the relation of the pubococcygeus muscles to prolapsus uteri?
9. Name the organs or parts composing the vulva and give functions of each.
10. Discuss the theories of menstruation.

SPECIAL MEDICINE

1. Conjunctivitis—give two varieties and treatment of each.
2. Glaucoma—describe and give treatment.
3. Otitis media—give causes and treatment.
4. Eustachian tube—name some of the diseases affecting it and the treatment.
5. Epistaxis—give causes and treatment.
6. Nasal catarrh (coryza)—treatment.
7. Give points at which principal heart murmurs are heard.
8. Hemorrhage from the lungs—give cause and treatment.
9. Name three curable forms of insanity and give general treatment.
10. Describe the S. Weir Mitchell rest cure.

BACTERIOLOGY AND HYGIENE.

1. Name several non-pathogenic bacteria which are useful to human life and health.
2. Name the two methods by which bacteria multiply, and state what bearing the knowledge of this has upon the methods of surgical sterilization.
3. Name five bacteria which are or may be pyogenic, and state their relative virulence.
4. Define the following: Obligate, facultative, toxin, and chemotaxis.
5. State Koch's four laws.
6. Describe a sanitary privy.
7. Give detailed directions how to rid a town of the house-fly.
8. Enumerate the important points in school hygiene, and discuss one of them in detail.
9. What is social hygiene, and what can the physician do in the course of his professional duties to promote it?
10. Discuss oral hygiene, and give the pros and cons concerning the use of the toothbrush.

ANSWERS.

PRACTICE OF MEDICINE AND PEDIATRICS.

1. *Treatment of scarlet fever and its complications.* The treatment is that of infectious fevers in general, and in addition: "1. *Serum treatment.*—Serum from convalescents, injected in doses up to 20 c.c., has sometimes proved successful. Good results have also been

obtained with polyvalent antistreptococcic sera (*i.e.* sera prepared from several different strains of cocci). 2. The danger of spreading the disease is greatest during the desquamative period. Isolation must, therefore, be kept up for at least six weeks from the onset, or till all desquamation and discharges (nasal, aural, etc.) have ceased. 3. A minimum amount of nitrogenous food, to avoid irritation of the kidneys. This caution does not affect milk, which may be freely used. 4. Daily toilet, tepid sponging, or tepid baths. 5. Inunction of oily antiseptic preparations into the skin, to prevent dissemination of the desquamating scales. 6. Examine the urine daily for signs of nephritis. 7. The condition of the ears must be carefully watched. *Complications.—Arthritis* demands warm and sedative applications. Wrap the joints in cotton wool; alkalies are better than salicylates, as the latter tend to irritate the kidneys. *Throat.*—Ice to suck; antiseptic sprays; glycerin of carbolic acid; warm applications externally. *For the severe types.*—Avoid caustic applications; relieve pain by cocaine solutions; internally, tincture of ferric chloride, with free administration of ammonia; quinine, either alone or with ferric chloride. Stimulants may also be required. Nasal feeding often gives much relief. *Nephritis.*—Milk diet, hydragogue purgatives (avoid mercurials), hot-air baths, hot packs, etc., according to the severity of the dropsy." —(Wheeler and Jack's *Handbook of Medicine.*)

2. *Treatment of typhoid fever with its principal complications:* The patient must be in bed, and no medicine given unless indicated. "Give no solid food, or that which would not readily pass through a fine sieve. Milk, if it agrees, albumin-water made from white of egg, beef tea, and chicken broth are the principal foods. Of late some authorities have advocated a light solid diet throughout, but nothing must be given that would increase the risk of perforation. The stools should be daily inspected. If undigested curd is found, milk is being given too often, or the gastric function is impaired. It may then be given with lime water or barley water. Beef tea should be sparingly used, lest it excite diarrhea. Alcohol is required mainly in the later stages, when the typhoid state has set in, and the heart is weak. Many cases do well without it altogether. Other stimulants are strychnine, ammonia, ether, etc.

"If the *diarrhea* becomes excessive give bismuth and opium, or lead acetate and morphia, or an enema of starch and opium. When the motions are very offensive intestinal antiseptics (calomel in small doses, salol, etc.), may be given. They are also useful in meteorism. If *constipation* be troublesome, give enemata. No purgatives should be given after the first week. *Hemorrhage*—opium, lead acetate, or calcium lactate gr. xv every four hours, hypodermic injection of morphine or ergotin, ice-bag to the cecum. *Perforation.*—The main chance of recovery lies in early laparotomy and suture of the affected bowel. Every hour lost after the diagnosis is made, and the initial shock has passed off, increases the danger to life. Cases operated on within twenty-four hours may recover; later, recovery is very rare. In anticipation of operation, morphine may be given to relieve pain and diminish peristalsis. *Bed sores*—water-bed, cleanliness, stimulant and antiseptic lotions, dry dressings if the slough is large. *High fever*—quinine and cold baths. The antipyrin group is dangerous to the heart. The stools and urine must be carefully disinfected. During *convalescence* the diet must be increased with the utmost caution, and the possibility of relapse must always be remembered."—(Wheeler and Jack's *Handbook of Medicine.*)

3. DIPHTHERIA. *Diagnosis* is made by finding the diphtheria bacilli in the exudate. A sterile swab is rubbed over any visible membrane on the tonsils or throat and is then immediately passed over the surface of the serum in a culture tube. The tube of culture, thus inoculated, is placed in an incubator at 37° C. for about twelve hours:, when it is ready for examination. A sterile platinum wire is inserted into the culture tube, and a number of colonies of a whitish color are removed by it and placed on a clean cover slip and smeared over its surface. The smear is allowed to dry, is passed two or three times through a flame to fix the bacteria, and is then covered for about five or six minutes with a Loeffler's methylene-blue solution. The cover slip is then rinsed in clean water, dried, and mounted. The bacilli of diphtheria appears as short thick rods with rounded ends; irregular forms are characteristic of this bacillus, and the staining will appear pronounced in some parts of the bacilli and deficient in other parts.

Treatment includes isolation, rest in bed, liquid diet, washing of the throat and nose with an antiseptic solution, and injection of the antitoxic serum. About 5,000 units may be given at once, and another dose of half this amount in from twelve to twenty-four hours if necessary.

4. CEREBROSPINAL MENINGITIS. *Cause:* the diplococcus intracellularis meningitidis. *Symptoms:* Sudden onset, pain in back of head and neck and down the spine, opisthotonos, vomiting, convulsions, cutaneous eruption, rise of temperature, and Kernig's sign. *Treatment:* Rest in bed, quiet, warmth and stimulation, withdrawal of cerebrospinal fluid by lumbar puncture and injection of Flexner's antimeningococcic serum.

Tuberculous Meningitis.—An inflammation of the soft intracranial membranes due to the deposit of gray miliary tubercles. It is usually secondary to tuberculosis elsewhere, and is seen most often in children. The onset is usually attended with various prodromes, such as irritability, anorexia, headache, insomnia, etc. The stage of excitation is characterized by headache, vomiting, convulsions, intermittent temperature, soft, irregular, and compressible pulse, and a red line upon drawing the finger-nail over the skin. This stage lasts for about two weeks and is followed by depression, in which the pulse is slow and compressible, temperature is depressed, and somnolence and stupor alternating with delirium, convulsions, headache, and peculiar shrieking are present. Collapse, coma, convulsions follow, and death usually results in from one day to two weeks."—(*Pocket Encyclopedia.*)

5. *Occlusion of the common bile duct may be caused by:* Gallstones, ulcers, foreign bodies, parasites, tumors in neighboring structures, aneurysms.

6. There are two normal heart sounds which follow in quick succession, and are succeeded by a pause. The first, or systolic, sound is dull and somewhat prolonged, the second, or diastolic, sound is sharper and shorter. The sounds may be expressed by the syllables *lubb—dup.*

The first sound is heard best at the apex beat in the fifth left intercostal space; the second sound is heard best over the second right costal cartilage.

7. *Koplik's spots* are bluish-white spots on a reddish base, found on the mucous membrane of the cheeks and lips in the pre-eruptive stage of measles.

Romberg's symptom: An ataxic patient is unable to stand steadily if his eyes are closed and his feet together; he will sway from side to side or backwards and forwards and may even fall down.

Argyll-Robertson pupil: The pupil responds to accommodation, but not to light; found in locomotor ataxia, general paralysis of the insane, cerebral syphilis.

Babinski's reflex: Irritation of the skin of the sole of the foot causes extension instead of flexion of the toes; found in lesions of the pyramidal tract, in organic (but not hysterical) hemiplegia.

Kernig's sign: The patient lies with the thighs flexed on the abdomen and the legs flexed on the thighs; if cerebrospinal meningitis is present, extension of the legs is impossible, being prevented by the contraction of the hamstrings.

Stokes-Adams syndrome: A symptom complex consisting of bradycardia, visible auricular pulsation in the veins of the neck, and vertigo or syncope; it occurs in heart-block.

8. "*Summer diarrhea in children* is a severe form of gastro-intestinal infection, due to the toxins of the bacteria in milk. It occurs in hot weather among the poor in large cities. *Treatment.* The stomach and colon should be irrigated. From 2 to 4 ounces of water at 100° F. should be allowed to flow into the stomach through a soft rubber catheter and be siphoned out. This should be done only once. For the colon, sodium bicarbonate, ʒj, should be added to the pint, and the irrigation performed twice daily. If the rectal temperature is very high, ice cold water should be used; otherwise warm water. When symptoms of collapse appear, hot pack is used. Ice water quenches the thirst, even if it is vomited. Champagne and drop doses of brandy may be given if the stomach is tolerant. Strychnine gr. 1/100-1/48, hypodermically, to a child 1 year old, is a valuable stimulant. Morphine, gr. 1/100, and atropine, gr. 1/800, may be given in the same way and repeated every hour until the child is quieted.—(*Pocket Cyclopedia of Medicine and Surgery.*)

9. "*Aphthous stomatitis* is characterized by a hypere-

mia of the mucous membrane of the mouth, and by the formation upon it of small, yellowish white vesicles of a herpetic character. Children from 6 to 18 months of age are the most commonly affected. It is due to uncleanness, improper feeding, bad hygiene, etc. The affection is self limited, but proper feeding, regulation of the bowels, and improved hygiene should be instituted, and mouth washes containing boric acid or sodium salicylate should be used.

"*Catarrhal stomatitis* is a simple catarrhal inflammation of a portion or of the entire surface of the mouth. It occurs most commonly during the period of first dentition. It results from uncleanliness, the ingestion of irritating food, infectious fevers, gastro-intestinal disturbances, etc., the mouth is red, dry, and hot; later, there is an increased flow of saliva; coated tongue, constipation, slight fever, thirst, etc., are present. The affection lasts about one week, during which sucking is painful. The treatment consist in cleansing the nipple and the child's mouth frequently, the administration of fractional doses of calomel, and the use of mild alkaline mouth washes.

"*Gangrenous stomatitis* is a rare affection, consisting of a gangrenous destruction of the tissues of the cheek, and possibly of the adjoining structures as well. It occurs in debilitated children and follows the infectious fevers. The disease progresses rapidly and terminates in death in from a few days to two or three weeks. In debilitating affections the treatment should include strict cleanliness of the mouth to prevent this condition. After it has occurred the affected areas should be excised and tonics should be administered.

"*Parasitic stomatitis* is characterized by a catarrhal condition and by the presence on the mucous membrane of white, flake like patches. It occurs usually in young infants, and is caused by a vegetable parasite (one of the mold fungi) variously known as *Oidium albicans* or *Saccharomyces albicans*. It results from uncleanliness, and the treatment is similar to that of catarrhal stomatitis.

"*Ulcerative stomatitis* is an inflammation and ulceration of the mucous membrane of the mouth, principally of the gums. It results from infantile scorbutus, infectious fevers, mercurial salivation, malnutrition, improper hygiene, etc. The symptoms include slight constitutional disturbances, reddened and swollen gums, pain and salivation, acrid, irritating and offensive saliva, foul breath, hemorrhages from the mucous membrane on pressure, etc. The treatment should first be directed toward the diet and hygiene of the patient. Salicylate of sodium, borax, or hydrogen dioxide may be used in mouth washes. Potassium chlorate should be administered internally (gr. 10-20 in 24 hours to child one year of age) and also should be used locally."—(*Pocket Cyclopedia.*)

10. *Diseases most commonly found in the right iliac region:* Inguinal hernia, psoas abscess, appendicitis, ovarian cyst or abscess, pyosalpinx, ruptured ectopic pregnancy.

SURGERY.

1. SARCOMA.—"(1) *Round-celled sarcomata* consists of a mass of round, nucleated cells with very little intercellular substance. The tumors grow rapidly, infiltrate, and disseminate. There are three varieties: (*a*) The small round-celled; (*b*) the large round-celled; (*c*) the lympho-sarcoma, in which the cells are small, but the intercellular substance consists of retiform tissue. They begin in lymphatic glands or lymphoid tissue. (2) *Spindle-celled sarcomata.*—The cells vary in size, but they are all oat-shaped, or fusiform. When much fibrous tissue is present, they are called fibro-sarcomata. Frequently patches of immature hyaline cartilage are present. (3) *Myeloid sarcomata* consist of round or spindle cells with large multinucleated cells scattered among them. The intercellular substance is gelatinous. The nuclei of the giant cells are scattered throughout, not arranged around the periphery, as in the giant cells of tubercles. They are very vascular, and may pulsate, or hemorrhage may occur in them. No secondary deposits occur, and they do not recur if completely removed. They always grow from bones, and are the least malignant. (4) *Alveolar sarcomata* are round-celled, but the cells are grouped in alveoli by distinct stroma. (5) *Melanotic sarcomata* are the most malignant. They originate from pigmented structures, the skin, and the retina. The tumor consists of round or spindle cells arranged in alveoli, the cells containing a deposit of brown pigment—melanin. The primary growth may be only slightly pigmented, and either shaped as a flat plaque or a papilloma; but the secondary deposits are of an inky-black hue. Pigmented moles are the commonest site of origin." (*Aids to Surgery.*)

2. In *subcoracoid dislocation*, the acromion process is prominent, and there is a flattening or depression below it; the head of the humerus may be felt below the coracoid process, and the glenoid cavity is empty; crepitus cannot be elicited; the head of the bone is fixed, and adduction is impossible; as a rule there is preternatural immobility. In *fracture of the surgical neck of the humerus*, the shoulder is somewhat flatter than normal; the head of the bone is in the glenoid cavity, and does not rotate with the shaft; crepitus may be obtained unless the fracture is impacted; as a rule there is preternatural mobility of the injured limb.

3. *Fracture of the middle of the shaft of the femur in a young child. Symptoms:* "As a rule, in fracture of the shaft of the femur the lower fragment is drawn upward and the upper end of the lower fragment is found posterior and somewhat to the inside of the lower end of the upper fragment, and the lower fragment also undergoes external rotation (the drawing up is due to the rectus and hamstrings; the passing inward is due to the adductor muscles; the rotation outward arises from the weight of the limb). There is complete loss of function, the thigh and leg are slightly flexed and usually everted. In some cases the leg and lower fragment are inverted. There are shortening, pain on movement, preternatural mobility, crepitus, and obvious deformity, and the ends of the fragments can be felt by the surgeon. In impaction there is alteration of the axis of the limb and some shortening. Always feel for the pulse below the fracture to learn if the artery is damaged.

Treatment: "Fractures of the thigh in children are reduced by extension and counter-extension; a well padded splint reaching from the axilla to below the sole of the foot may be applied to the outer side of the limb and body. This splint is held in place by bandages which are overlaid with plaster of Paris. It is worn for four weeks, at which time it is removed and a plaster bandage, applied so as to include the entire limb, is worn for four weeks. Bryant's extension is very satisfactory in treating a child. Both the injured limb and the sound limb should be flexed to a right angle with the pelvis, fixed by light splints, and fastened to a bar above the bed. The weight of the body produces counter-extension and the child can be easily cleaned."—(Da Costa's *Surgery.*)

5. *Osteomyelitis* is inflammation of the bone and marrow; the term is often used now for inflammation of bone.

It is *caused* by infection, the bacteria gaining entrance either through a wound, or by extension from neighboring tissues, or they may be brought by the blood.

Symptoms: Sudden onset; pain, tenderness, fever chills, swelling of soft parts; sometimes the joint can be moved gently without pain; septicemia or pyemia may be present.

It is to be *diagnosed* from (1) *Rheumatism*, in which more than one joint is affected and the tenderness is *in* the joint, and not *near* it. (2) *Tubercular arthritis*, in which the onset is slow and the trouble starts in the epiphysis rather than in the diaphysis. (3) *Cellulitis* in which the bone and periosteum are not affected, and in which there is always a wound.

In *osteomyelitis*, the *treatment* consists in relieving the constitutional symptoms and preventing the bone from necrosing. An incision down to the bone is made; if pus is beneath the periosteum, the latter is also incised; a piece of bone is removed by chisel or trephine, pus is removed, the endosteum is hurt as little as possible, the wound is irrigated with hot bichloride solution and packed with gauze; the soft parts are closed and the wound well drained. In case this fails, amputation may be necessary.

6. In *ulcer of the duodenum* the symptoms are very similar to those found in ulcer of the stomach; but in the former condition there is less tendency to vomit, the pain does not come on till some time after food has been swallowed (and has had time to pass the pylorus), and blood in the stools is more common. All of these points are due to physiological and anatomical reasons based on the relative position of the stomach and duodenum. A special sign of duodenal ulceration is the so-called "hunger pain" which occurs at the end of digestion, when the unmixed acid of the gastric

juice is passing into the duodenum. This pain is relieved by taking food, for when this occurs the pylorus closes, and the gastric juice is for the time retained in the stomach to be mixed with the food, while the alkaline duodenal and pancreatic secretions are stimulated.

7. *Intestinal obstruction* may be caused by: Strangulation, kinking, volvulus, foreign bodies, intussusception, stricture, fecal accumulation, and tumors either within or outside the bowel.

STRANGULATION	INTUSSUSCEPTION	TWISTS (VOLVULUS)
Subjective Symptoms.	*Subjective Symptoms.*	*Subjective Symptoms.*
1. Generally occurs after age of 20.	1. Most frequent in childhood.	1. Most frequent after age of 30.
2. Pain localized, rapid collapse.	2. Constant tenesmus.	2. Pain diffuse.
3. Pain intense, paroxysmal in character.	3. Pain develops suddenly and is continuous.	3. Pain paroxysmal; recurs less often than in strangulation.
4. Constipation complete.	4. Frequent diarrhea, passage of bloody mucus.	4. Constipation complete.
Objective Symptoms.	*Objective Symptoms.*	*Objective Symptoms.*
1. Temperature often subnormal.	1. Temperature normal or subnormal.	1. Temperature slightly elevated.
2. Location in small intestine.	2. Localization in small intestine; bowel frequently protrudes at rectum.	2. Location, small intestine, abdomen often protrudes, in certain areas giving dullness on percussion.

—(*Pocket Cyclopedia.*)

8. *Two methods of skin disinfection (hands and forearms):* "After mechanical cleansing a germicide is employed to render the parts sterile. Whatever method is adopted it is desirable that it shall not unduly irritate the skin." *Fürbringer's Method:* After washing off the soap in sterile water the hands are dipped in 95 per cent. alcohol and held there for two or three minutes while the forearms hands, fingers, and nails are being rubbed with alcohol. Alcohol removes the soap which has entered into follicles and creases, removes desquamated epithelium, enters under and about the nails, and favors the diffusion of the corrosive sublimate under and about the nails and into the follicles, when the hands are placed later in the mercurial solution. Alcohol also hardens epithelium and keeps it from desquamating into the wound. After using the alcohol the hands are then dipped in a hot solution of corrosive sublimate (1:1000), and with the forearms are scrubbed for at least a minute, the nails receiving especial care.

The Sublimate Alcohol Method: It is as follows: Cleanse the hands with soap and water as previously directed. Use 95 per cent. alcohol as in Fürbringer's method. Dip the hands in 70 per cent. alcohol containing 1 part to 1000 of corrosive sublimate, and rub the hands, forearms, and nails with a piece of sterile gauze wet with this fluid for three minutes. Rinse these parts in the fluid and then rinse in sterile water." —(Da Costa's *Surgery.*)

9. *Treatment of Burns.*—General: If carbonic-oxide-poisoning is present, artificial respiration and administration of oxygen. For shock, opium and stimulants. Local: For burns of the first degree, powder with boracic acid. Puncture blisters, and cover the part with an antiseptic dressing. Burns of deeper degrees than the second must be made aseptic with 1 in 1,000 perchloride of mercury. Carbolic acid is absorbed readily, and must not be used. Antiseptic gauze dressings should then be used. Picric acid (20 grains to 1 ounce of water) is used as a dressing. It lessens the pain, and can be left on two or three days. The continuous bath may be used. If the burn be of any size, it should be skin-grafted, as the scars of burns contract very much, and may produce deformities.—(*Aids to Surgery.*)

10. Punctured wounds, and those made with an implement which is dirty or which is infected with the tetanus bacillus are the most likely to result in tetanus. Such wounds should be disinfected before being dressed; and all wounds which have been exposed to infection by earth, dust or stable refuse should be thoroughly purified. The use of Antitetanic Serum has been recommended by some surgeons.

OBSTETRICS AND GYNECOLOGY.

1. PUERPERAL ECLAMPSIA. *Etiology:* Urema, albuminuria, imperfect elimination of carbon dioxide by the lungs, medicinal poisons, septic infection; predisposing causes are renal disease and imperfect elimination by the skin, bowels, and kidneys.

"*The prophylactic treatment* consists in frequent and regular examination of the urine. After the first appearance of albumin, daily quantitative examination of the urine should be made. The diet should be milk; the bowels should be kept freely open by means of calomel and salines; the skin should be kept active by hot baths, followed by vigorous rubbing. Diuretics, such as Basham's mixture, digitalis, and caffein, should be administered. During pregnancy, if the percentage of albumin increases in spite of the treatment, abortion or induction of labor is indicated.

"*The treatment of the attack* consists of the administration of chloroform by inhalation, chloral hydrate (gr. 60) by enema, and the fluidextract of veratrum viride hypodermically (gtt. 15 followed by gtt. 5, repeated frequently enough to keep the pulse at about 60 beats a minute), to control the convulsions, and free purgation by croton oil (gtt. 2, or 3, in sweet oil or glycerine), free sweating by the hot pack, and sometimes depletion by venesection to eliminate the poison. The after-treatment consists of free purgation by the salines, restriction of diet, and later the administration of tonics and stimulants. The obstetric treatment is usually noninterference." (*Pocket Cyclopedia.*) Sometimes *accouchment forcé* is indicated.

2. *Methods of determining the position of the fetus prior to labor:*—"The examiner stands alongside the patient, facing her head; the tips of the fingers of both hands, moving together and at equal distances from the middle line, are carried up the sides of the abdomen by a series of tapping movements; and upon one side (for example, the left, in the L. O. A. position) is noticed a firm, broad, even sense of resistance, contrasting with the cystic, tumor-like sensation of the other side, with the occasional encounter of firm, irregular bodies,—the fetal extremities. This firm, broad, even resistance is produced by the fetal back, and, to confirm this fact, the extremities are felt for by a rubbing motion with one outstretched hand on the opposite side. They are felt as cylindrical, irregular bodies, slipping away from the hand, and changing their position from time to time. Having located the back and the extremities, the portion of the fetal ellipse presenting at the superior strait is next ascertained. The examiner now faces the woman's feet, and, with the outstretched hands, the fingers parallel with and the middle finger over the center of Poupart's ligament, on either side, the fingers dip down beneath the ligament into the pelvic cavity. If the head is presenting, it is felt as a hard, regular, round body, the greater mass of the occiput, the sharp point of the chin, and the groove between occiput and back being often distinguishable. At the same time, the density of the head, its compressibility, its approximate size, and its relative size to the pelvis may be learned. By *auscultation* the fetal heart-sounds are located, and their rate and intensity are noted. The uterine bruit and the funic souffle are often heard. The former is a low-pitched musical murmur synchronous with the maternal heart-beat. The latter is a high-pitched whistling murmur synchronous with the fetal heart-beat. The position of the abdomen at which the fetal heart-sounds are heard with greatest intensity is of diagnostic value in confirming the find, by abdominal palpation, as to position and presentation. By *vaginal examination* the finger detects the varying portions of the fetal body which may present at the superior strait, as the cranium, the face, the shoulder, the buttocks, the knees, feet, and, exceptionally, the elbow or hand."—(Hirst's *Obstetrics.*)

3. "*Treatment of threatened abortion* includes rest in bed with absolute quiet; the administration of nerve sedatives, preferably suppositories of opium, one grain of the aqueous extract morning and evening; this may be supplemented by teaspoonful doses of the fluid extract of viburnum prunifolium four times daily. If the abortion is due to general disease, such as typhoid fever, pneumonia, phthisis, or valvular heart disease, no attempt should be made to prevent it."

Treatment of inevitable abortion: "If the preceding plan of treatment fails and abortion seems inevitable, the emptying of the uterus should be hastened.

Two methods of treatment have been advised for these cases. The first is the *expectant plan*, which may be described briefly as follows: Place the patient in bed, and if the bleeding is profuse, insert a tampon of iodoform gauze (1 yard) well up against the cervix. If this fails to control the hemorrhage, reinforce it by

another yard or two of gauze and a perineal pad and binder. Small doses (5½) of the fluid extract of ergot should now be given every 2 or 3 hours. At the end of from 8 to 12 hours remove the tampon, when the ovum may be found extruded from the cervix; if not, a vaginal douche of mercuric chlorid; (1:4000) must be given, and another tampon introduced. If, upon the removal of this second tampon at the end of 10 or 12 hours, the ovum is not discharged, then more vigorous methods to secure its expulsion must be adopted.

The active plan comprises the following: The physician's hands and instruments are sterilized; the patient is etherized and placed on an appropriate table, or across the edge of the bed, her buttocks resting upon a Kelly pad; the genitalia are thoroughly cleansed and a vaginal douche of mercuric chloride (1:4000) is given; the anterior lip of the cervix is brought down to the vulvar orifice; the cervix is dilated if necessary; the placental forceps are introduced into the uterus, and as much as possible of the ovum is removed; the uterus is thoroughly cureted, and an intrauterine douche of sterile water is given. A light tampon of iodoform gauze is placed in the vagina; the patient is then returned to bed.

A strip of gauze may be placed in the uterus in cases of sharp retroflexion, to secure free drainage, and occasionally an intrauterine tampon will be necessary when the uterus refuses to contract and hemorrhage persists after the use of the curette."—(*Pocket Cyclopedia.*)

4. "As a result of impregnation the mucous membrane of the uterus undergoes certain changes in structure, and is henceforth known as the decidua. The fertilized ovum may enter the uterus at any stage of the menstrual cycle. The surface of the endometrium may not be quite smooth, and the ovum may possibly be arrested by some ridge or projection of the surface. Here it embeds itself, and the destructive and invasive action of the syncytium is soon followed by a reaction on the part of the uterus. This reaction is characterized by a rapid transformation of the small, primitive, connective tissue cells of the stroma of the endometrium into large oval or polygonal 'epithelioid' cells with large pale oval nuclei. These are the decidual cells, and they are probably thrown out as a line of defence against the advance of the syncytium (Turner). The glands of the endometrium become enlarged and dilated, the capillaries distended with blood, and the whole membrane becomes markedly thickened and soft and edematous. Instead of being only about one-eighth of an inch thick, it swells until it may even be as much as half an inch in depth. In this growth the glands take a very active share, and increase so much in length that in order to accommodate themselves, they become folded backwards and forwards in their middle parts. The effect of this is to make the middle portion of the decidua full of distended gland spaces, whereas the more superficial portion contains only the mouths and necks of the glands supported in a stroma packed with the decidual cells. If a section be made through the decidua, it thus appears to be divided into three layers, the superficial part being compact in structure, and hence known as the superficial compact layer, while the deeper part is known as the spongy layer. The deepest part of all, immediately next the muscle wall, contains only the blind ends of the glands (many of which actually penetrate the muscle), and is sometimes described as a third layer, the deep compact layer. For purposes of description the decidua is divided further into three parts according to its relationship to the ovum. The part on which the embedded ovum rests is called the decidua serotina; the part superficial to it is called the decidua reflexa, and the decidua lining the rest of the cavity of the uterus is called the decidua vera."—(Johnstone's *Midwifery*).

5. *Manner of using forceps:* "They should not be used when the os is undilated, when the head is not engaged, except in placenta prævia, when the membranes are unruptured, when the disproportion between the child's head and the parturient canal is too great, or in impossible positions and presentations. Before applying the instruments they should be sterilized, preferably by boiling; and the patient anesthetized and placed in the lithotomy position. Two fingers of the right hand are introduced into the vagina; the left blade of the forceps is then held almost perpendicularly by the left hand, with the tip of the blade opposite the vulva; the tip is introduced into the vagina, passed along the floor toward the sacrum. The blade is rotated outward in its long axis in order to escape the promontory of the sacrum. The right blade is introduced in a similar manner. To facilitate locking, one of the blades must be rotated forward. If the head occupies the right oblique diameter, as in L. O. A. and R. O. P. positions, the right blade must be rotated; if it occupies the left oblique diameter, the left blade must be rotated. Traction is made in the direction of the pelvic axis until the perineum is well distended. The perineum is then protected by one hand, while the face is swept over it by an upward movement of the forceps. In posterior positions it is necessary to remove the instruments after the head is drawn down to the pelvic floor; after anterior rotation is secured they may be reapplied. If the occiput rotates into the hollow of the sacrum the hands should be depressed as the face is swept out under the symphysis pubis."—(*Pocket Cyclopedia.*)

6. Phantom tumor may be a "pseudocyesis," a condition in which the patient (erroneously, but honestly) believes herself to be pregnant. She may present some of the subjective signs of pregnancy, with increase in the size of the adbomen; but the cervix is unaltered, the uterus is not enlarged, and there are no fetal movements. The diagnosis is made by giving an anesthetic when the abdominal swelling diminishes in size. The difficulty lies in getting the patient to believe that she is not pregnant; perhaps the best method is for a friend of the patient to be present during the examination under anesthesia and to witness the diminution of the swelling. No treatment is indicated.

7. The *mesosalpinx* is that part of the broad ligament beneath the Fallopian tube; it consists of two layers of peritoneum with a little connective tissue, and contains the organ of Rosenmueller.

8. It was formerly believed that a ruptured perineum was the main, if not the only factor in causing a prolapse of the uterus. This is no longer accepted as true. Of course if the perineum is completely torn prolapse is more likely to occur, but the perineum is only one factor in the case. The levator ani is one of the perineal muscles, and the pubo-coccygeus is one of the divisions of the levator ani. In an ordinary perineal laceration in the median line, even if it extends into the rectum, very few fibers of the pubo-coccygeus are torn. Hence this muscle cannot be considered as having much of a causal relationship to prolapse of the uterus.

9. The *vulva* consists of the labia majora, labia minora, clitoris, hymen, vestibule, fossa navicularis, and mons Veneris. All these parts are endowed with great sensibility, and are mainly concerned with the function of coitus; in addition, the clitoris is regarded as being the main seat of sexual sensation and pleasure; the mons Veneris is said to prevent irritating secretions from the skin trickling into the vulval cleft; the hymen is a membrane closing (partially) the entrance into the vagina.

10. *Menstruation* is a periodic discharge of blood from the mucous membrane of the uterus, due to a fatty degeneration of the small blood-vessels. Under the pressure of an increased amount of blood in the reproductive organs, attending the process of ovulation, the blood-vessels rupture, and a hemorrhage takes place into the uterine cavity; thence it passes into the vagina. Menstruation lasts from five to six days, and the average amount of blood is about five ounces. It begins at puberty and occurs periodically at about 28 days interval, until the menopause; it is absent during pregnancy and early lactation.

The relation existing between ovulation and menstruation is not known. The two processes are usually coexistent, but they may be independent of each other. The following theories have been held: (1) Menstruation is dependent upon ovulation; (2) ovulation is dependent upon menstruation; (3) they are independent of each other; (4) they both depend upon some other (at present unknown) cause.

Menstruation has been considered as being analogous to the condition of "heat" or "rut" in the lower animals.

SPECIAL MEDICINE.

1. ACUTE CONJUNCTIVITIS. *Etiology:* Irritation, a foreign body, cold, exposure to strong light or heat, eyestrain, disordered secretion of tears. *Symptoms:* Hyperemia, lacrimation, epiphora, discharge, photophobia, sensation of sand in the eye, symptoms are worse in evening. *Treatment:* Remove cause if possible; use astringent and antiseptic washes; anoint the lids with vaseline; alum, tannic acid, zinc sulphate, or silver nitrate have all been recommended. When it becomes contagious, its common name is "pink-eye."

OPHTHALMIA NEONATORUM. *Causes:* The gonococcus or some other pyogenic microorganism; the secretions of the mother contain the infecting agent, and transmission may occur directly during parturition, or indirectly by the fingers of physician or nurse, cloths, instruments, etc. *Symptoms:* Swollen eyelids, with copious purulent discharge; ulceration of the cornea may ensue. *Prophylaxis:* Whenever there is the possibility of infection, or in every case, wash the eyelids of the newborn child with clean warm water, and drop on the cornea of each eye one drop of a 1 per cent. solution of nitrate of silver, immediately after birth. *Treatment:* Wash the eyes carefully every half hour with a saturated solution of boric acid; pus must not be allowed to accumulate. Two drops of a 2 per cent. solution of nitrate of silver must also be dropped on to the cornea every night and morning. The eyes must be covered with a light, cold, wet compress. The patient must be isolated, and all cloths and compresses used must be burnt.

2. *Glaucoma* is a diseased condition of the eye, produced by increased intraocular pressure, and resulting in excavation and atrophy of the optic disc, and blindness. It is due to increase of the contents of the eye, hypersecretion, retention, old age, gout, rheumatism, nephritis. *Symptoms:* Visual disturbances, increased ocular tension, hazy and anesthetic cornea, sluggish and dilated pupil, shallow anterior chamber, ciliary, neuralgia, cupping of optic disc, blindness. *Treatment:* Myotics, such as eserine or pilocarpine; massage of the eyeball; mydriatics are contraindicated; operative treatment may include paracentesis, iridectomy, or sclerotomy.

3. *Acute catarrhal otitis media* is frequently caused by acute coryza and the infectious fevers. There is a painless obstructed sensation in one or both ears, impairment of hearing, and tinnitus. The inflammation causes closure of the Eustachian tube. Inflation and aspiration of the middle ear and syringing and douching the nares and nasopharynx must be avoided. A moderate spray of Dobell's solution may be used. If pain is present, dry heat, in the form of hot-water bottle, hot stone wrapped in flannel, etc., may be applied. A few drops (100), warmed, of a carbolic acid solution (1:40), or one of formalin (1:2000), may be instilled into the ear.

"*Acute purulent otitis media:* Acute catarrhal otitis media, instead of undergoing resolution, may pass into acute purulent otitis media (especially in exanthemata) from the passage of pathogenic germs from the nasopharynx into the middle ear. The pain will become more intense, the hearing dull; tinnitus will become louder and more distressing, and fever usually sets in. Dry heat allays the pain. Warmed water or warmed carbolic acid solution (1:40) may be used. Inflations, aspirations, etc., should be avoided. If the nares are filled with tough secretions, a spray of Dobell's solution may be used. If the pain continues over six hours in a child or over twelve hours in an adult without spontaneous perforation of the tympanic membrane, paracentesis of that structure should be performed. The concha and meatus should be smeared with petrolatum to avoid chapping, and the secretions should be gently mopped off as they appear. Under this treatment the ear usually returns to normal in two to three weeks." —(*Pocket Cyclopedia of Medicine and Surgery.*)

4. *Eustachian tube, diseases of:* Catarrh (acute and chronic) and obstruction. Cleanse the postnasal space, and inflate the Politzer bag or bougie. Dover's powder may be given at the commencement of an acute catarrhal condition.

5. EPISTAXIS. *Causes:* Ulceration, foreign bodies, anemia, cardiac hypertrophy, fracture of nose, purpura, hemorrhagic diathesis, nephritis, typhoid. *Treatment:* (1) Try to cauterize the bleeding point; (2) plug the nasal cavity with gauze soaked in adrenalin; (3) inject into the nares a solution of peroxide of hydrogen; (4) plugging the nares, anteriorly and posteriorly; (5) an inflating plug may be used.

6. The treatment of nasal catarrh consists in rest in bed, the administration of fractional doses of calomel followed by a saline, hot foot baths, hot drinks, quinine, Dover's powder, and a combination of belladonna, opium, and camphor water. The local treatment consists in a gentle spray with an alkaline solution, and the application of a mixture of one ounce of liquid vaseline and four grains of menthol.

7. The *mitral regurgitant murmur* is heard best in the center of the mitral area, above and to the left of the apex.

The *aortic obstructive murmur* is heard best in the midsternum or to the right of it; opposite the third rib or second interspace.

The *aortic regurgitant murmur* is heard best in the midsternum opposite the upper border of cartilage of third rib.

The *mitral obstructive murmur* is heard best over the mitral area around the apex.

The *tricuspid regurgitant murmur* is heard best in the midsternum just above the ensiform cartilage.

The *tricuspid obstructive murmur* is heard best in the midsternum opposite the cartilage of the fourth rib.

The *pulmonary obstructive murmur* is heard best in the second interspace to the left of the sternum or at the level of the third rib.

The *pulmonary regurgitant murmur* is heard best in the second left interspace.

8. *Hemorrhage from the lungs* may be *caused* by:—Injury, severe coughing, purpura; it occurs in phthisis, pneumonia, abscess or gangrene or cancer of the lung, affections of the mitral valve, aneurysm. *Treatment:* "Unless a large artery is opened, bleeding usually ceases spontaneously, and the patient should be reassured. Absolute rest and quiet, light food given cold, ice to suck and injections of morphine and atropine suffice in the majority of cases. Inhalation of nitrite of amyl is a valuable measure. Ergot raises the intrapulmonary blood pressure and may do harm. In protracted cases, saline purgatives and aromatic sulphuric acid are indicated. Adrenalin is useless." —(Wheeler and Jack's *Practice of Medicine.*)

9. *Three curable forms of insanity:* Some forms of mania, melancholia, and delusional insanity.

In a general way, rest and change of environment are necessary; removal of constipation and dyspepsia is essential; sleep is beneficial, frequent bathing with friction of the skin is useful. In mania, a hot or warm bath reduces the excitement; hyoscine or chloral may quiet the patient and produce sleep; the food must be nutritious and easily digested; and the patient must be removed from his friends. A kind, but firm and judicious nurse is invaluable.

10. "The '*Weir Mitchell*' *treatment* is a systematized plan by which the weakened body is placed in thorough condition, by means of continuous rest, enforced feeding, and regular muscular waste produced by massage, which enables food to be taken and assimilated. The essentials of this method are:

(1) Complete rest, the patient being placed in bed, and kept there during treatment; and it should be a *sine qua non* that this rest should not be in the patient's own house, but in a medical home or in lodgings, the friends and relatives, whose influence is often most injurious, being strictly excluded.

(2) Regular muscular exercise to produce tissue waste, by means of massage of the whole body, at first for ten minutes or a quarter of an hour, twice daily, soon increased to an hour or an hour and a half. The influence of this is often misunderstood, and this treatment is frequently erroneously talked of as a 'massage treatment.' It should be borne in mind that massage is nothing more than a remedial agent, used for a specific purpose; that it is not the most important part of the cure; and that, used alone, and without enforced rest and over feeding, as is unfortunately so often done, it cannot possibly be productive of any real good.

(3) Feeding is the most essential part of the treatment. At first the patient should be placed on milk alone, about five ounces every third hour. Within a few days this is increased to ten ounces, so that at least two quarts are taken in twenty-four hours. Then, by degrees, solid food is added, so that within a fortnight the patient should be taking three large mixed solid meals daily, in addition to the milk, and often a cup of strong soup, with two teaspoonfuls of beef peptonoids added, twice daily as well. This exaggerated diet is continued for six weeks or two months, when it is gradually lessened, the massage also being discontinued, and the patient allowed to get up. In an average case the patient should gain from fourteen to twenty-three pounds during this time. It is strange to see how, with returning health, all invalid habits are lost, sleep becomes regular without drugs, the bowels cease to require assistance, and the whole appearance, and apparently even the nature, of the patient is altered.

At the end of the treatment, in most cases, it is advisable that the patient should go for a change, either on a sea voyage or abroad, so as to complete the cure.

At any rate, she should not return to her family until her health is re-established. The essential point to remember is that no half measures should be permitted: if this treatment is not carried out thoroughly and completely, it had much better not be tried at all."—(Quain's *Dictionary of Treatment.*)

BACTERIOLOGY AND HYGIENE.

1. *Clostridium pasteurianum; Nitroso-bacteria; Nitrobacteria;* various bacteria of the genera. *Thiothrix, Chromatium, Spirillum, Monas, Crenothrix, Cladothrix, Leptothrix; Bacterium aceti; B. pasteurianum; Bacillus chauvæi; Saccharomyces cerevisiæ.*

2. Bacteria multiply by fission (or division), and also by spore-formation. Spores are much more resistant to heat than the bacteria without spores. Hence the process of fractional sterilization is adopted by the surgeon. Sterilization on the first day kills all the non-spore forms, while the spores remain alive. The next heating kills such spores as have assumed the non-spore form. The third heating probably kills the remainder.

3. *Five pyogenic bacteria.—Streptococcus pyogenes, Staphylococcus pyogenes aureus, Staphylococcus pyogenes citreus, Staphylococcus pyogenes albus, Micrococcus tetragenus.*

4. An *obligate aerobe* is a bacterium that can only exist in the presence of oxygen; an *obligate anaerobe* is one that can only exist in the absence of oxygen.

A *facultative acrobe* or *anaerobe* is one that can exist either with or without oxygen.

A *toxin* is the poisonous product of bacteria.

Chemotaxis is the property by virtue of which certain living cells approach (*positive chemotaxis*) or move away from (*negative chemotaxis*) certain other cells or substances.

5. KOCH'S FOUR LAWS. To *prove that bacteria causes disease* it is essential: (1) That the microorganism be found in the tissues, blood, or secretions of a person or animal sick or dead of the disease; (2) the microorganism must be isolated and cultivated from these same sources; it must also be grown for several generations in artificial culture media; (3) the pure cultures, when thus obtained, must, on inoculation into a healthy and susceptible animal, produce the diseases in question, and (4) the same microorganisms must again be found in the tissues, blood, or secretions of the inoculated animal.

6. *A sanitary rural privy* consists of a "small watertight pit, not drained but roofed over to exclude rain, and so arranged that the excreta and ashes become thoroughly mixed. For this purpose either the ashes must be thrown in through the closet seat, which may be hinged so as to be lifted *en masse*, or else a "shoot" or sloping slab must conduct one and the other to a common point. The floor should be smooth, and raised a few inches above the level of the adjoining ground.

"The contents ought to be removed at fixed short intervals, and the work should be done at night or early in the morning so as to minimize the nuisance."—(Whitlegge and Newman.)

7. "Since flies breed only in filth, the first thing to do is to render it impossible for the fly to reach any of the accumulations unavoidable around habitations. This is done: (1) By destroying filth wherever found. (2) By rendering it distasteful or poisonous to flies or their larvæ by the use of lime, kerosene, oil of pennyroyal or cresol. (3) By excluding light from the receptacle or by screens which the flies cannot pass. The most difficult part of an anti-fly campaign is teaching the people to dispose of their garbage properly. No amount of screening, trapping or poisoning, will make up for careless disposal of filth and waste. All such materials must be promptly destroyed or buried. If a really good suspension of milk of lime (calcium hydrate) is mixed with the garbage or refuse, the eggs and pupæ or maggots of the fly are at once destroyed, but it must be made to come in contact with the eggs or maggots to do any good. Kerosene oil is more effective, but more expensive. Where crude oil or low grade distillates are procurable, the expense is much lessened. Oil of pennyroyal, in the proportion of 1 ounce to 1 quart of kerosene, is very distasteful to the adult fly, as well as fatal to the young, and a small quantity sprinkled around the garbage can is sufficient to keep away all flies. The greatest drawback is the expense. Cresol is not expensive, and may be used freely in 2 per cent. emulsion. Privy vaults, manure bins, and similar places must be made and kept perfectly dark. Screens must be made automatically self-closing, otherwise they are sure to be left open and to fail of their object."—(Gardner and Simond's *Practical Sanitation*). Fly poisons, flytraps and fly papers may also be used.

8. *Concerning schools:* The school building should be as near as possible to the center of the area which it is to serve; the site should be airy and open, of sufficient size, free from swamps, and somewhat elevated; it should not be too near factories, busy streets, or railways; the soil should be as free as possible from organic matter. The buildings should be so planned that the corners look towards the four points of the compass. In this way the sun will have access to each side and to every room during some part of the day. The building should have as few stories as possible. The walls should be of brick or stone, and should be pointed with cement; the inner surface of the wall should be cemented smooth. The foundations must be solid. The general arrangement will depend upon size of site, number of scholars, and number of required rooms. Fifteen square feet per child should be allowed. Details will have to be considered on: plans, accommodations to be provided, shape and size of class rooms, distribution of rooms, teachers' rooms, corridors, entrances and staircases, playground, ventilation, heating, lighting, and placing of windows, sanitation, lavatories, water supply, drinking water, sewage disposal, removal of refuse, sanitary appliances, and drainage. Special care must be given to the prevention of contagious diseases and the exclusion of all possible sources of infection or contagion; there should be physical examination of children, also, for noncontagious physical defects.

The principal means of preventing the spread of contagious diseases in schools are: Regular and efficient inspection by physicians; prompt exclusion and isolation of any one suffering from a contagious disease, or coming from a house where such disease is; compulsory notification of all infectious and contagious diseases; individual towels, drinking vessels, and other implements; children who have had a contagious or infectious disease or who have come from a house where such disease prevailed should not be readmitted to school until sufficient time has elapsed since the occurrence of the last case to insure safety.

9. *Social hygiene* is a term with no exact meaning, but which is often euphemistically applied to venereal prophylaxis—the prevention and control of venereal diseases. The physician can advise parents about the proper supervision of their children's leisure, amusements, companionships, and tendencies; he should urge physical exercise upon such as need it, but are disinclined to take it. He can recommend the adaptation of schooling and vocational training to the child's nervous system. He can suggest to the parents instruction in the basic facts of sex as the child attains to puberty, and in the venereal perils thereafter. Upon request, he should himself undertake this instruction. He should employ every legitimate means to insure that venereal patients under his care do not marry until they are cured, impressing upon them the seriousness of the consequences if they disregard this advice.

10. The mouth and teeth should receive especial attention in the way of cleanliness. The hygiene of the mouth is of the first importance and may be a means of preventing disease. The teeth should be cleansed with a brush of suitable size, having bristles neither too hard nor too soft, and a handle bent at such an angle with the bristles that the latter may be able to reach all the surfaces of the teeth; the bristles should be of unequal length, and the brush must be kept clean. An improper brush, with bristles either too hard or dirty, may do harm, and has been held responsible for pyorrhœa alveolaris; but a suitable tooth-brush can effect nothing but good. The mouth and teeth should be cleaned morning and night, and if possible, after meals. In this way particles of food may be removed, fermentation checked, decay prevented, bad breath prevented or lessened, and dyspepsia warded off.

Post-Anesthetic Glycosuria.—Ross and McGuigan in some experimental work with dogs came to the conclusion that ether anesthesia causes a rise in the sugar content of the blood—hyperglycemia; that this hyperglycemia was greater, if the dogs had been fed meat only; and that the anesthetic itself, and not the asphyxia or excitement, is responsible for the increased quantity of sugar in the blood.—*Journal of Biological Chemistry.*

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Original Articles.

A CASE OF SPONTANEOUS PYOPNEUMOTHORAX COMPLICATED BY HYDRO- OR PYOPNEUMOPERICARDIUM.*

BY ALFRED MEYER, M.D.,

NEW YORK.

CASES of pneumopericardium and its allied diseases of hydropneumopericardium and pyopneumopericardium are so rare that the vast majority of medical men have never seen one.

FIG. 1.—Pneumothorax; tuberculosis right lung. Dorsoventral skiagram, with patient upright. Shows pericardium separated from heart ½ in. P, pericardium; L, compressed lung; Pn, Pneumothorax.

In 1904 W. B. James published a case of his own and could collect from the literature a series of only thirty-eight other cases. In his very excellent article he quotes Schroetter as saying, "The infrequency of the presence of air or gas in the pericardial space may be gathered from the fact that I never had an opportunity of observing such a case in thirty-five years' diligent study of the enormous clinical material offered by the City Hospital (Vienna), while our predecessor and teacher, Skoda, had the same experience."

I, however, have been able to add ten more cases† to James' list, published before his article appeared, which were no doubt accidentally omitted, and the four following cases were published since the appearance of his article; that of John Cowan in 1912; Wenckebach, in *Zeitschr. f. klin. Med.*, Berlin, 1910, LXXI-402; Ljungdahl, in *Deutsches Arch. f. klin. Med.*, Leipz. 1913, CXI, 19-28, and J. Burke, *Buff. Med. Jr.*, 1908, LXIV, 531.

The interest of Cowan's case and that of Wenkebach, which was one of artificial pneumopericardium and was illustrated, is much enhanced because of the fluoroscopic and skiagraphic findings, of which latter characteristic plates are reproduced. So far as I could find, they are the only radiographs of pneumopericardium extant besides my own.

The object of the present paper is to publish the records of a case in which a hydro- (pyo-?) pneumopericardium was present together with a pyopneumothorax, a combination apparently so rare that a diligent search of the literature made for me at the library of the New York Academy of Medicine has failed to find a similar one. It is true, Baeumler says, with reference to prognosis in pneumopericardium, that the rupture of a pneumothorax or even a pulmonary cavity into the pericardium can heal spontaneously, but he gives no cases or references, or other indication that he has seen such a combination. The nearest approach to the case observed by me is the one published by Lundie; this was a case of spontaneous left pneumothorax in a young man of 20 years with recovery in about three weeks *and then followed* by a hydropneumopericardium from which he also recovered; in other words

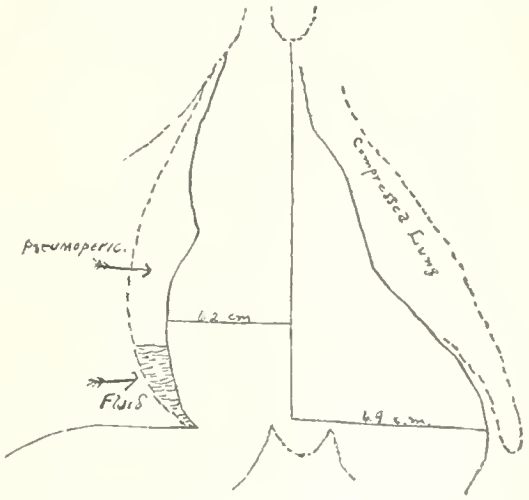

FIG. 2.—Orthodiagram of the chest.

the two conditions were not present at the same time.

My own case is that of a male, B. B., peddler, 29 years old, who was admitted to my service at Mt. Sinai Hospital on December 12, 1914. He claimed to have had a cough for a period of six months, with dull pain in

*Read before the Medical Section of the Academy of Medicine, Oct. 19, 1915.

†List of cases not mentioned by James: Lundie, *Edin. Med. Jour.*, 1891-2, XXXVII, 220; Clasen (F.), 8°. Giessen, 1895; Beckers (J.), 8°. Gryphiæ, 1860; Timmers (C. S.), 8°. Leiden, 1879; Conn (G. P.), Tr. N. Hampshire Med. Soc., Concord, 1871, 84; Hawkins (C.), *Lancet*, Lond., 1860, II, 411; Joy (W. B.), In Syst. Pract. M. (Tweedie) 8°. Lond., 1840, III, 378; Niemeyer, *Deutsche Klinik*, Berl., 1860, XII, 359; Soraner, Constatt's Jahresber, 1858, I, 215; Love, *Lancet*, 1888, I, 319.

left chest, becoming acute, sharp and constant *two days before admission;* expectoration for three months and night sweats for only a few days; his weight having dropped to 120 pounds from 175 pounds in six months.

My first examination was made two days after his

FIG. 3.—Oblique skiagram showing pneumopericardium with fluid at base of pericardial cavity. P, pericardium; Pf, fluid in pericardium.

admission. His rectal temperature was ranging between 100° and 104°, pulse from 96 to 132, and respiration from 28 to 36; tubercle bacilli had already been found in his sputum several times. There was dullness at the right apex to the third rib with much crepitation; on the left half of the chest, both anteriorly and posteriorly, the ordinary signs of pneumothorax were present, (tympany, absent respiratory murmur and voice, and decreased mobility) *but no succussion.* The heart's borders could not be mapped out and its sounds were best heard to the right of the sternum; but the most interesting and unexpected physical finding was a *peculiar amphoric or metallic tinkling or splash,* sometimes with systole and sometimes with diastole.

In a rather extensive experience with both spontaneous and artificial pneumothorax, I had never heard a similar physical sign, and I strongly suspected the existence of both fluid and air in the pericardial sac to account for this remarkable phenomenon. It must be noted that at this time there was not yet proof of pus in the pleural cavity, nor was any succussion sound to be elicited by the usual maneuver.

A skiagraph of the chest taken on December 15 showed a nearly complete pneumothorax of the left side, the left lung collapsed and its edge forming a perpendicular line in the parasternal line. *A linear shadow was seen along the right border of the heart and parallel with it. Its exact significance was undetermined.*

On December 17, the peculiar splash above described was audible in the precordial region and just below the angle of the left scapula. On this date a fluoroscopic report of the chest says: "A linear shadow to the right of the heart runs parallel with its right border. A study of the relation of this shadow to the heart indicates that it probably represents the pericardium. There is evidently here a pneumopericardium which occupies the right and anterior portion of the pericardial cavity, displacing the heart backward. There also appears to be a small effusion at the base of the pericardium on the right side."

Orthodiagram on December 19 showed the following: "The heart is displaced somewhat to the right together with the mediastinum. On the right side the pericardial cavity is seen to contain air. At its base is seen a fluid level agitated by each beat. A lateral examination shows the pericardial cavity anterior to the heart full of air crowding the heart back. The collapsed left lung is seen lying close to the left border of the heart, a small layer of gas, possibly in the pericardium, intervening." (See Fig. 2.)

Physical signs of effusion in the left pleural cavity appeared on December 21, with dullness in the sixth left interspace when seated; one inch below this when lying down. Succussion was also elicited. The heart borders could not be mapped out very distinctly and the heart sounds had a musical character. Tympany extended to the right of the midsternal line a distance of

1 cm. at the level of the 2nd rib
3 cm. at the level of the 3rd rib
6.5 cm. at the level of the 4th rib
8 cm. at the level of the 5th rib

Fluoroscopic report on December 23 showed "a left pneumothorax with unquestionable evidence of fluid in the left chest, the latter showing tumultous waves due in all probability both to respiratory and cardiac influence. The right border of the pericardium seems to be more to the right than at the first examination. An interval between the heart and the pericardium seems to be greater, as if the pneumopericardium had either increased or had become more apparent. A small amount of fluid in the pericardial cavity reaches about one inch above the inferior surface. *The fluid in the pericardium can be seen undulating apparently with the cardiac impulse." The report should also have stated that the level of the fluid in the pericardium was above the level of the fluid in the pleural cavity.*

FIG. 4.—Ventrodorsal skiagram showing pneumopericardium and fluid, also pyopneumothorax. P, pericardium; Pf, fluid in pericardium; H, heart; Pn, pneumothorax; Fl, fluid in pleural cavity.

On December 24 about 100 c.c. of air were withdrawn and intrapleural tension taken at the same time and shown to be 5 mm. of mercury (equivalent to 65 + mm. of water), a mercurial manometer having been used in place of the usual water manometer attached to the

Fig. 5.—Ventrodorsal skiagram with the patient recumbent, showing fluid in the left chest with compressed lung; left diaphragm depressed. Complete outline of lower border of heart. Pneumopericardium—1¼ in. wide. P, pericardium; Pn, air and fluid in left chest; L, compressed lung; H, lower border of heart.

Floyd Robinson apparatus because of the expectation of finding a pleural tension too high for the water manometer.

On January 8 an electrocardiogram, taken by Dr. B. S. Oppenheimer, showed absence of P wave and a constant irregularity, but not the typical oscillations of auricular fibrillation. The electrocardiograms were interpreted as indicating auricular fibrillation in all probability. The R wave in lead III showed considerable variation.

On January 9, 10 c.c. of cloudy, yellowish, thin fluid were aspirated from the left chest and proved sterile, both aerobically and anaerobically. An inoculated guinea pig died subsequently of tuberculosis.

On January 18 *cardiac splash could be heard with the naked ear at a distance of* 18½ *inches from the chest wall near the apex.* On the same date there was also audible a to-and-fro sound like pericardial friction, plainest near the sternum, with the patient semi-recumbent.

On January 26 electrocardiograms showed a decided change in the heart's action since January 9. "The heart's action is regular now; the auricular wave (P) is present in every cardiac cycle. Variations in wave R have disappeared and there is now not the slightest evidence of any fibrillation of the auricles. Wave T is inverted in leads II and III."

The continued rise of fluid in the left pleural cavity gradually obscured the splash more and more and on January 28, with the fluid level in the third space in the upright position, it could only be heard when the patient was absolutely flat on his back and then up to a distance of 6 inches from the chest wall with the naked ear. On the same date both liver and spleen were palpable below the free border of the ribs, due in all probability to both enlargement and to compensatory emphysema of the right side and depression of the diaphragm on the left.

A skiagraphic plate of March 2 still showed the pres-

Fig. 6.—Patient lying on left side. Shows pneumopericardium and left pyopneumothorax. P, pericardium.

ence of a small sized pneumopericardium. Fluid hidden?

On March 5, 500 c.c. of greenish yellow pus were removed from the left chest, but on March 23 the physical signs indicated that his left pleural cavity was again full of pus to the top.

FIG. 7.—Oblique skiagram, showing much thickened pericardium with air above and fluid below pneumothorax. P, pericardium; Fl, fluid in pericardium; Pn, pneumothorax.

On March 8 an electrocardiograph showed very small waves in all three leads, indicating poor heart action.

On March 29, at a second aspiration, 2500 c.c. of purulent fluid were removed and 1300 c.c. of nitrogen substituted. Similar aspirations and substitutive nitrogen injections were made on April 19, when 2500 c.c. of thick pus were removed and 1100 c.c. of nitrogen injected; on May 20, at the fourth and last aspiration, 1850 c.c. of pus were withdrawn and 900 c.c. of nitrogen substituted. All three times, previous to aspiration, the intrapleural tension was negative.

Long before the last aspiration and nitrogen substitution, the patient had been up and about, insisting that he felt well enough, resisting all persuasion to remain in bed and even threatening to leave the hospital if his liberty were denied him.

Temperatures, which during the first month ranged between 100° and 104°, reached the normal for a few days in the sixth week, and then fluctuated during the next few months, mostly between 99° and 100.6. The original pulse range of 96 to 132 fell in March to 84 and during the month of May was continually in the 70's. The original respiration range of 28 to 36 fell to 24 in March.

The daily sputum total which originally varied between 25 and 45 c.c. dropped gradually to between 12 and 20 c.c. per day. The leucocyte count never went over 21,000 and was still 15,000 on May 15 with 76 per cent. polymorphonuclears and 24 per cent. lymphocytes.

His weight on admission was 120½ pounds, reached 128 pounds in February and was still 124 pounds on May 20 when this history was written.

The urine occasionally contained small amounts of albumin.

In spite of the comparatively favorable progress of this remarkable case, there can be no doubt of the presence of fluid and air in both the pleural and pericardial sacs. All the evidence points that way: physical signs, fluoroscopic and radiographic findings. That the fluid in the chest was pus was, of course, proven by the aspirations; that the fluid seen and heard in the pericardium was pus is only presumption, no aspiration of that cavity having been undertaken. There is no evidence indicating whether the same tuberculous lesion in the lung which caused the pyopneumothorax also caused the pneumopericardium; or, if so, where this lesion was situated; or whether a point of lessened resistance in the pericardium gave way to the pressure of the pneumothorax, causing a communication between these two serous cavities. But of the value of the *x*-ray in confirming the co-existence of these two serious lesions there can be no question. For comparison, I am appending a skiagraph of Cowan's case of spontaneous pneumopericardium and one of Wenckebach's case of artificial pneumopericardium (aspiration of tuberculous pericarditis and injection of air). The close resemblance of these two pictures to my own pneumopericardium is most striking.

Finally, I wish to draw attention to the conservative treatment of this case under circumstances where the temptation would have been irresistible for some, to have a pericardotomy and perhaps a thoracotomy, with rib resection, performed.

Merely for completeness sake I wish to refer to a statement made by James in his article on pneumothorax, in Osler's "Modern Medicine," namely, "the heart sound, occasionally have the same metallic quality as that of amphoric breathing, deriving this from the adjacent cavity." I must frankly admit

FIG. 8.—Case of Cowan. (*Quart. Jour. Med.*, Oct. 13, 1914.)

that I have never been able to confirm this finding, though in an attempt to elicit this sign or cardiac splash I recently auscultated four cases of hydropneumothorax in a great variety of positions (including knee-chest, recumbent, prone, lateral and Trendelenburg), but unsuccessfully. I also sent to thirty-six physicians with large experience throughout the country, the following query:

"1. Have you ever seen either a spontaneous or artificial pneumopericardium?

"2. Have you ever heard a splash synchronous with cardiac systole in a case of hydro- or pyopneumothorax?"

All my replies to the first question were negative. Three physicians suspected having heard cardiac splash in undoubted hydropneumothorax with no proof offered that these may not have been cases of hydropneumopericardium. The suspicion is justified that some of these cases of cardiac splash may really have been cases of complicating hydro-

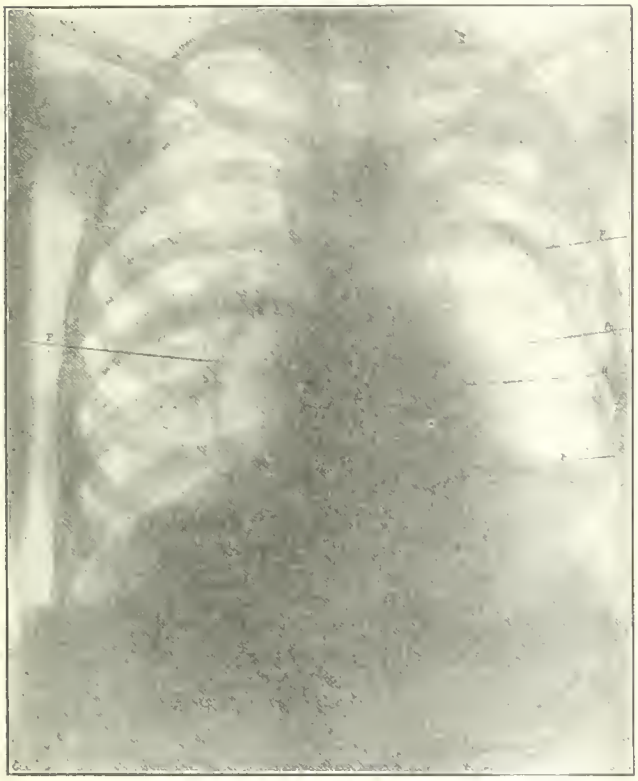

FIG. 9.—Wenckebach's case of artificial pneumopericardium. P, thickened pericardium; H, heart; Pn, air in pericardium; F, level of fluid.

pneumopericardium for whose demonstration fluoroscopy and radiography, as in my case, would have proven extremely valuable.

FINAL NOTE.—Patient left the hospital against advice on June 6, but returned three times subsequently for aspiration of his left chest. On June 15 950 c.c. of purulent fluid were removed; on July 26 1,400 c.c., and on August 27 1,300 c.c. His July weight showed a gain of 10 pounds (less 3 pounds for weight of accumulated pus?). Metallic tinkle with cardiac systole was still audible on July 22. He died in the hospital on August 28. In spite of the most earnest efforts consent for a post-mortem was refused by his relatives.

Thanks are due Drs. Jaches and Wessler of the *X*-Ray Department and to Drs. Beck and Piller of the house staff for their cooperation.

785 MADISON AVENUE.

AURICULAR FLUTTER ACCOMPANYING ACUTE ENDOPERICARDITIS.

BY SELIAN NEUHOF, M.D.,

NEW YORK.

VISITING PHYSICIAN, HAR MORIAH HOSPITAL; ADJUNCT ATTENDING PHYSICIAN, LEBANON HOSPITAL.

AURICULAR flutter is a comparatively frequent arrhythmia; up to May, 1914, Ritchie[1] collected fifty-three cases from the literature. Though it may occasionally be the result of morbid nervous influences acting upon a perfectly healthy heart, the presence of auricular flutter is usually indicative of severe disturbance of cardiac nutrition, accompanied by decompensation. The following case is, therefore, of interest because it occurred without decompensation during an attack of acute endopericarditis; after the acute inflammation had run its course, the rhythm became normal and remained so.

A. H., printer, married, aged 32, was admitted to the Lebanon Hospital (Dr. R. Stein's service) in December, 1914. He had an attack of diphtheria (?) four weeks previously for which he had received antitoxin. Data with reference to his pulse or heart at that time could not be obtained. When he entered the hospital he was suffering from polyarthritic pains and swelling, involving the heels and metatarsal joints; later the larger joints became involved. For several weeks he had irregular temperature of moderate degree. The pulse was rhythmical on admission. At the cardiac apex there was a localized dry pericardial friction rub which disappeared in two days. The patient was given salicylate of soda.

On December 8, the pulse became irregular; clinically, this appeared to be due to extrasystoles; no tracings then were taken. The next day a soft systolic murmur at the apex and again dry pericardial friction sounds were heard. The pulse and apex beat were regular. Careful scrutiny of the jugular pulsations showed no apparent abnormal activity. The electrocardiogram (Fig. 1) showed rhythmic ventricular activity at the rate of 75 per minute, but the auricles were beating regularly at the rate of 300 per minute; that is, the auricles were in a state of flutter; incomplete heart block at a four to one ratio was present. The orthodiascopic tracing revealed very slight left ventricular enlargement. There was no decompensation. On January 13, a polygraphic tracing showed that the rhythm had become normal. On January 20, the pulse was again irregular. On January 29, another electrocardiogram (Fig. 2, lead 2) showed a varying ventricular rate; most beats were approximately at the rate of 95 per minute, the extremes being 60 and 100 per minute. The auricular speed was 300. Complete heart block was present. In the third lead (Fig. 2, lead 3) the auricular rate is 280, the ventricular, 90 per minute. On February 21, tincture of digitalis in fifteen drop doses three times daily was begun in the attempt to induce first, auricular fibrillation, then, after discontinuance of the drug, the resumption of normal sequential rhythm. On March 7, after ten drachms of the tincture had been taken, the electrocardiogram (Fig. 3) showed flutter with marked irregular ventricular activity not only in speed but also in the height of the R waves. These differences were not due to the occasional superposition of auricular and ventricular waves, nor to the phasic variations in the ventricular complexes occasionally due to breathing. They were electrocardiographic evidence that the R waves, though supraventricular in origin, were following different paths in the ventricular musculature, a condition probably caused by increased ventricular irritability resulting from digitalis medication. The drug was stopped because it was assumed that any further attempt to induce auricular fibrillation would be futile. On March 28, an electrocardiogram (Fig. 4) showed normal rhythm, which was still present at the last examination. The patient has been at work for several months; there have been no rheumatic or other complaints; there was no dyspnea at any time during his illness; the evidences of a mitral regurgitant lesion and of a dry pericarditis are still present.

Auricular flutter may occasionally occur as the result of an extracardial affection. Ritchie[1] and Parkinson and Mathas[2] report cases in which nervous influences were the exciting causes. The writer saw a case in which tabacism was the etiological

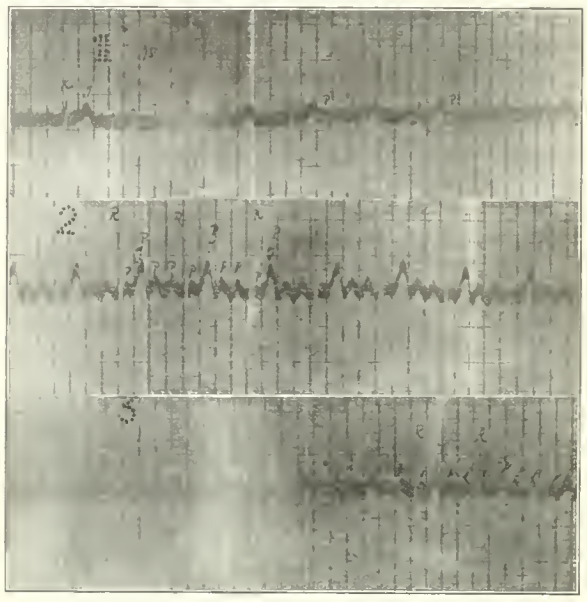

Fig. 1.—The regular rapid auricular activity is best seen in lead 3. The ventricular rate is 75, the auricular, 300 per minute; incomplete heart block is present, the ratio is 4:1. The P and T waves are occasionally superimposed. The P waves are less distinct in lead 3 and almost indistinguishable in lead 1. This is one of the characteristics of auricular flutter. In the electrocardiograms, the different leads are marked 1, 2, and 3, and refer to the direction taken by the action current of the heart. P = auricular. R — T = ventricular complex. The vertical lines measure one-fifth second.

factor. When auricular flutter occurs in cardiovascular disease, severe decompensation is the rule. It is most common in elderly people with evidence of myocarditis and arteriosclerosis,[3] and precordial pains, the latter presumably resulting from advanced coronary sclerosis. The writer has reported

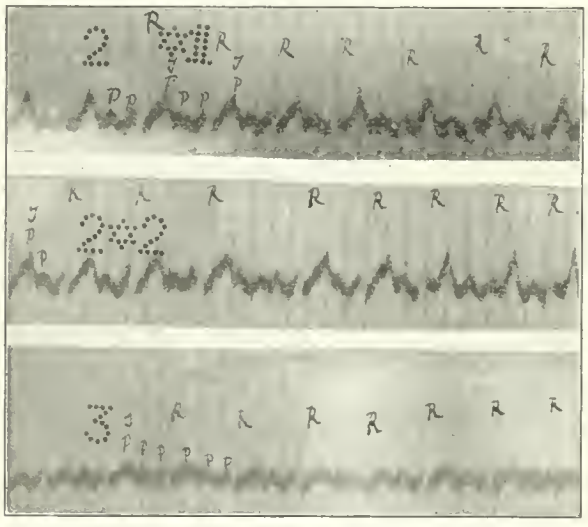

Fig. 2.—2*1 and 2*2 are different parts of the second lead. The auricular rate is 300 per minute. The ventricular rate varies; most beats are approximately 95 per minute, the extremes being 60 and 100 per minute, complete heart block is present. In lead 3, the auricular rate is 280, the ventricular, 90 per minute. For references see Fig. 1.

a case[4] in which auricular flutter was the terminal event in a young woman dying of rheumatic pancarditis.

Digitalis in our case had no effect upon the auricular rhythm, its only effect was to increase ventricular irritability. The cases of auricular flutter in which the administration of digitalis was followed by auricular fibrillation and later by resumption of the normal rhythm were those in whom cardiac decompensation was a marked feature; com-

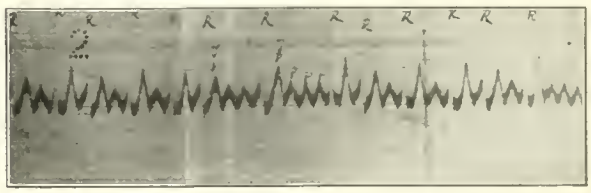

Fig. 3.—Auricular flutter with ventricular complexes varying in height and speed. For references see Fig. 1.

pensation was usually restored with the return of normal rhythm. In our case decompensation was never present, hence the beneficial effects of digitalis on the rhythm could scarcely have been expected. Sutherland[5] has described a case of rheumatic carditis without decompensation in a child in whom auricular flutter developed. Auricular flutter and the advent of endocarditis were intimately associated in the case I describe. During the time in which the rheumatic manifestations—joint involvement and fever—were present, flutter continued and was uninfluenced by medication. When these symptoms stopped, flutter ceased and the pulse became and remained rhythmical.

It is questionable whether the acute endocarditis acted by profoundly disturbing cardiac nutrition. From a careful study of the clinical course it seemed more probable that the flutter resulted from the presence of a fresh inflammatory and irritative intracardiac focus—the mitral lesion. The writer has seen several instances of auricular fibrillation—a more serious arrhythmia than flutter—which occurred in paroxysms lasting hours or days during exacerbations of endocarditis; these exacerbations were usually evidenced by the temperature, rheumatic manifestations, or change in the area and distribution of endocardial murmurs. The fibrillation ceased *pari passu* with the endocarditic exacerbations; there was never evidence of any profound or special disturbance of cardiac nutrition, no increase of decompensation or of dyspnea if already present, though, of course, each added

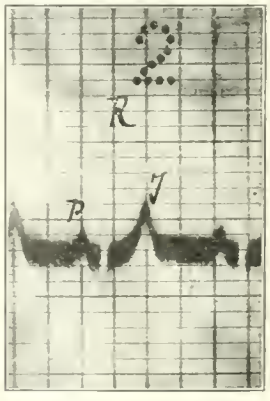

Fig. 4.—Normal rhythm, auricles and ventricles beat sequentially. For references see Fig. 1.

inflammatory focus is probably attended by a certain amount of disturbance of cardiac nutrition. The usual arrhythmias accompanying new endocarditic lesions or their exacerbations are extra systoles, tachycardias (usually simple, sometimes

paroxysmal), auricular flutter, and fibrillation. With our present knowledge we cannot individualize the special inflammatory foci which produce these special types, nor can we indicate their morbid action upon the neurogenic control of the heart.

The importance of the presence of an inflammatory endocardial focus as the cause of an arrhythmia lies in the therapy. We cannot hope to influence the arrhythmia by drugs of the digitalis group because these cannot strike at the source; in the absence of myocardial insufficiency, they seem useless. We must attempt to influence it by medication which may possibly control the endocarditis and morbid nerve influences. Such therapy is unfortunately very limited; besides rest and icebags, it comprises practically drugs of the salicylate and bromide broups, occasionally opiates; possibly in the future autogenous or other vaccines may act as curative agents.

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1275 MADISON AVENUE.

FIVE TEASPOONS REMOVED FROM AN INTRAABDOMINAL ABSCESS AFTER PERFORATING THE SMALL INTESTINE.

BY BENJAMIN T. TILTON, M.D., F.A.C.S.,

NEW YORK.

THE surgical literature contains descriptions of many cases of foreign bodies found in the stomach and intestines, notably among the insane and children. The *x*-ray has helped enormously in the localizing of these bodies at some point in the gastrointestinal tract. It is less often that cases are reported where the foreign body has perforated the digestive tract and is discovered free in the peritoneal cavity.

The following case exhibits some unusual features of interest which make it worthy of report.

An Italian male, 32 years of age, an inmate of the Manhattan State Hospital for the Insane, began to complain September 15 last, of abdominal pain and tenderness. He was admitted to the hospital department for observation. During the week following he vomited on a few occasions, took but little nourishment and ran a temperature reaching 101° F. in the evening. Physical examination showed a very much emaciated individual with negative findings except marked tenderness and rigidity on the right side of the abdomen extending approximately from the costal margin to McBurney's point. The abdomen was flat. He stated that on August 21, a month before, he had swallowed three teaspoons and nine days later two more. In each instance he had forced the spoon down the throat, the bowl end first. The *x*-ray picture showed on the right side of the abdomen what was thought to be one large spoon. Repeated questioning of the patient invariably elicited the answer that no less than five spoons had been swallowed. A diagnosis was made of localized peritonitis or peritoneal abscess caused by perforation of the intestine, and immediate operation was advised.

Operation September 22, under ether anesthesia. A 4-inch vertical incision was made through the right rectus muscle beginning about 3 inches below the free border of the ribs. Upon opening the peritoneum a large intraabdominal mass was found occupying the region mesial to the ascending colon. This was walled off with gauze pads and opened, whereupon a large amount of pus was caught by sponges. Upon inserting the hand into the abscess cavity five spoons were found lying one upon another with the bowls at about the level of the cecum and the handles pointing upwards. The spoons were so perfectly superimposed one upon another that the *x*-ray had given the impression of one spoon. Search for the opening through which the spoons had left the intestine revealed a perforation of the jejunum close to the duodenojejunal junction which was nearly closed. The spoons were removed and two large gauze drains inserted into the cavity. The patient left the table in very poor condition but improved during the night from rectal saline injections and vigorous stimulation. The next day there was a free discharge from the wound; the abdomen was soft and not distended. Temperature 102.2°, pulse 120. The following day he had hiccough, the temperature rose gradually to 104° and the abdomen became distended. Death occurred about forty-eight hours after the operation evidently from peritoneal sepsis.

Roentgenogram showing the five spoons in the abdominal cavity; posterior view.

The most remarkable feature of the case was that the spoons were lying in almost perfect apposition, although having perforated the intestine at a point some distance from where they were found. In fact, the *x*-ray picture showed but one shadow so that the truth of the patient's statements as to the number of spoons was doubted before operation.

14 EAST FIFTY-EIGHTH STREET.

AN IDEAL NASOLARYNGEAL INHALER.

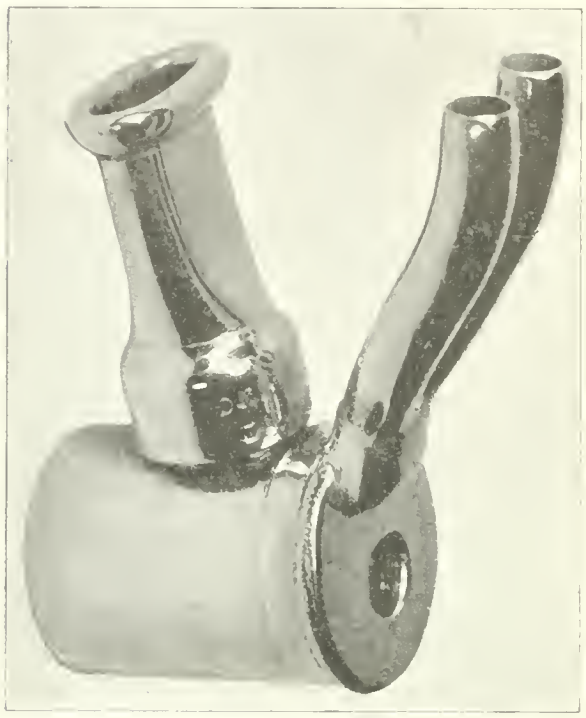
BY CHARLES E. DRESSLER AND ALFRED KAHN, M.D.,

NEW YORK.

THE instrument herewith illustrated is to be recommended because of its simple construction and the many purposes for which it may be used. The inhaler is made up chiefly of three parts; a cup, two nostril tubes, and a mouthpiece, within the cup are two minute valves of mica; one controlling the nasal tubes (allowing the air to pass smoothly through the cup, where it is purified from all dust particles and where in passing it is medicated; but the foul exhaled air from the lungs is not permitted to enter). The other valve, also of mica, controls the mouthpiece where exhaled air is permitted to pass; but the inhaled air is stopped. The instrument is held by a mouthpiece between the teeth, as shown in figure. The inhaled air passes through opening in top of cup through medicated chamber, through nasal tube to nostril—nares, postnares, pharynx, larynx, lungs. The exhaled air reverses the inhaled current and passes out through

mouthpiece, being eliminated through two holes on side of mouthpiece, and does not enter purifying chamber, through which the fresh air passes.

Its light weight and the fact that it is small enough to be carried in the pocket, give it unlimited



usefulness. The apparatus is of brass, nickel-plated, and can be boiled without taking apart.

The utility of this instrument is readily apparent: as an adjunct to office treatment, in diseases of the throat, nose, etc.; in acute laryngitis, rhinitis; in

those conditions of the upper air passages where an inhalant is indicated. It is medically cleaner and cheaper than the old-time atomizer, that is often allowed to stand around from one month to the other, that cannot be sterilized, and is used by entire families. The quantity of drug to be prescribed at a time for use in the inhaler may even be less than half an ounce. As an exercise, in correct breathing, and in those cases of mouth breathing, where all obstruction has been removed and where the mouth breathing is continued from habit the instrument has a field. This inhaler is especially recommended in acute rhinitis and the acute laryngeal conditions of winter associated with hoarseness.

34 East Fortieth Street.

THE CAUSES AND CURE OF INFECTIVE DISEASES OF THE KIDNEYS.

WITH PARTICULAR REFERENCE TO PUERPERAL NEPHRITIS.

By D. B. Mc CARTIE, M D

NEWARK, N. J.

Acute Nephritis.—Acute inflammation of the kidney is most frequently found in connection with some acute infecting disorder. This has particular reference to the infection known as scarlet fever, for in this disease more than in other infections there is apt to follow a chronic nephritis. The cause of this chronosity will be found in the presence of certain pathogenic microorganisms which are contained in urines coming from such infected kidneys; whereas in diphtheria and other contagious diseases no bacteria can be demonstrated. When the inflammation passes into the chronic stage it is probable that the irritation is kept up by the irritating properties of the urine. The damage caused by the primary irritant cannot be repaired, but every source of irritation can be lessened, thereby ameliorating the existing conditions. Another very important question is, can any other disorder outside a general infecting disease set up an acute nephritis? I think that can be answered in the affirmative. Probably tuberculosis can do so, and also any surgical sepsis severe enough to set up tubular nephritis. Puerperal nephritis is entirely of this order. The old theory of "cold" setting up acute tubular nephritis is very misleading, and cannot to-day hold any scientific basis. The kidneys are too well protected; and if "cold" ever could be a cause, it would be curious to consider why both kidneys were attacked at the same time. It is better to consider that in these cases the cause is unknown, or that it is an obvious condition easily ascertained if sought for—some surgical sepsis coming from diseased tonsils, ulcers, otitis media, tuberculosis, etc.

Puerperal Nephritis.—The cause of this infection has hitherto been unknown. It is an extraordinary fact that in such a benignant condition as pregnancy a woman should have to dread the terrifying possibility of an acute tubular nephritis. A short history of this peculiar condition will not be out of place here, but will rather add a certain interest to the study of this extraordinary phenomenon. In 1851 Frericks pointed out the close resemblance that existed between convulsions occurring in the course of Bright's disease and those which occur in pregnant women. "True eclampsia," he remarks, "occurs only in pregnant women suffering from Bright's disease: and it bears the same causal relation as convulsions in Bright's disease. It is the result of uremic intoxication, with which in its mode of manifestation it agrees."

Braun a little later supported this theory, and tried to strengthen it by means of clinical and

post-mortem observations. Even to-day the uremic theory holds its ground notwithstanding some conflicting evidence which does not fit entirely with its tenets. For instance, convulsion can occur without the presence of albumin in the urine. Such cases were set down as reflex, or epileptiform; but in such rare cases I would think that the poison acted on the cerebrum before it had time to set up acute nephritis. We see such a thing illustrated in acute septic cases of scarlet fever, where a septic meningitis destroys life before an infecting nephritis has set in. This might show that the uremia is not always the cause of convulsion, but the rule lies the other way, for we find an acute nephritis in most cases of puerperal eclampsia.

Yet in rare cases we find that the septic infection of the blood can cause convulsion before acute infection of the kidney occurs. And we know that uremia alone, without sepsis, can cause convulsions as in the later stage of Bright's disease. In such cases we understand that the causes of the uremia is chemical, not bacterial. There is a gradual shutting off of the channels of excretion, and excess of chemical poison in the blood.

Seyfert made the following observations against the uremic theory: (1) Convulsions can occur without albuminuria; (2) the albumin is due to the cause that sets up the convulsion, and is not itself the cause; (3) in fatal cases kidney lesions are not found sufficient to account for the very severe symptoms; (4) convulsions are rare where a previous albuminuria has existed; (5) in cancer of both ureters, where complete occlusion has occurred, uremic convulsions do not follow. As regards the first class, I have already spoken and observed that when convulsion occurs without albuminuria the toxin has acted on the cerebrum before it has had time to involve the kidneys.

Most observers will admit that the presence of albumin proves an inflamed state of the kidney, if we except exudations of serum albumin in dropsies, ascites, etc. But it is understood that the presence of albumin in itself is not the cause of the convulsion. There are many factors to be considered before convulsion can occur. Defective chemical excretion is sought as a cause, and yet this can happen to a very marked extent before convulsions occur. This we have noticed in the above list where the ureters were both occluded and convulsions did not happen. On the other hand, we find that certain poisons, as strychnine, staphylotoxin, etc., can readily set up convulsions, aside entirely from their action on the kidney.

In replying to the third proposition, it is contended that in fatal cases there is very little evidence left in the kidney. This is not surprising, since evidence of acute inflammation soon passes away after death.

The fourth proposition is more interesting. Seyfert claims that in cases where albuminuria already exists convulsions do not necessarily follow. In only two out of seventy cases in his observation were there convulsions. According to the theory of "renal insufficiency" all such cases would become worse as pregnancy advanced, and there would be a very high rate of mortality from convulsion, but we do not find this to be so at all. What explanation have we to offer? Certainly none as far as the uremic theory is concerned. The albumin is often markedly increased, but there seems to be little danger from general convulsions.

Finally, convulsions do not always occur though both ureters are occluded. The reason would seem to be that the system gets accustomed to poisonous chemical products when the obstruction is of slow development, but in acute nephritis, due to bacterial infection, the poisoning of the blood is rapid and convulsions occur readily, whether the cause be found in bacterial or chemical disturbance.

The Traube-Rosenstein Theory.—This theory held its ground for some time. It consisted in a condition called hydremia, caused by the loss of albumin from the blood. This condition brought about increased arterial tension and edema of the brain. Compression of the blood vessels occurred producing coma and convulsion. The slight increase of the blood pressure during the labor pains gave zest to this idea, until some time later Spiegelberg entirely disproved such a vague hypothesis.

McDonald's Theory.—His idea was that anemia of the brain is caused by vasomotor irritation, which irritation is a manifestation that the kidneys are defective, and therefore unable to deplete the blood of poisonous elements. Other attempts have been made in the same direction to try and prove that peripheral irritation causes convulsions. There was reason for this because two-thirds of all cases occurred during labor. Any source of irritation at this time, such as removal of the placenta, examination of the patient, etc., would often lead to convulsions. Even to-day there are theories formed around this preconceived notion. It seems the liver is "insufficient" as well as the kidney. The thyroid is spoken of since there is some enlargement of that gland in pregnancy. Other signs of "insufficiency" are general arterial tension, headache, neuralgia, etc. A blood count is taken, the fundus of the eye is watched, lumbar puncture and even decapsulation of the kidney are suggested as a cure for the supposed renal "insufficiency." A late text-book dealing with this subject says: "The toxemia of the second half of pregnancy is supposed to be due to a failure of the maternal organism to excrete both its own and the waste products of the fetus. These waste products are disposed of partly by the liver, being broken up by oxidation into substances which can be eliminated; therefore it is evident that if the kidneys or the liver are insufficient, there will be an accumulation of toxin in the blood." Yet with all this theorizing no attempt is made to explain what this "insufficiency" of the kidney or liver means. It would be a singular fact to find one woman's kidneys or liver more "insufficient" than another's. In the case of twins there should be undoubted "insufficiency," but there is not. It also happens that a woman who was eclamptic with her first child may not even be the subject of a simple albuminuria with her second. It is also a common fact to find the urine normal within a week or two before labor, whereas if faulty elimination were the cause of albuminuria we would expect to find a gradually increasing quantity of albumin as the child grew larger, but this is not the case at all. Again we would find "insufficiency" of the kidneys most common in weaklings and in debilitated women, whereas it is precisely the contrary that happens, for we find it mostly in the healthy and robust patient. Finally, we would expect to get marked "insufficiency" in all cases where a previous albuminuria occurred, yet in such cases, according to Seyfert, only two out of seventy suffered from convulsion.

The following are some case reports of albuminuria in pregnancy:

Case I.—Mrs. P., primipara, age 36, of robust constitution. No albumin appeared in the urine until two weeks before the birth of the child. The conditions became so serious that premature delivery was brought on two weeks before the expected time. On December 20 the urine was normal. On January 1 an immense quantity of albumin was present. The child was born by the breech, and was almost in the world when the first spasm occurred. The patient died one week later in coma. This case illustrates that albumin may be found in the urine at any time in pregnancy, and that it may occur with extreme suddenness, and in very great quantities.

Case II.—Mrs. McD., primipara, age 19. Always in good health. Urine normal until four weeks before birth. About this time on account of cramps in the left leg her husband rubbed the leg with rancid oil, setting up a severe dermatitis. While the limb was still very sore and swollen albumin appeared in the urine, and numerous colonies of microorganisms were seen in the microscopic field. It was not, however, a case of puerperal infection. Infection of the amniotic sac did not occur. The case came under the heading of surgical infection, and as soon as the local source of infection in the leg was removed the urine again became normal. There was no trace of albumin at the time of birth. I report this case since we may mistake such a condition for infection of the amniotic sac, thereby causing unnecessary fear to a pregnant patient.

Case III.—Mrs. L., multipara, age 26. Generally of good health. At the sixth month albumin was found in the urine. The amount of albumin increased slowly and then remained stationary for several weeks. Under treatment albumin disappeared gradually and the urine was normal several weeks before the birth. After treatment was once established the case resembled one in which the child is already born, that is, the albumin began to get less and less until it entirely disappeared. With the disappearance of the albumin the dropsy, headache, vomiting, etc., also improved. This was the first case in which I tried the antiseptic treatment and was rewarded with very brilliant results. Against all ordinary rules, instead of a continued increase in the albumin there was a steady decline until a normal state of things was established.

Case IV.—Mrs. A., 30 years, primipara, apparently healthy before marriage. Albumin appeared in the urine only four weeks before the birth of the baby. It became so serious that premature birth was brought on. The child was born naturally. No convulsions occurred, but after the birth albumin still continued in the urine, not the customary few weeks, but for months. In fact a chronic albuminuria was established.

I feel sure that the urine was normal for several months in the earlier part of the pregnancy, and I can only imagine that all cases of puerperal nephritis do not clear up after the birth, but may become chronic, as after scarlet fever. Happily this is not the usual condition, but it may be well to remember that such a thing can happen, and in so far as we can stay the course of an acute nephritis we can thereby eliminate the dangers of a chronic kidney disease.

The Cause of Puerperal Nephritis.—The cause of infection of the kidneys in pregnancy is probably due to infections of the amniotic sac. This infection probably starts from a local cause, a septic discharge from the vagina being the most common source. Any septic condition at or near the cervix uteri can lead to infection of the amniotic sac. We might call the condition one of absorption or osmosis. Microorganisms are not generally found in the liquor amnii, yet the toxic products of bacteria from the vagina are most certainly the cause of this infection. As the os uteri becomes more and more patulous, as in the later stages of pregnancy, the danger of infection becomes greater. We know that the liability to infection is greater in primiparæ; probably the reason is that the canal retains the infecting materials better, the os being torn in multiparæ so that septic discharges would not be retained so effectively.

Septic conditions in the vaginal canal can occur in several ways: Putrefaction of vaginal secretions; contamination through soiled clothing or any other external source of infection; infection from within from septic conditions in the bladder, and infections which come through the male, which is the most likely of all to carry septic material to these parts. We should, therefore, warn all pregnant women of the dangers of such infections, and point out to them the remedy which, of course, consists of surgical cleanliness, this rule applying as much to the male as the female. If a septic discharge occurs we ought to advise thorough vaginal douching, several times daily till the source of the contagion is removed; this is particularly so when albumin has appeared in the urine. A septic vaginal discharge is always associated with infection of the kidneys and albuminuria. Antiseptic douching can do very little harm and may accomplish a vast amount of good. The water ought to be about body temperature, and any antiseptic can be chosen to suit the case. The albumin will be found to disappear slowly, as in a case where the child is already born.

The day is not far distant when every pregnant woman will be ordered to use an antiseptic douche. Microscopical examinations of vaginal discharges ought to be also frequently made. The liquor amnii ought also to be examined, although septic germs are not always found in it even when marked infection of the kidneys and convulsions have occurred. The poison is more of a toxin than the mere presence of a germ, but the liquor amnii itself does readily decompose showing almost the same microorganisms at all times, in marked contrast to the urine (with the exception of the *Bacillus urinæ*) where no uniform conditions are found.

Interstitial Nephritis.—It is most likely that interstitial nephritis is a type of renal inflammation or irritation in a class by itself. It is identical with cirrhotic processes elsewhere, that is there is a marked tendency for the connecting tissues to suffer most, if not exclusively; the other conditions being secondary to contraction of the new-formed muscular tissues. The irritant probably reaches the intertubular tissues through the nutrient blood-vessels, whereas in acute nephritis the poison is carried to the tubules themselves. It would be better to try and differentiate one class entirely from the other. The increase of connective tissue constitutes the most prominent feature of chronic Bright's disease, known as Bright's disease with contracting kidney. The onset is generally insidious, with increased secretion of urine, absence of dropsy, and only faint traces of albumin. In the first stage of the disease the tubules are unaffected, which shows that the first change really occurs in the intertubular tissues, and later when the tubules are affected it is more the result of constriction from this hyperplasia than from any disorder in the tubes themselves. The walls of the blood-vessels are thickened due to hypertrophy of the muscular coat which appears to be continuous with the newly-formed tissue between the tubules. The resiliency of the vessels is interfered with and the blood-pressure is as a consequence very much increased. Similar changes occur in small capillaries all over the body, but they would appear to have their starting point in the kidney. So we would consider that any chronic irritation capable of setting up interstitial ne-

phritis can also set up similar changes in the blood-vessels of the body. Such a source of irritation will be found in chronic forms of malaria, probably in rheumatism, in syphilis, in gout with repeated attacks and pus in the joints, and in any chronic process where the suppuration is so to speak external, and too much pus does not invade the blood current, but where there is none the less a certain absorption of septic discharges. This we find commonly in rectal fistula, otitis media, onychia, septic conditions of the nose and throat, repeated attacks of tonsilitis, probably also chronic enlargement of glands, iritis, gastric ulcer, gall-stone infection, etc. In tuberculosis a tubular nephritis is more apt to occur. There cannot be a continued inflammation without a continued cause, so in every case of interstitial inflammation it is imperative for us to seek the cause. The greatest difficulty, however, will be found in the fact that the disease has existed for many years, and that it was not until some noticeable symptom had driven the patient to the physician that such a disorder was even suspected. But the chief reason for this disease getting ahead of the physician lies in the fact that the usual chemical tests are entirely fallacious. No trust should be placed on Heller's test when small traces of albumin are sought for. Heat with weak acetic acid is the only reliable test. It is about time to abandon the Heller test, which is entirely misleading in the presence of small traces of albumin. In using the heat test, which is very accurate, the urine ought always to be filtered. This is essential to get a good result. It is best to heat the top layer of the tube in the usual way, and then view it through a good light, placing some dark object behind as a better contrast to the whitish cloud of precipitated albumin.

The blood-pressure in interstitial nephritis is higher than in any other disease and is a more permanent factor in this disorder. We might ask the question, why does not the blood-pressure increase in other cirrhotic processes, as in cirrhosis of the liver? We can give no definite answer except to say that in one disease the process is more localized than in the other. The heart action is not affected as much in cirrhosis of the liver as in cirrhosis of the kidney, and the other vessels do not become cirrhotic. It appears to be the case that the poisons which can circulate in the blood in cases of syphilis, malaria, gouty and rheumatic conditions, imperfect drainage from small suppurating cavities, as fistula, gallstones, etc., do set up this interstitial change in the kidney. Alcohol is probably modified by the blood current and does not act directly on the kidney. It is problematical whether spicy foods, or heriditary conditions can ever set up a chronic interstitial nephritis.

Albuminuria.—There are so many tests for albumin in the urine that it would be useless to enumerate them here. They are mostly qualitative; what the medical man wants is a sure and quick method of determining the presence of serum albumin in the urine, but at the same time it would be an advantage to him if he could determine the quantity even roughly. A modified Heller test is good for this purpose. I use a long graduated tube with a firm stand, marked off in parts of a cubic centimeter. The nitric acid is used in the usual way, and the urine is allowed to drain down the side of the vessel. The quantity of albumin is then read off in parts of a c.c.. It is best to heat the urine first and, as before said, to filter before making the test. Traces of albumin will not respond to this test, so in dealing with cases of interstitial nephritis no trust should be put in Heller's test.

The gravimetric method or weighing of precipitated albumin is the only exact means we have for determining the quantity of albumin in a given sample of the urine. A brief allusion to this method may not be out of place. It is based on the well-known fact that heat coagulates albumin. Then if we are particular not to count in other coagulable ingredients in the urine we are certain to get a correct estimation of the quantity of albumin in a fixed quantity of the urine. Take 20 c.c., dilute with 80 parts water; heat over a water bath half hour at 100°; add a few drops of acetic acid to further coagulation; filter, dry, and weigh. Too much acetic acid redissolves part of the albumin, and in alkaline solutions an alkaline albuminate is formed that does not coagulate on heating.

Albumin can also be coagulated by alcohol, carbolic acid, or tannin, and can then be filtered, dried, and weighed. Albumin is not precipitated in alkaline urine. Albumin does not act in dialysis in the same way as the serum of the blood. Albumin is different in different stages of Bright's disease, and is also different in temporary albuminuria. Paralbumin precipitated by alcohol redissolves in large quantities of water. In Bright's disease the alcoholic precipitate does not redissolve in water. Peptone can be precipitated from urine by alcohol after the other varieties of albumin are coagulated by heat. Five grams of albumin excreted in 24 hours is an insignificant amount; 6 to 8 grams moderate, 10 to 12 considerable. There is no serious drain on the system with an average loss of albumin if the nutrition is kept up, except in fevers where the digestion is poor, since three ounces of meat daily will make up for the loss of ten grams of albumin.

The heat and acetic acid test is very reliable for small traces of albumin. The Heller test, as has been said, is not to be relied on where small quantities are present, and almost all cases of interstitial nephritis will be set down as normal according to the Heller test.

Bacteria in the Urine.—Naturally there is no such thing as urine entirely free from bacteria, yet certain forms are found only in connection with certain conditions. So we find commonly: (1) Chains of streptococci, large and small, due to cystitis, probably originating in a vaginitis. (2) Staphylococci from the same source. (3) *Bacillus urinæ* found in all stale urines. (4) Very fine streptococci in twos and threes or in single cells, found in the urine after nephritis due to scarlet fever.

In studying the urine coming from different disorders we find distinct differences according to the disease. In minor surgical conditions we generally find small chains of streptococci, always faint and indistinct, in chains of twos and threes. Staphylococcic groups I have never seen. We sometimes find a similar condition after diphtheria, but as a rule the urine is free from bacteria. This is very different from scarlet fever, in which innumerable colonies of bacteria are always present at some time after the appearance of the albumin. In stale urine no matter what the disorder we always find a large bacillus of dumbell shape. It becomes evident in about 24 hours, the time when the alkaline change occurs in the urine, and is probably connected with this chemical condition. In urines

coming from chronically inflamed kidneys there are no specific germs or bacteria found. Of course bacteria will develop if the bottle is not sterile, but we never find the same characteristic bacilli as after scarlet fever, or even in minor surgical conditions. By these I mean septic conditions of the skin, of the fingers, an otitis media, a rectal fistula, a chronic catarrh, a gallstone infection, a gastric ulcer, etc. Septic germs will appear in the urine as long as the cause is present, but they will soon disappear, as will also the albuminuria, when the septic cause is removed. The liquor amnion is singularly free from germ life, even in infected cases, though very liable to decomposition soon after being exposed to the air. For staining urine-smears a very weak solution of methyl violet is best. Methylene blue is too thick and is apt to become sticky, whereas methyl violet spreads evenly and stains well in the very weakest watery solutions.

Arterial Fibrosis.—This condition is probably brought about in two ways: either by stasis in the kidneys, or by the action of a general poison on the vessels themselves. Nature sets out to overcome the blocking of the tubules which the inflammatory disease sets up. The convoluted and extensive mass of tubules are seriously obstructed by the process of inflammatory products, and there seems to be no other way on Nature's part to relieve this condition except by excessive pressure on the part of the heart and blood-vessels. In acute cases recovery takes place in a few weeks, but in chronic cases the resistance continues with the very unfortunate results which we find in the small arteries in almost any part of the system. There may be also a chemical or bacterial element behind this process, as in malaria and syphilis, but at present it is impossible to say how much the process is due to mere mechanical action or to chemical or bacterial irritation.

Prognosis.—In all chronic subinflammatory diseases of the kidneys the prognosis is bad if we cannot remove the cause. The prognosis may be guided by the microscopic findings. In cases due to minor surgical infections the patient will get well if the infection is removed. In malarial cases a cure ought to be obtained, also in those caused by syphilis. Minor surgical infections should receive careful study. Attempts should be made to cure fistula, gallstone, gastric ulcer, recurring tonsillitis, otitis media, skin infections, and all sources of such irritations should be carefully sought for and cured if possible without delay. In acute nephritis the disease is serious or not, according to the infection which set it up. Most patients recover after measles, diphtheria, septic surgical conditions, but in many cases the disease becomes chronic after scarlet fever. Pregnant cases rarely become chronic. In some cases of diphtheria the urine will be normal for several days and then show traces of albumin. In scarlet fever microorganisms will always be found in the urine; when they disappear the prognosis is good, otherwise a chronic inflammatory process will set in. As scarlet fever is the one disease most likely to set up a chronic tubular nephritis, chemical and microscopical examinations ought to be made frequently and for months in any case of this disease.

Treatment.—In all acute infections we must endeavor to protect the kidneys from infection. This is difficult to do if the blood-current is invaded by the microorganism which set up the disease. We should also try and check the growth of such organisms at their site in the throat with some better ideas and means of prevention than have hitherto been in use. It is probably useless to try and disinfect the throat by a few gargles of some harmless antiseptic, or some mild sprays for the same purpose. Here it would be better to strike at the root of the disease by some more radical method. Painting the tonsils and throat hourly with some strong disinfectant, as carbolic acid or bichloride of mercury, should be tried in as strong solutions as we use for other disinfecting purposes. The application of antiseptic powders to the throat by means of a brush should also be tried, those best to use being salicylic acid, boric acid, chlorate of potassium. If notwithstanding the local attempts at disinfection in the throat and nose, an infection of the blood has occurred it might be well to try internal antisepsis as far as any good may accrue from such methods. Small quantities of mercury may be given, as any salt of this is highly antiseptic in the blood-current. Arsenic has much the same effect. Salicylic acid is probably the best in scarlet fever. When the kidneys are infected we might still try antisepsis in a urinary form and make use of drugs supposed to have such an effect on the urine, such as salol, hexamethylenamine, etc.

In chronic cases of tubular nephritis a continuation of the antiseptic treatment to a certain point may be still good treatment, but after a time all irritating drugs should be omitted, and this means almost every drug in the pharmacopœia. Drugs irritate, and it may be better to omit them altogether, except some mild salines which dilute the urine and render it less acid, thereby diminishing its irritating qualities. One drug also gives good results, and that drug is digitalis. It equalizes the defective circulation in the kidney, and helps Nature's process at curing the condition, which is to strengthen the heart and thereby force the blood through the obstructed organ. Diet may be of some importance—a light diet is best, but we know that three ounces of meat diet will make up the loss of ten grams of albumin daily; it is therefore better to supply a necessary amount of meat diet to keep up the balance of the nutrient properties in the blood. Mineral purgatives give good results because they keep the bowels open and are also alkaline. I would not advise iodides as a panacea even for arterial fibrosis except in cases with a complete syphilitic history. It seems to me that we ought to be very conservative in regard to our remedies, and not discard the older and well-tried medicines for some newfangled ideas which sound well but which rest on no certain scientific basis in the present state of our knowledge. However, in kidney disease the very first law is to avoid irritation, either by diet, by drug, or other injudicious treatment. Our purpose is to conserve the secreting cells and not to irritate them, therefore it would be safer for a man to avoid drugs altogether than to take chances that any special drug will irritate his kidneys. In chronic tubularnephritis warm baths are to be commended to aid the skin in its function as a diuresis. Light salines may be of advantage in the form of lemonade, cream of tartar mixture, oranges, and mucilaginous drinks. The urine being an acid fluid acts as an irritant on the inflamed tubules and anything that dilutes the urine and renders it less acid thereby aids in preventing irritation. High sp. gr. would argue increased irritation as we see in fevers with a high temperature. The acidity of normal urine is supposed to be caused by the acid salt sodium phos-

phate. There is little free acid, if any, but some chemists maintain that the acidity may come from uric, hippuric, or carbonic acids. This acid reaction may be modified or lost in two ways. After the urine is passed urea is changed into ammonium carbonate by the absorption of water. This conversion of urea into ammonium carbonate was thought previously to be due to the action of a ferment, but now it is known to be bacterial. This conversion of the urea occurring in the urinary passages would cause great irritation, but it is rarely met with in kidney disease. Normal alkalinity of urine occurs in 24 hours after being passed—a glass rod moistened with HCl held over the urine will give forth clouds of ammonium chloride.

Secondly, the reaction of the urine may be changed by the condition of the blood. This is indeed a highly important matter when dealing with a case of chronic nephritis, for we can modify the urine as it passes through the diseased tubules and thereby prevent irritation. Under normal conditions acid urine is formed from alkaline blood—the kidneys having the power to extract acid salts from the blood, yet when the blood is highly alkaline acid urine is no longer secreted. It becomes neutral when large quantities of alkalies are introduced into the blood currents. Such are the carbonates of lime, potash, magnesia, also vegetable salts which are changed into carbonates in the body, and excreted as such in the urine, the citrates, the malates, the acetates. According to Bence Jones, 20 grains of tartrate of potash in water will cause alkalinity of the urine in thiry-five minutes. Foods act in the same way. In carnivorous animals the urine is strongly acid; in herbiverous it is alkaline. Jones also pointed out that the acid reaction of the urine increased inversely with the secretion of the gastric juice. The urine is most acid at night, and least so before noon. After severe exercise the urine is also very acid, as if the waste products of muscular disintegration caused an increased acidity in the urine. Very acid states of the urine favor crystallization, thereby favoring irritation. The question of the exclusion of the chlorides may be answered this way:

1. In all acute febrile diseases the amount of chlorine eliminated diminishes rapidly. As recovery progresses, it increases. This is probably due to the digestion and the meager diet. In intermittent fever there is no marked diminution, probably because the patient eats well between the attacks of the fever.

2. In chronic diseases the elimination of chlorine is subject to great variations. As a rule it is diminished. In diabetes the chlorine appears to be increased. In dropsies there is also an increase when diuresis begins. Excess of sodium chloride may be injurious by preventing blood formation and by displacing albumin. The amount of chlorine is of importance to the physician in all chronic diseases, since it is a good measure of the digestive powers of the patient. An excretion of 6 to 8 grams daily gives evidence of a fair digestion. We can see from these facts that an excess of chlorine may be harmful in chronic kidney diseases, but the question is whether a small quantity, such as is likely to occur in the poor digestion of patients with Bright's disease, can be any way irritating to inflamed organs. While it will probably be wise to moderate the ingestion of salt, it might not be well for the health of the whole body to eliminate it altogether.

In dealing with kidney disorders, we must therefore prevent all acute infection and modify chronic disease by stopping all sources of irritation. In acute eclamptic attacks little can be accomplished by drugs. The issue will depend on the state of the kidneys and the quantity of uremic or bacterial toxins in the blood. We try and attempt elimination by baths or purges, but it is far better to prevent the acute attack by watching the urine, the quantity of albumin secreted being a fair indication for our treatment, and if this should persistently increase under treatment, as I have outlined, it would be fairer and better to our female patients to terminate the pregnancy than take risk of an eclamptic condition.

The reason why in two-thirds of all cases of ecclampsia the spasms occur during labor will be found in the fact that the uterine contractions cause a forced absorption of the septic liquor amnii into the blood.

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A REVIEW OF THE STUDY OF THE PSYCHOSES ASSOCIATED WITH CEREBRAL ARTERIOSCLEROSIS.

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Osler says: "Modern life favors the development of arteriosclerosis, as a man is apt to work his body machine at high pressure. In the fourth and fifth decades of life, even with the best of habits, the incessant drain and anxiety of public life and business may lead to arterial degeneration. The mental exertion that goes with our present business and professional life, with its stimulating environment, and with such keen competition, even without social or political ambition makes high mental pressure a necessity. The tragedies of life are arterial; represented in old mythology as Winged Nemesis, the Goddess of the Inevitable may still be pictured with a wheel—the Wheel of Life, the ceaseless revolutions of which the circulation administers. How often does the fatal touch call away in their prime the best and the bravest. Living quieter lives, with less strain and stress, women are less affected with this disease."

Etiological Factors.—It is said by most authorities that arteriosclerosis is common during the seventh decade of life. Kraepelin has found cases with evidence of arteriosclerosis as early as the fourth decade of life. It may be that in those cases of premature arteriosclerosis an early and perhaps inherited tendency exists for this disease. This is seen where one or more members of the same family show evidence of the disease early in life, but show no mental disturbances; but if excessive demands are made on the nervous system the patient may develop an early cerebral arteriosclerosis. Romberg well puts it when he states that arteriosclerosis is always severe in that part of the body where vessels have undergone the greatest strain.

From a histological standpoint Aschoff says that, following the period of complete development of elastic fibers in the tunica intima of the arterial wall, there succeeds a period during which the vessels remain histologically unchanged. This period extends to the middle or end of the fourth decade of life, then follows the descending period of life of the arteries, which is characterized by senile

sclerosis. Another etiological factor is chronic alcoholism, and Kraepelin states that it especially favors the development of a disseminated sclerosis of finer blood-vessels. Chronic intoxications, as lead and arsenic poisoning, chronic intestinal stasis, chronic malarial intoxications may also be causative factors. A most prolific cause is syphilis, especially the acquired form. Certain metabolic diseases, as gout or diabetes, may be factors in producing arterial sclerosis. Continued great physical exertion is also a factor. Individuals inclined to emotional outbreaks and who live under constant strain and excitement are liable to develop cerebral arteriosclerosis. States of continued anxiety and especially where responsibilities are great, as often seen in physicians, legislators, brokers, merchants, financiers, army officers, and in chronically worried individuals, are likely to develop the disease.

To summarize, we have: (1) The involutionary period, in which degeneration is caused by ordinary wear and tear of life, which is as natural as gray hair and failing eyesight. (2) The toxic group in which degeneration is caused by poisons of acute and chronic infections and intoxications, alcohol, etc. (3) The hyperpietic group, in which degeneration follows persistent high blood pressure.

The consequences of the effects of arteriosclerosis on the mental functions are of great importance, and we shall briefly review them.

Arterioslerosis plays an important rôle in the life of the heart, the kidneys, digestive system, and especially the highly sensitive nervous system. Like every other organ, the part of the nervous system which is the organ of mental functions has its distinct biotrophy or vital elasticity characteristic of the individual, and often enough it ages in many members of the same family more or less independently, and it may suffer through arteriosclerosis in three directions: (1) From effects of reduction or change of metabolism due to arteriosclerosis of some other organ, *e. g.* heart and kidneys; (2) from disease of its own vascular mechanism, especially sclerosis of larger or smaller vessels of brain; (3) or it may run behind in its own metabolism, owing to exhaustion of vital elasticity, of nerve tissue proper, especially when more trying demands are made upon it, through toxic substances, *e. g.* syphilis and alcoholism or stress and anxiety of life.

These factors should be considered in a diagnosis, if by diagnosis we understand not a mere name, but a statement concerning the nature of the disease, the causes and their working, and possible clues concerning means of repair.

Alzheimer has described four varieties of the disease, which are to an extent differentiated clinically:

1. *Arteriosclerotic Brain Atrophy.*—This occurs in two forms: The mild form with severe arteriosclerosis, but absence of focal brain lesions; symptoms are easy fatigue, slight failure of memory, dizziness, and headache. The severe type may resemble the mild type at first, but is progressive and leads to profound impairment of cerebration and presents in its course epileptiform and apoplectiform attacks and focal symptoms.

2. *Subcortical Encephalitis of Binswager.*—In this condition the white matter of the brain is largely involved as a result of the disease in the long medullary arteries. Epileptiform and apoplectiform attacks occur, also transitory attacks of confusion, aphasia, and paresis, disturbances suggesting focal lesions. Focal lesions are not found extensively, but areas of softening often occur in basal ganglia.

3. *Perivascular Gliosis.*—In this condition there is a disappearance of nervous elements about the diseased vessels and replacement by neuroglia.

4. *Senile Cortical Devastation.*—We find extensive destruction of cortical areas in vascular territories of diseased vessels.

Pick has very thoroughly described certain large atrophies involving whole lobes or portions of lobes. The occipital lobes may be involved producing blindness, or the temporal lobes producing deafness. The atrophy does not always follow a vascular atrophy and so while it is generally supposed to be due to arteriosclerotic disturbances in the irrigation of these territories, the cause is not always clear.

The basis of arteriosclerotic mental disturbances is not so much the general softening and destruction of cortical fibers, as the more diffuse condition of the cicatrix-like alterations and changes at various points.

It must be borne in mind that symptoms in any given case usually afford only a rather vague basis of the exact localization of the cerebral changes. It is questionable whether one is able to separate clinically an arteriosclerotic perivascular gliosis from cortical devastation due to the same cause. In considering a case, seek first to determine the amount of damage which the brain has suffered; localization is more or less secondary.

Let us consider the forms of insanity occurring after the age of 45, and ask in which we have reasons to suspect cerebral arteriosclerosis.

First we meet with all these forms which may occur at any age—alcoholic psychosis, general paresis. Further, exhaustion deliria and that group of patients who have a number of attacks in their life, usually depressive or exalted or mixed (*i.e.* manic-depressive psychosis). Further, forms of paranoid or delusional states and forms of deterioration.

As specially characteristic of that period we find anxious melancholia and certain paranoid states of hypochondriacal disturbances. We know that they may occur without arteriosclerosis.

The specifically senile psychosis is practically always associated with some arteriosclerosis; it is, however, one of general mental reduction and apparently is a fairly independent condition. Senile reduction of mind is a phenomenon from which few people escape completely in old age, and which is apt to show prematurely in some individuals. This is usually part of general senile reduction.

In ordinary life we notice decrease in memory, tendency to follow ruts of thoughts, and to rehearse them, a certain narrowing down in interests and in the grasp of new things.

Well founded suspicion of arteriosclerosis exists, however, when an ominous deterioration begins, with gradual loss of memory, narrowing of judgment, and transitory states of confusion, without the cardinal symptoms of general paresis.

Loss of memory which affects the most recent past events makes the patient repeat himself, he gets confused temporarily, and especially at night is unable to locate himself, and is apt to develop outbreaks of anxiety, often with frightful hallucinations. At times gaps of memory are made up for very liberally by confabulations. Patient does not remember what time of day it is, but says he

has been to town, etc. Frequently shows aimless desire for activity. Not infrequently the delirious states are transitory at first, chiefly nocturnal, whereas the fundamental defect of memory and judgment, which is not accounted for by temporary confusion and perplexity, is as a rule lasting or progressive. Often we see increasing self-absorption with hypochondriacal complaints, partially built on natural fear of becoming unable to control sphincters; the patient claims that internal organs are absent, bowels stopped up; a feeling of helplessness leads to ideas of persecution. To what extent cerebral arteriosclerosis, as such, is actually the cause or simply a part of general involution is one hard to decide definitely. After all, the only symptoms which can be laid more directly to changes in blood-vessels are those of focal nature, of various extents, the appearance of symptoms of focal lesions in the brain, and vague symptoms, such as circulatory difficulties, dizziness, occasional occipital neuralgia, or even neuralgia of a whole side of the body. Are we justified at present in speaking of arteriosclerotic psychosis as a disease entity or only of a psychosis of senile or premature senile involution, and is it true that the real arteriosclerotic nature is revealed only by the cause, by nervous and collateral symptoms of focalized or general arteriosclersosis?

The so-called organic dementia, following apoplexy, is usually a compound of the effects of direct focal destruction and diffuse changes. In rare cases, though, it would seem as if focal lesions as such might cause transitory mental disorder. But these cases are difficult to analyze and one should be careful with the statement frequently made that a little "hemorrhage" or "embolism" is the cause of transitory mental disorder.

As a rule the weight of the brain is very much reduced in old age. This reduction keeps pace with the "dementia" so that in simpler delusional forms and in many cases of senile melancholia the weight of the brain is said to be relatively high, whereas actual dementia is accompanied by fairly parallel loss of weight. In many cases atrophy refers more particularly to special localities, such as the temporal lobe, without there being any focal lesion whatever. The nature of blocking of circulation or softening we can obtain from fairly pure symptom-complexes of aphasia, in such cases with local atrophy. Even in these cases it is not always easy to demonstrate a parallelism between the atrophy of the part and the condition of the blood-vessel feeding it. It is impossible to draw a line between cases of simple atrophy of the brain and those of atrophy with focal lesions, except where lesions implicate a part which we can recognize by its focal symptoms during life. In other words, the vascular nature of dementia can be diagnosed only by the existence of distinctly vascular symptoms. As a rule vascular lesions affect the chief vessels of the base and at times the disease process extends to smaller branches and very diffuse changes are possible, such as a small multiple aneurysm, not only in place of predeliction (internal capsule) but in various parts of cortex.

The course of the disease is either progressive, the mental loss becoming more profound as time goes by, or mental deterioration may come to a standstill. During the course of the disease there is a peculiar variability in the intensity of the symptoms at different periods. How long a patient may live it is difficult to say. Death may come quickly or be long deferred, even for years. Intercurrent infections, pneumonia, uremia, etc., may carry off the patient. Severe apoplectic strokes may cause death, or the case may go on to a terminal state resembling to a great degree other organic dementias.

Diagnosis.—Neurasthenia is frequently diagnosed in men past the fifth decade or even in the early sixties, the symptoms as a rule being irritability, insomnia, headache, defective memory, and personal inefficiency. The previous history is to be gone into carefully to note onset and cause, if such can be found. It should be remembered that sclerotic changes are apt to occur early in neurasthenics, whether it be of the acquired or constitutional type. From paresis a positive Wassermann in blood shows that we are dealing with a syphilitic patient. Sclerosis of vessels is common in them and may occur early in the disease. An examination of cerebrospinal fluid when possible and with increased globulin content and increase in number of cells in fluid, and Langs-Gold test is diagnostic of paresis. In simple sclerotic conditions the fluid will be negative, even if the blood reaction is double plus. An increase in albumin content is not rare in severe arteriosclerosis, but is usually less than in luetic diseases. A pleocytosis is also very rare in purely sclerotic conditions, and while it has been reported is of no practical value in deciding whether the sclerosis is or is not due to lues.

In differentiating between syphilitic brain disease and arteriosclerotic mental disturbances, pupillary reactions are important and also fundus examinations for sclerosed retinal arteries. In cerebral syphilis an Argyll-Robertson pupil is usually found, that is, loss of light reaction, but reaction to accommodation is retained. Also examinations of blood for Wassermann test and examination of cerebrospinal fluid for pleocytosis and globulin increase.

In paresis pupillary signs are usually stationary, while in sclerosis pupillary signs may change on different examinations. They may react; another day do not. The changeableness of pupillary reaction in sclerotics is often seen. In paresis such changeable conditions of pupils do not occur. Also if pupils are affected in cerebral arteriosclerotics both light and accommodation are affected. In arteriosclerotic conditions the speech is not characteristic. There may be some difficulty in saying the test phrases, but in paresis there is marked disturbance in speech, fine tremor of lips. Paresis usually occurs between the years of 30 and 40, and may occur earlier. Arteriosclerotic mental disturbances usually occur after the fifth decade of life and are most pronounced in the sixth and seventh decades. Focal signs of organic brain injury and permanent paralytic symptoms occur much earlier in the course of arteriosclerotic brain disease than in paresis. Mentally the essential differentiating factor is the long-retained feeling of illness, *i.e.* insight in arteriosclerotic diseases is retained, the slower progression of the loss of mind, the patient retaining his psychic personality until late in the course, in contrast to paresis, where insight is lost early and practically never regained, and loss of intellectual powers and formation of delusions are much more rapid. There is a splitting of the personality early in paresis, while in sclerotic disturbances this occurs very late in the disease. In the majority of cases of sclerotic mental disturbances the general picture has a depressive and anxious

coloring, which is in contrast to the happy, euphoric state of exaltation so very common in paresis. Rarely is the case reversed. In sclerotics who are exalted their ideas are relatively sensible compared with those ridiculous and foolish states in paretics, also even in the excitement stage the sclerotics retain a knowledge of their personality and social position.

To differentiate arteriosclerotic dementia from senile dementia is not always easy. In some cases we have symptoms which resemble both conditions, and the two conditions are commingled. The arteriosclerotic may pass into the senile stage of dementia. Characteristic of the pure senile case is the general loss of memory, almost total loss of memory for recent events while memory for remote events may be practically impaired. In senile dementia absence of focal symptoms is generally the rule. Senile dementia occurs after 70, but may occur earlier in psychopathic individuals.

The retention of psychic personality and relatively long-retained insight and presence of focal symptoms speak for arteriosclerosis.

From manic-depressive attacks the absence of physical arteriosclerosis, history of previous depressions or excitement, and age. It is said that manic-depressive patients are liable to early arteriosclerosis.

Therapeutically, little is to be done beyond what all mental disorders require—provision for safe and simple conditions of life, avoiding of encumbrances in the intestinal tract, and of states which naturally increase blood pressure, such as worry and anxiety. The principal value of our knowledge of the disorder is undoubtedly the prognostic one and that of early recognition of danger in business transactions, naturally, also the avoidance of confusion with syphilitic processes which would demand specific measures.

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GASTROALBUMORRHEA IN GASTRIC CANCER.

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On the assumption that malignant disease of the stomach is accompanied by degeneration processes which liberate débris and protein matter into the stomach cavity, Salomon[1] recommended a test which he thought was diagnostic of cancer of the stomach. This theoretical assumption is in accordance with our knowledge of cancer in general, and the results reported by various observers would seem to bear out the theory. It must be remarked, however, that such diseases as gastric ulcer would also cause a gastroalbumorrhea, as has been demonstrated by several opponents of Salomon's test.

Salomon's method for testing the stomach contents for the albumin fraction is as follows: The stomach is first carefully washed on the evening before testing, after a preliminary non-albuminous fluid diet had been administered for twenty-four hours. On the next morning the stomach is thoroughly washed with normal saline solution (400 c.c.) the same fluid being repeatedly used and then tested for the quantity of nitrogen by the Kjeldahl method and for the quantity of albumin by the Esbach method.

Salomon found the nitrogen content in non-carcinomatous cases to be between 0 and 16 milligrams per 100 c.c. of fluid. His study of six cases of cancer of the stomach revealed between 10 and 70 milligrams of nitrogen per c.c., and the albumin content was between 0.06 and 0.5 parts per thousand. According to Salomon a case is extremely suspicious of carcinoma if the nitrogen content is more than 20 milligrams per 100 c.c. of the fluid, or if the Esbach test gives a distinct precipitate.

Wolff and Junghans[2] modified the Salomon technique somewhat. They determined the albumin by the phosphotungstic acid reagent. They obtained very good results. Smithies[3] found that the Wolff-Junghans modification is of decided value. Another modification of this test has been recommended by Goodman,[4] who desired to eliminate the labor involved in a Kjeldahl determination. He analyzed the gastric contents for phosphorus.

Siegel[5] concurred with Salomon's opinion, concluding from his own results that a figure over 25 milligrams of nitrogen per 100 c.c. is auspicious of gastric cancer, Orlowski,[6] Schittenhelm and Lowes,[7] Zirkelbach,[8] Witte,[9] and Schupfer[10] are convinced that the Salomon test is of value. Gerster regards this test as useful in cancer of the lesser curvature without stenosis, unless the cancer has formed on an old ulcer, in which case the little hydrochloric acid present would digest the albumin present. Zirkelbach, however, is of the opinion that the minimum nitrogen content suggestive of cancer is 30 milligram nitrogen per 100 c.c. of the washing fluid. Berent and Guttmann,[11] Romano, Minkowski and Yague[12] have reported very unfavorable results with this test. Goodman, on the basis of his findings with his modified technique, concluded that: (1) In normal individuals and in persons suffering from diseases exclusive of carcinoma of the stomach, the Salomon test gives more than 20 milligrams of nitrogen per 100 c.c. of wash water; (2) not all cases of gastric carcinoma reveal more than 20 milligrams of nitrogen—the absence of ulcertation is probably responsibile for this; (3) the test is by no means pathognomonic and can be considered as contributary only to the other symptoms; (4) the phosphoric acid of the wash water of a non-carcinomatous case is less than 10 milligrams per 100 c.c., whereas in cancerous conditions it usually exceeds 10 milligrams.

Before discussing the results which we have obtained, mention should be made of the work of Clarke and Rehfuss,[13] which was communicated by Hawk before the Columbia University Biochemical Association. The following is a summary of their findings: "The protein content of the gastric juice was investigated by the method of Wolff, namely, by successively diluting the gastric juice and adding phosphotungstic reagent. It was found that the normal gastric juice *per se* contained only traces of protein, never giving a reaction in dilutions greater than 1:40. The protein content of the specimens removed by the fractional method, after the administration of Ewald meals, was also determined. The macerated Ewald meal *in vitro* never gave a reaction in a dilution greater than 1:40. Treated in

the incubator with artificial gastric juice, the authors were able to demonstrate an increasing content due to the effect of the gastric juice on the proteins of the bread. If, therefore, material removed from the stomach at intervals develops a greater protein content than the theoretical content due to the action of the gastric juice on the bread proteins, we are able to say that it comes from other sources than bread." In cancer the authors found a high protein coefficient.

TABLE I.—ALBUMIN IN THE GASTRIC WASHINGS OF NON-GASTRIC CASES

No.	Name	Diagnosis	Nitrogen Mgs. in 100 c.c.	ALBUMIN PARTS P. M.		
				Esbach	Tsuchiya	Pfeiffer
1	J. M.	Diabetes	12 5	Traces	Traces	0 2
2	I. B.	Diabetes	9 4	None	Traces	Traces
3	N. R.	Pulm. Tbc	7 3	None	None	Traces
4	F. M.	Fracture	5 9	None	Traces	0 2
5	A. J.	Fracture	1 4	None	None	None
6	S. H.	Syphilis	8.2	None	None	None
7	A. K.	Syphilis	5.4	None	None	None

We have examined the gastric washings of 43 patients—15 gastric carcinoma, 3 esophageal carcinoma, 18 noncancerous diseases of the stomach, and 7 cases in which the patients had no gastric symptoms whatsoever. The washings were analyzed for nitrogen by the Kjeldahl method and for albumin by the Esbach, Tsuchiya, and Pfeiffer methods.[11] In nearly all cases we obtained a higher result with the Tsuchiya method and the highest albumin figure with the Pfeiffer method. In the fifteen cases of gastric cancer the nitrogen content of the washings varied between 27.9 and 71.5 milligrams per 100 c.c. Intermediate figures were obtained in the three cases of esophageal carcinoma. In several cases the diagnosis of malignancy was confirmed by subsequent operation or necropsy. The protein content of the washings in the cases of malignancy was invariably high, never less than 0.4 parts per thousand and occasionally as high as 1.2 parts per thousand by the Esbach method. The smallest figure for protein obtained by the Pfeiffer method was 0.6 parts per thousand and the highest figure was 1.4 parts per thousand. Of the seven cases of gastric ulceration, six gave nitrogen and protein figures, which were similar to the ones obtained in the cases of malignancy. In a case of acute gastritis high nitrogen and protein indices were obtained. In the cases of non-gastric disease the washings were either entirely free from protein or else they contained extremely minute traces.

TABLE II.—GASTROLABUMORRHEA IN CARCINOMA OF THE STOMACH

No.	Name	Nitrogen Mgs. in 100 c.c.	ALBUMIN PARTS P. M.		
			Esbach	Tsuchiya	Pfeiffer
8	Mrs. W.	69 8	0 75	0 8	1 0
9	M. W.	52 7	0 6	0 75	0 9
10	F. C.	71 5	0 65	0 8	0 9
11	S. G.	47 9	0 6	0 8	0 75
12	E. F.	33.2	0 4	0 5	0 6
13	M. G.	44 8	0 5	0 7	0 9
14	Z. H.	51 2	0 5	0 6	0 8
15	A. T.	32 4	0 4	0 5	0 7
16	D. S.	67 4	0 75	0 9	1 1
17	E. M.	62 8	0 8	0 9	1 2
18	W. J.	32 5	0 6	0 8	1 1
19	A. H.	27.9	0 4	0 6	0 9
20	G. T.	35 5	0 5	0 75	0 8
21	G. F.	29 3	0 4	0 75	1 0
22	J. L.	51 2	0 5	0 6	0 75
		IN CANCER OF THE ESOPHAGUS			
23	N. Z.	62 7	1 2	1 5	1 4
24	H. H.	28 4	0 4	0 6	0 8
25	J. T.	43.9	0 6	0 8	1 2

We did not think the Goodman modification to be of sufficient value to lay any stress on it. The test should be performed in a well-equipped laboratory, and cannot be performed to advantage in the usual laboratory of the practitioner.

In our hands the estimation of the albumorrhea in cases of gastric disease has been of great aid in the differential diagnosis of gastric cancer from a benign condition. Care must be observed to eliminate gastric ulcer and acute inflammation of the stomach mucosa, for as will be seen from our data, these conditions also cause the exudation of protein matter into the stomach cavity.

TABLE III.—GASTROLABUMORRHEA IN NON-CANCEROUS DISEASES OF THE STOMACH

No	Name	Diagnosis	Nitrogen Mgs. in 100 c.c.	ALBUMIN PARTS P. M.		
				Esbach	Tsuchiya	Pfeiffer
26	B.	Gastric ulcer	25 5	0 2	0 2	0 4
27	S. K.	Gastric ulcer	32 4	0 4	0 4	0 6
28	M. F.	Gastric ulcer	41 2	0 5	0 6	0 6
29	M. M.	Gastric ulcer	33 7	0 4	0 3	0 5
30	B. W.	Gastric ulcer	35 9	0 4	0 5	0 6
31	J. J.	Gastric ulcer	22 6	0 3	0 3	0 5
32	R. K.	Gastric ulcer	12 8	None	Trace	Trace
33	K.	Cardiospasm	1 5	None	None	None
34	M.	Acute gastritis	38 9	0 5	0 5	0 7
35	F.	Hyperacidity	12 5	None	Traces	0 2
36	Katz	Gastrectasis	3 9	None	None	None
37	L. B.	Tabetic crises	2 4	None	None	None
38	T.	Hyperacidity	1 7	None	None	None
39	L. K.	Chronic gastritis	19 8	0 2	0 3	0 3
40	J. U.	Anacidity	5 5	None	Trace	Trace
41	M. D.	Appendicitis	2 6	None	None	None
42	S.	Hernia	2 4	None	None	None
43	M. M.	Intestinal stasis	4 7	None	None	None

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HOW TO BLOW THE NOSE.

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THE child is taught the alphabet to read. The vocal teacher imparts the use of the voice to a pupil to make him master of the singing art. The mother teaches the child to walk after he has learned to creep. Thus certain members of our anatomy undergo a certain special course of instruction before they render their five talents worth of usefulness to the bulk called the human system.

I have specialized in the nose and throat for over thirty years, and in my hospital experience in the old Bellevue clinic and in my private practice I do not think I have seen twenty-five patients who knew how to blow their noses properly unless they had been previously taught.

The failure to clean the nose by the handkerchief thoroughly is responsible for over 75 per cent. of the catarrh cases that apply for treatment. The in-

correct way of cleansing the passage is also responsible for any number of ear cases.

Years ago when I was a student at school and we were marshalled out in a line preparatory to our march to the Large Room I once blew my nose. A student back of me touched me on the shoulder and said, "Griffin, if you blow your nose that way, you will be deaf when you grow up." That man has been a patient of mine for years. He was so deaf when he first applied for treatment that I could only make him hear by speaking loudly into his ear. His deafness was caused by faulty use of the handkerchief.

The average winter cold starts in the head. The patient instead of properly using his handkerchief begins to hawk the secretion back into the nasopharynx; then some of the mucus is expectorated, while a certain amount will remain glued to the pharynx and the inner border of the soft palate. This will become loosened when the patient moves from one temperature to another, like leaving the house to go out-doors or *vice versa*. Then there is a constant string of mucus hanging down from the palate. This mucus keeps up a constant cough; the cough that is known as a winter cough. This cough is only a symptom of faulty handkerchief service. Cough medicines are given again and again and fail to relieve. The morphine and codeine of cough syrups may benefit, but only benefit by soothing the general system.

The cough syrup passes down the pharynx into the esophagus and then the stomach, but does not strike the point where the irritation lies, namely, the nasopharynx.

The morning vomiting of catarrh is produced by this accumulation on the pharynx and the palate of a large amount of mucus that has been hawked back and has no place to go except to the buccal cavity to be expectorated from the throat.

This constant hawking and cleansing of the nose through the throat is responsible for a constant irritable pharynx and the vomiting to which some persons are so prone.

Elongated uvula is diagnosed again and again in these cases and part or whole of this member is removed. The uvula is not often responsible for a cough. I very seldom see an elongated uvula. During some years I will go the whole twelve months and never see one that demands an operation. Still, this is the field for the general practitioner and one when he operates again and again, and, I think, distinctly without any benefit. The cough or tickling in the throat is not caused by the uvula. The congestion of the uvula is caused by the bunch of phlegm and the habit of hawking on the part of the patient.

If we consider the nose simply as an appendix of the face, the importance of this organ is lost. The nose is the grand central terminal of the air tract. It is here where the various branch lines have their juncture. To see this perfectly an *x*-ray picture of the chest is necessary. If the picture has been taken from a cadaver when the bronchi have been filled with shot, the picture is more than expressive.

The trachea divides low down into the right and left primary bronchi which continue down into the lung tissue to break up into various branches deep into the mammary region. These structures are all used in properly cleansing the nose. When the nose is not properly cleansed all these tissues feel the effect. The nose is the open sesame to these most important organs, the lungs.

I do not think I put it too strong to state that the improper use of the handkerchief is a salient factor in the development of consumption.

The nose can be divided into two parts: the bony part, contained within the skull, and the soft part that extends from the face. The bony part opens into the nasopharynx, the site of the adenoid and the space for the pharyngeal orifice of the eustachian tube.

The bony part of the nose drains the frontal cells, the antrum of Highmore, the lacrymal duct. Thus it can be easily seen that the nose acts not only as an organ of smell, an organ to breathe through, but as a general drain for the sinuses of the skull or head.

All these discharges have to be removed by the handkerchief. A noted specialist once applied to me and explained that his nose was always obstructed and that he could not obtain any air through his nostrils. He illustrated this by breathing in my presence and sucking the alæ nasi together which rendered the nose hermetically sealed. He thought the way to breathe through the nose was to suck the alæ nasi in toward the septum. I quickly saw his mistake and illustrated by my own nose how it would close up if I breathed the way he did. He was much surprised when I told him the way to breathe was from the chest with the chest as a bellows and the nose as the end of the bellows. The nose must be passive. The alæ nasi must be passive in breathing. The alæ nasi, in other words, constitute a cover to the nose and should be used as such.

If we approach a disagreeable smell, the smell ceases to be an objection by sucking the sides of the nose in or holding them together by one finger and thumb. This is the purpose of the fleshy muscular partitions that frame the nose from the face.

Forced inspiration will bring the alæ nasi together. This is seen in the second stage of pneumonia, when the breathing is rapid and panting and the face of dusky hue. Marked movements of the nares are here apparent.

An actor that I had as a patient would take one of my towels that I use in my nose work, touch his nose with the linen and then extend his hand and give the towel a gentle pitch toward his back. He would use up about ten linen towels in this performance and still he never blew his nose. Ladies will take their handkerchiefs, touch their noses gently and put the handkerchief back into the reticule and consider they have emptied their nostrils of a normal secretion.

The baby will hold the secretion in his nostril till it overflows, then it will drain down on his lips and be wiped away by its nurse or parent.

The nose of the adult very seldom overflows toward the front. The drain as I have pointed out before is toward the back, when the flow or current of mucus is augmented by the habit of hawking.

The "Benjamin Backbite" of "The School for Scandal" on the stage is never seen without a large lace handkerchief whose center part is so small that a few tears from the lacrymal duct would make it dripping wet. These kerchiefs of the past show that the art of blowing the nose was as badly understood in former ages as in the present.

The proper way to blow the nose must be a lost art, because at some time in our existence we must have been human and known by instinct how to use our anatomy properly before Dame Fashion came in with the kerchief and lace.

To blow the nose properly it is best to look at it as a double shotgun; the nose as the muzzle of the

gun and the chest as the air receiver, the mucus in the nose as the bullets and charge.

A deep inspiration to fill the chest with air, then one finger is placed upon the ala of one nostril to obstruct the passage. With one violent expiration the air from the chest is forced through the open chamber of the nose and the offending discharge is caught by the handkerchief. This maneuver is repeated on the opposite side. It is a simple mechanical process and one that I have pointed out before, but is seldom known.

We have our tooth-brush drill in the public schools, why not the nose drill? If it was instituted and the pupils taught the proper use of the little piece of linen, catarrh would be diminished, ear cases would be less common, and the germs that first find their way into the anatomy through the nostril would be expelled before they had time to find a sleeping place in the human network.

55 West Forty-seventh Street.

Medicolegal Notes.

Optometrists Not "Practitioners in Medicine" Within Pennsylvania Licensing Statutes. — Injunction was sought in the Pennsylvania courts to restrain members of the State bureau of medical education and licensure of the department of public instruction from enforcing against the plaintiffs, who practised as optometrists the provisions of the Pennsylvania Acts of June 3, 1911, and July 25, 1913. These statutes provide that it shall not be lawful for any person to hold himself or herself forth as a practitioner in medicine unless he or she has first fulfilled the requirements of the acts and received a certificate of licensure.

It appeared from the proofs that the business or profession of optometry is one of ancient standing. Until a comparatively recent date a large part of that which is done by optometrists was exclusively within their province, and was not covered in practice by the physician or surgeon. Within the last quarter of a century, or thereabouts, it appeared from the proofs that among those who are engaged in making lenses to correct or cure defects in the eyes there has arisen a classification, or division, whereby some who make lenses confine themselves entirely to the work of making them in accordance with the prescriptions given them by physicians or oculists. These call themselves, or are known, as "opticians"; others, who still manufacture the lenses, according to either their own judgment or the prescription of physicians, do not confine themselves to the making of lenses, but also examine the eyes for the purpose of ascertaining whether there are such defects visible as can be corrected by the application of lenses. This class have taken the name of "optometrists," and that is the name by which they are now generally known. Those who practise under the latter title are many in number, and they are recognized in many States of the Union as a class by themselves, and regulated by statute.

The court held that an optometrist is not a "practitioner in medicine" within the meaning of the statutes. It did not consider that the fact that the work done by the eye specialist physician and that done by the optometrist, to a certain limited extent, lap over each other, constitutes the optometrist a practitioner in medicine. "Such work on the part of the optometrist was done by him perhaps, and probably, long before the eye specialist among physicians had either the knowledge or the skill to do the work which is now done by both physicians and optometrists. . . . So far as the alleged danger to patients from the application of glasses or lenses upon an examination which did not disclose a hidden disease, a point urged with great force on behalf of the defendants, it seems to us that such a consideration throws no light upon the meaning of the statutes or their bearing upon the case in hand. It might constitute a sufficient reason for the Legislature to regulate the practice of optometry by special enactments, or, by suitable enactments or amendments, to bring optometrists within the regulative control of the defendants making up the board intrusted with the supervision over such matters as are involved in the present case."

It was claimed that the plaintiffs came under the statutes because they diagnosed diseases. The proofs were to the effect that optometrists, examining the eye of a patient, either with or without the aid of artificial means, in case they find that the interior of the eye is clouded and gives ground for suspicion that there is some disease of the eye, inform the patient that, for his own protection and safety he should consult a physician. The court understood that under such circumstances the optometrists decline to furnish lenses for the patients. The court held that this alone was not diagnosis within the meaning of the acts. It thought that a fair and usual construction and interpretation of the words "diagnose diseases," such as ought to be given in determining the meaning of the acts in question, was that the mental act involved in the matter of diagnosis should be something more than the mere determination that there were indications of disease.—Martin v. Baldy, Pennsylvania Supreme Court, 94 Atl. 1091.

Privileged Communications — Arizona Law as to Waiver.—The United States Supreme Court holds that neither the testimony of other witnesses, offered by the patient, nor his own voluntary testimony as to his physical condition at the time of his examination by a physician, nor any averments in the pleadings, amount to a waiver of his privilege, under the provision of the Arizona statute as to privileged communications, against the disclosure by the physician of any communications made by the patient with reference to any physical or supposed physical ailment, or any knowledge obtained by personal examination of the patient. According to the proviso of the Arizona statute, the privilege may be waived only in the event that the patient offers himself as a witness and voluntarily testifies with reference to the "communications" made by him to the physician.—Arizona & New Mexico Ry. Co. vs. Clark, 35 Sup. Ct. Rep. 210.

Care Required in Obstetrical Cases. — The question whether a physician or surgeon, charged with malpractice, has treated the patient or performed an operation with reasonable skill and care, is ordinarily to be tested by the standards of the school to which the physician or surgeon belongs; but if there is uniformity in the rules of practice and treatment, regular practitioners of any school are competent witnesses as to the proper diagnosis and treatment. Where a person who holds himself out as a medical expert or healer has no fixed rules of practice, he is still bound to treat patients with ordinary skill and care, and competent physicians regularly engaged in the practice are competent witnesses as to whether the treatment administered in the case was properly or negligently given. In an action for malpractice, where the defendant was an osteopathic physician, and professed to practise according to the rules and methods of that branch of the profession, it was held that physicians of the regular school were properly permitted to testify as to the progress and condition of labor in an obstetrical case, the methods of delivery and the proper treatment of the mother after the birth of the child.

Ordinarily, only physicians and surgeons of skill and experience are competent to testify as to whether a patient has been treated or an operation performed with a reasonable degree of skill and care, but testimony as to many matters connected with the treatment of a patient, such as the statements and acts of the physician or surgeon, as well as the external appearances and manifest conditions, which are observable by any one, may be given by more expert witnesses.

A physician employed in an obstetrical case is required to care for and aid the patient, not only during her confinement and the delivery of the child, but it is his duty to make a careful examination of the patient and give reasonable and proper attention to any lacerations or injuries resulting from the delivery; and if he fails in this respect or to inform the patient or those caring for her as to her condition, or to give them instructions so that they may act intelligently in the further care and treatment of the patient, he is guilty of negligence and liable for the resulting injuries. An objection that the Kansas statute does not permit an osteopath to administer drugs or medicine or perform operations in surgery, and that therefore he could not legally take any steps to repair a laceration, was met by the opinion that if an osteopath may lawfully attend an obstetrical case such a repair might be regarded as a mere incident of the delivery rather than an operation in surgery.—Yard v. Gibbons, Kansas Supreme Court, 149 Pac. 422.

MEDICAL RECORD.

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PELLAGRA.

PELLAGRA is chiefly prevalent in this country in the South and is, moreover, especially frequent in mill districts and closely associated with a condition of poverty. Again observation tends apparently to indicate a considerable increase in the prevalence of pellagra during the past seven or eight years. The suggestion is at once obvious that there is a possible relationship between the incidence of pellagra and certain conditions of an economic nature. In *Public Health Reports*, Oct. 22, 1915, Edgar Sydenstricker, U. S. Public Health Service, contributes various data on this phase of the question.

He summarizes briefly some conclusions afforded by industrial and budgetary investigations regarding (1) The relation of the wageworker's family income to diet, with certain data relating to wages and income of workingmen's families and to the adequacy of wages and family income measured by the cost of living of wage earners in the South as compared with wage earners in other sections of the United States. (2) Some factors affecting the availability of the food supply in Southern industrial localities. (3) Differences in the diet of workingmen's families in Northern and Southern States. (4) Some factors having a possible effect on the diet of Southern wage workers' families in recent years, including the source of the recent labor supply in Southern factories and mills and the urban movement of population, changes in the character of the food supply, changes in the status of Southern wage earners' families, and the recent rise in the retail prices of food. The following conclusions were formulated as a result of this inquiry: (1) The lower the economic status of the white American family, the greater is the pressure for sacrifices in diet, particularly in animal protein foods, since such are the most expensive. (2) The economic status of wage-earners' families in the Southern States, particularly of cotton-mill families, is lower than that of wage-earners' families in other sections of the country. (3) Certain factors have tended to restrict the supply of protein foods in Southern industrial localities that do not restrict, at least to the same extent, the supply of carbohydrates and hydrocarbons. (4) Budgetary studies of a large number of native white earners' families generally comparable as to annual family income and size, indicate that the proportion of proteins in the diet of Southern families is considerably less and of carbohydrates and hydrocarbons considerably greater than in the diet of Northern families. (5) Certain facts have tended to intensify the condition in recent years, particularly since the industrial depression began in the latter part of 1907. While the supply of a properly balanced diet in Southern industrial localities has apparently not been improved materially, the economic status of wage-earners' families, especially in the cotton goods and lumber industries, has been lowered, and retail prices of food have greatly increased, this increase being more pronounced, particularly since 1907, than in other sections of the country. The increase in retail food prices has been at least 40 per cent. higher in proteins than in carbohydrates and hydrocarbons. The available data thus point to a lessened financial ability of Southern wage-earners' families to provide a properly balanced diet, as well as a decrease in the availability of an animal protein food supply for the wage-working population, particularly since 1907 or 1908.

The same issue of Public Health Reports contains papers by Drs. Joseph Goldberger, C. H. Waring, and David G. Willets, U. S. Public Health Service, with regard to tests of diet in institutions. The summary and conclusion are as follows: (1) The diet at two orphanages, "M. J." and "B. J.," for several years endemic foci of pellagra, was modified in accordance with the direction of the writers in September, 1914. The hygienic and sanitary conditions have remained unchanged. (2) The modification in the diet consisted principally of a marked increase in the fresh animal and the leguminous protein foods. (3) Since the change of diet at orphanage "M. J." there has not been observed any recognizable evidence of a recurrence in any of the pellagrins of 1914, 67 of whom remained under observation until they had completed at least the anniversary date of their attack. Nor have any new cases been observed among the non-pellagrin residents of 1914, 99 of whom have been under observation for not less than a year. (4) Since the change in orphanage "B. J." there has been observed this year but a single individual with recognizable evidence of a recurrence among the pellagrins of 1914, 105 of whom remained under observation until they had completed at least the anniversary date of their attacks. Nor has any new case been observed among the non-pellagrin residents, 69 of whom have been under observation not less than a year. (5) At the Georgia State Sanatorium, an endemic focus of pellagra, a ward of pellagrins in the colored female service and one in the white female service were organized in October and December, 1914, respectively, for a test of diet in the prevention of pellagra. (6) The diet in these wards was modified on the same principle as that at the orphanages. The institution routine and the hygienic and sanitary conditions have remained unchanged. (7) Since the change of diet and up to Oct. 1, 1915, there has not been observed any recognizable evidence of a recurrence in any of the pellagrins in these wards, 72 of whom have remained continuously under observation throughout the period or at least until the com-

pletion of the anniversary date of their 1914 attacks. (8) During the corresponding period of observation not less than 15 (47 per cent.) of 32 control female pellagrins have presented recurrences. (9) The conclusion is drawn that pellagra may be prevented by an appropriate diet without any alteration in the environment, hygienic or sanitary.

From the foregoing data drawn from careful observations, it would seem that pellagra, after all, is a "mal de misère" that is brought about by an inadequate and unsuitable diet. Always the disease appears to go hand in hand with extreme poverty and does not occur when individuals are fed well and on a sufficiency of animal protein food. The results of the investigations made by Dr. Goldberger and his co-workers, although they by no means clear up the mystery of the cause of pellagra, yet do further substantiate the views held by so many that pellagra is mainly a dietetic disease, a malady induced by errors of diet irrespective of the influence exerted by bad sanitation or hygiene.

LESIONS PRODUCED BY ARSENICALS.

THERE is no other group of drugs to which so much attention has been accorded within recent years as the compounds of arsenic. They have occupied the center of interest in chemotherapy ever since Laveran and Mesnil in 1902 demonstrated the trypanocidal action of arsenic in laboratory animals. Then came the striking achievements with the use of atoxyl in spirochetal infections which began the series of investigations that culminated in Ehrlich's contribution to what was at first thought to be the specific therapy of syphilis. From the very inception of the use of arsenic as a therapeutic agent, even in the older days when its parasiticidal action was not even suspected, the adverse effect of this chemical agent upon the body cells was definitely recognized. These effects have been greatly accentuated in the case of the heroic applications of this drug in the various spirochetal infections. The problem in the modern chemotherapy of arsenic has been to evolve compounds of this drug that would produce the greatest therapeutic effect and at the same time exert the least toxic influence upon the cells and tissues of the individual under treatment.

The knowledge of these toxic effects has been extremely vague although the pathology of arsenic poisoning has been known for a long time. Wade H. Brown and his associates have studied this subject for several years and the results are reported by Brown in an important paper in the *Bulletin* of the Johns Hopkins Hospital, September, 1915. About sixty different compounds of arsenic were studied as to their effects upon the important organs of the body. The already well-known lesions of arsenic poisoning are not alluded to. An important group of changes are those found in the heart and blood-vessels. Some arsenic compounds, such as atoxyl in relatively large doses and salvarsan and its modifications, produce subendocardial and myocardial hemorrhages and hemorrhage into the substance of the heart valves. Vascular occlusion resulting from thrombus formation or the presence of emboli is another important effect of arsenic poisoning. Characteristic lesions in the lungs consist of petechial hemorrhages finely and uniformly distributed throughout the lung. The hepatic lesions are divided into three groups: (1) diffuse degenerative changes similar to those produced by inorganic compounds of arsenic; (2) lesions of the central zone of the liver lobule including degenerative processes and necroses; and, in the case of one compound of arsenic, characterized chiefly by profuse hemorrhage into the bile-ducts; and (3) lesions produced by preferential action upon portal structures and the peripheral zone of the lobule. One important characteristic of the toxic action of arsenic is the fact that the most pronounced effect is produced by the first injection. Apparently the regenerated tissue of the injured territory acquires a distinct degree of tolerance or tissue fastness. In some instances, however, there is produced a condition of tissue sensitization in which the effect of a later dose may be more marked than those of an earlier dose.

Brown differentiates two types of kidney lesions produced by inorganic compounds of arsenic; (2) In one of these, known as the red kidney, the necrotic lesions involve all the elements of the kidney, or may exhibit a preferential action as regards the vascular, cortical, or medullary changes. The second type, in which the kidney is extremely pale, exhibits a pronounced involvement of the tubular epithelium. The suprarenal capsules are also affected by the toxic action of arsenic, the type and degree of injury varying decidedly with the different compounds of arsenic and the different animal species, but being parallel with the susceptibility of a given animal species for a given compound.

An important distinction is drawn between toxicity and tissue injury, for one may be diminished without a necessary reduction in the other. The lesion complex is measurably related to the chemical constitution of the compound. The problem for the future is how to evolve compounds of arsenic that will produce the maximum therapeutic effect and the minimum toxic effect. The solution of this problem, the possibility of which is still extremely remote, will require the close co-operation between the clinician and the laboratory investigator.

GARLIC JUICE IN WOUND TREATMENT.

SINCE the great European war commenced many and various modes of treating wounds have been tested and more have been discussed. At the beginning of the campaigns the antiseptic treatment of wounds and injuries in civil life had fallen into disfavor—almost into disrepute—and some authorities had openly stated that the antiseptic method was practically dead. However, after the war had progressed somewhat, it was found that not only were antiseptic principles not dead but that under the conditions which prevailed in the most modern warfare the carrying out of aseptic methods were, generally speaking, impossible and that recourse must be had to Lister's principles. Many measures have been suggested and tried, and among these not

the least successful has been the employment of hydrogen peroxide. Another substance which seems to have proved its worth is garlic juice. In the *Medical Press and Circular*, November 17, 1915, Dr. A. D. Serrell Cooke writes concerning this method. The way in which the juice was used is stated to be as follows: After efficient drainage had been established the infected wound was washed out carefully twice daily with a lotion of garlic juice and distilled water, in a strength of 1 to 3 or 1 to 4. After this treatment in a large number of cases a noticeable improvement occurred in 24 hours and a decided improvement within 48 hours. During this period the purulent discharge not only became markedly diminished, but also the pain and surrounding inflammation were either very much relieved or disappeared. The kind of wounds treated were recent dirty wounds, in which suppuration had not yet occurred; foul, lacerated suppurating wounds of the face, scalp, thigh, etc.; extensive superficial burns of the face, scalp, chest, limbs, and abdomen in children; suppurating bursæ about the knee; cases of empyema; foul ulcers of the leg; infected and suppurating wounds in connection with compound fractures; carbuncle; one particularly interesting case of moist spreading gangrene of the leg in an old woman of 71 years, etc.

The good effects of garlic juice have been ascribed to the active principles contained in the essential oil derived from it; and oleum allii is stated to contain allyl sulphide, in addition to certain volatile terebenes. As the red-skinned varieties of *Allium sativum* are said to contain more of the essential oil than the white-skinned, the juice derived from the former has been chiefly employed.

As a matter of fact, although stress has been laid upon the regeneration, so to speak, of antiseptic principles in the treatment of wounds, the antiseptic value of garlic juice according to the Rideal-Walker tests is but small. Cooke is of the opinion that as the result of the work carried out in Paddington Infirmary with garlic juice, it would seem that in this substance we have at hand a powerful remedy for the treatment of infected wounds. It would appear to possess properties which are cleansing, sedative, deodorant, penetrative, lymphagogic, and possibly also antiseptic. To its action as a lymphagogue probably most of its good results are due, and the results in wound treatment so far achieved by it would appear to confirm in practice, without injury to the tissues, the recently expressed theory of Sir Almroth Wright as to the value of drainage combined with lymph lavage in wound treatment.

WHAT IS DEBILITY?

Is there such a thing as debility? Of course, we all know that the quality the expression intends to represent permeates large areas of mundane things; it extends its baleful influence to political movements, to therapeutic fads, and to good resolutions. But whether there is a clinical entity sufficiently delimited to be known by that name is open to serious doubt.

In the medical dictionaries the term is given as synonymous with asthenia, which is defined as a general loss or absence of strength, adynamia. This latter is in turn defined as a deficiency or loss of vital or muscular power. A lay dictionary defines it as the state or quality of being weak, weakness, feebleness, languor. The international list of causes of death, published by the Census Bureau for the use of physicians, does not mention it at all except under "Ill-defined diseases," where it says, "Some of the old chronics which well-informed physicians are coming less and less to use, are the following: . . . Debility. . . ." We do not find the condition described in Osler, Hare, Sahli, or other well-known works on internal medicine and physical diagnosis.

We must then conclude that debility is itself not a disease, but a symptom, and look behind it for the cause. There are cases, of course, in which it is impossible to determine readily the cause of the debility and where it is necessary to make some diagnosis at once, as for instance, when we have patients in a sick benefit society and it is our task to fill out weekly reports that they may obtain the payments to which they are entitled. In such cases it might be quite proper to certify for the first week or two at least that the patient is suffering from debility, but such a diagnosis can be reconciled to the scientific side of our minds only by the agreement with ourselves that we mean thereby merely that the patient is incapacitated for work because of a general weakness the cause of which we have not yet determined.

Medicine, after all, is not an exact science and attempts to treat it as such are not only futile, but actually detrimental. How many fevers, for instance, do we encounter in our daily practice which last a short while and then disappear and we never know their source or nature? True, we have strong suspicions, but if we were obliged to catalogue them rigidly as influenza, malaria, or autointoxication, would not the future efforts of the profession to master these conditions be impeded by the inclusion of material, much of which in reality belonged elsewhere? Let us, therefore, refer to the patient's condition as debility if that is as far as we have progressed in the diagnosis, and not befog the issue by any pseudoscientific guesses.

Internal Secretions and Gynecology.

In the present state of our knowledge of this subject the internal secretion of the ovary is bound up chiefly in the activities of the corpus luteum. The latter supplies a principle which presides over the growth of the genitals and precipitates menstruation. A second hormone has a hemostatic action on the menses. The two, acting in alternation, cause the entire phenomenon of menstruation. The stroma of the ovary also produces a hormone which protects the development of secondary sexual characteristics. The ovarian secretions antagonize the production of breast milk and may be used in therapeutics to check galactorrhea. There are many facts of gestation which point to the existence of a placental hormone. The ovary and thyroid promote each other's activity. The latter enlarges at puberty and during menstruation and pregnancy. Gestation aggravates ordinary goiter and Graves' disease. In hypofunction of the thyroid the geni-

tals may suffer in development and activity. The hormone of the parathyroids has an activity quite similar to that of ergotin. The above summary was given by Franz Cohn last June at a meeting of the Frankfort Medical Society (*Berliner klinische Wochenschrift,* August 2). Somewhat less obvious are the relations between the hypophysis and female genitals. Hypopituitarism inhibits the development of the latter, but so does the opposite condition of hyperpituitarism. Conversely castration of women is sometimes followed by acromegaly. The phenomena of overgrowth seen during gestation are doubtless due to activity of the hypophysis. Destruction of the epiphysis has caused precocious sexual development. The relations of the thymus with the ovary appear paradoxical. The adrenals are activated by pregnancy and are responsible for its chloasma and various other phenomena. Puerperal osteomalacia appears to be due to a general disturbance of the internal secretions.

Isolated Neuritis Vestibularis Following Typhoid Immunisation.

Since inoculations with dead cultures of germs introduce definite quantities of toxins into the economy, we must expect to see develop in rare instances some mild and brief type of toxigenic lesion. As the nerves are susceptible to toxic inflammations, as shown by the occurrence of alcoholic, plumbic, and luetic neuritis, we would look forward to beholding sooner or later some type of typhoid neuritis in the predisposed. Should a nerve like the vestibularis be the victim the resulting symptoms might be distressing and further be superadded to the systemic action which sometimes develops. Indeed it is by no means improbable that these so-called general symptoms may be largely attributable to inflammation of the vestibular nerve (vomiting, nausea, headache, vertigo). In an article in the *Deutsche medizinische Wochenschrift,* Aug. 19, Hirsch gives the results of a typhoid immunisation in a medical colleague. The latter, a very healthy subject, had borne the first injection without much reaction. The second, however, made twenty-six hours later, caused symptoms which pointed to a neuritis vestibularis. This result suggests that in typhoid fever the same nerve is exposed to injury. As a matter of fact a serous labyrinthitis does occur at times in this affection and causes deafness. But since other portions of the auditory apparatus are prone to implication, isolated neuritis vestibularis is seldom seen.

Bence Jones Albuminuria and Lymphatic Leucemia.

In 1898 Askanazy published case reports of lymphatic leucemia in which Bence Jones bodies were found in abundance in the urine and also in the bone marrow; these, however, were absent in the lymphoid tumors, blood, and exudates. Ten years later von Decastello, with somewhat different finds, arrived at the conclusion that the source of these proteins is the bone marrow, from which they gradually disappear as the disease nears a fatal ending. At a recent session of the Verein für Wissenschaftliche Heilkunde of Königsberg (*Deutsche medizinische Wochenschrift,* September 2) Frohmann reported the case of an adult male with lymphatic leucemia. The general condition was still good and the patient presented only the multiple lymphnode tumors and blood picture, with an abundance of Bence Jones bodies in the urine. Although there were no other evidences of bone marrow implication this find was looked upon as making the diagnosis, which is not, however, specific for myelogenous leucemia, since under different circumstances it could indicate a metastatic carcinosis of the bones. In leucemia it cannot distinguish between primary and secondary forms of bone marrow implication. The *x*-rays have no influence over the production of these bodies, while benzol has been known to reduce and even inhibit their excretion in the urine.

News of the Week.

Disease Among Food-Handlers.—Health Commissioner Emerson recently issued a report of an investigation into the health of persons handling food in the restaurants and cafés of New York. So far about 75 per cent. of the 100,000 hotel and restaurant employees in the city have been examined, and only 3½ per cent. have shown evidence of infectious disease. In only one-half of these was the disease present in a communicable form. The Sanitary Code requires the discharge of all culinary helpers in hotels and restaurants who are considered by the inspectors to endanger the health of the patrons.

Proposed Broad Street Hospital.—The funds so far collected for the proposed new Broad Street Hospital in New York, an institution for the immediate medical and surgical relief of persons injured or taken ill in the big office buildings in the Wall Street District, amount to $50,000, the sum set by some of the wealthy men in Wall Street as the amount to be reached before they would contribute. The prospects for the speedy erection of the hospital are, therefore, good.

Rockefeller Hospital.—The Hospital of the Rockefeller Institute for Medical Research, New York, which receives only selected cases having a bearing on the subjects under investigation, is now admitting patients suffering from acute lobar pneumonia, from broken compensation, especially with edema, and from nephritis. Patients suffering from diabetes mellitus are also being treated, but at present no additional ones can be admitted. Physicians having patients who desire to enter the hospital and are suitable for treatment should communicate with the Resident Physician, either personally or by telephone (Plaza 6800).

Radium Hospital.—The New York Radium Sanatorium on West Seventieth Street, New York, was formally opened to the public on December 1. The sanitarium has at present accommodations for about eighteen persons and can care also for a large number of dispensary patients. About 300 milligrams of radium are already in the possession of the institution, and a considerable quantity in addition has been contracted for. The surgical staff consists of Dr. Cornelius G. Coakley, Dr. John A. Fordyce, Dr. Charles H. May, Dr. George D. Stewart, Dr. Winfield S. Ayres, Dr. Henry C. Coe, Dr. Anthony Bassler, Dr. Eugene C. Savidge, Dr. William C. Lusk, and Dr. Joseph B. Bissell, who is to be the director. The pathologist is Dr. Charles Norris; the dermatologist, Dr. Howard Fox. The director of the medical staff is Dr. Samuel A. Brown; the names of the other members of the medical staff have not yet been announced.

Home for Incurables.—The cornerstone of the

home of the House of the Holy Comforters, New York, a free home for incurables, was laid on December 3. The new building is at the corner of 196th Street and the Grand Concourse, a site which was selected when it was found that the home was outgrowing its present quarters at Riverside Drive and 139th Street. This is the second time that the home has had to move because of rapid increase in the number of applicants.

Personals.—Dr. DAVID BOVAIRD has resumed practice in New York after an extended tour of Siam, the Philippines, China, Korea, and Japan.

Dr. E. V. MORROW of Portland, Me., has been made director and chief surgeon of the Belgian units of the American Red Cross. He will have charge of all the Red Cross relief work in Belgium.

Dr. W. T. GRAHAM, superintendent of the Iowa Methodist Hospital, Des Moines, has been appointed superintendent of the University Hospital, Iowa City, Iowa.

Dr. HENRY H. DOAN has been made Chief of the Division of Child Hygiene of the Bureau of Health of Philadelphia.

Drs. WILLIAM MITTENDORF, SR., and ALFRED D. MITTENDORF have removed to 399 Park Avenue, corner Fifty-fourth Street.

Dr. OTTO T. FREER of Chicago was the guest of honor at a dinner given by Dr. Wolff Freudenthal at his residence in this city on Monday, December 6. At the invitation of the German Medical Society, Dr. Freer made an address on "Opening the Frontal Sinus through the Nose."

Police Census.—The population of New York City, according to the Police Census taken this year, is 5,253,885, which shows a gain of 244,773 over the figure recently given by the State. The population by boroughs is as follows: Manhattan, 2,295,761; Brooklyn, 1,825,534; Bronx, 37,233; Queens, 389,233; Richmond, 93,631.

New Jersey State Census.—The State Census of New Jersey, recently made public, shows that there are now in the State 2,844,342 persons, an increase of 700,208 over 1905, when the last census was taken. There are 734,052 persons of foreign birth, 95,281 negroes; 1,428,189 males; 1,416,183 females; and 1,167,340 married persons. The Irish in the State have decreased from 136,061 in 1905 to 75,444 this year; and the Germans from 119,051 in 1905 to 115,711; while the English have increased from 47,404 in 1905 to 55,357, and the Italians from 75,786 to 144,848.

Losses on Hospital Ship.—The complete statement of the casualties attending the sinking of the British Hospital ship *Anglia* in the English Channel on November 17, shows that four officers, one nurse, and 129 wounded soldiers were lost.

Schechter Memorial.—As a permanent memorial to the work of Dr. Solomon Schechter, the noted Hebrew scholar and head of the Jewish Theological Seminary, New York, who died on November 20, the Federation of Roumanian Jews will dedicate its new Jewish Home for Convalescents at Grandview, Rockland County, N. Y., on April 1. The home will be known as the Prof. Solomon Schechter Memorial. The home was established several months ago at a cost of $200,000, and will accommodate 200 patients.

Street Accidents.—During the month of November, 40 persons were killed by vehicles on the streets of Greater New York, says the report of the National Highways Protective Society. Of these, 29, of whom 14 were children, were killed by motor cars, 5 children and 1 adult by trolleys, and 4 children and 1 adult by wagons. The Police Commissioner recently had tabulated the reports of street accidents in New York from January 1 to November 30, of this year, the total being 567 killed and 20,003 persons injured by vehicles. Of the 567 fatal accidents, 160 were due to automobiles, 89 to motor trucks, 67 to street cars, 88 to horse drawn vehicles, 46 to falls from vehicles, 36 to collisions, and 81 to miscellaneous causes.

Railroad Accidents in Pennsylvania.—Of the millions who rode on passenger trains in the State of Pennsylvania during the year 1914-15 covered by the last report of the Bureau of Accidents, only 2 were killed. During the same period there occurred 11,639 accidents on steam and street railways, resulting in injury to 11,802 persons and in the death of 1,162. Of 999 persons who were killed on steam railways, 609 were trespassers, and 105 were struck at grade crossings. On the street railways 13 passengers were killed, of whom 10 lost their lives by jumping from moving cars.

American Society for the Study of Alcohol and Other Narcotics.—The 45th annual meeting of this society will be held at the Hotel Raleigh, Washington, D. C., on December 15 and 16, 1915. Programmes may be obtained by addressing the secretary, Dr. T. D. Crothers, Hartford, Conn.

New York Geriatric Society.—The first meeting of this society will be held on Wednesday, December 15, 1915, 8.30 P.M., at Sherman Square Hotel, Broadway and 71st street, New York. Subject for discussion: "The Neglect of the Aged." Speakers: Drs. Hermann M. Biggs, Edward T. Devine, Eugene L. Fisk, Thos. E. Satterthwaite, L. F. Bishop.

Medical Society Elections.—NEW YORK ACADEMY OF MEDICINE. At the annual election, held on Thursday of last week, the following officers were elected: *Vice-President*, George David Stewart; *Recording Secretary*, Frederick Theodore Van Buren, Jr.; *Trustee for Five Years*, Nathan E. Brill; *Trustee for Two Years*, L. Emmett Holt; *Committee on Admission*, Walter Lindsay Niles; *Committee on Library*, Arthur B. Duel.

SECOND DISTRICT BRANCH OF THE MEDICAL SOCIETY OF THE STATE OF NEW YORK. Through a change in the by-laws of this society the office of second vice-president was recently created, and Dr. Frederick C. Holden, Brooklyn, was elected to fill it. The officers of the society for the ensuing year are: *President*, Dr. James S. Cooley, Mineola; *1st Vice-President*, Dr. A. H. Terry, Patchogue; *2d Vice-President*, Dr. Holden; *Secretary-Treasurer*, Dr. Charles Eastmond, Brooklyn.

Mental Clinics in Brooklyn.—The Department of Health of New York calls attention to the fact that there are conducted in Brooklyn two clinics where persons suffering from mental diseases may receive free advice and treatment. Both of the clinics are under the direction of the superintendent of the Long Island State Hospital; one is located in the out-patient department of the Polhemus Memorial Clinic of the Long Island College Hospital, and the other is in the Long Island State Hospital. The first is held every Friday afternoon at 2 o'clock, and the second on Saturdays from 10 a. m. to 3 p. m.

Home for Nurses.—Shevlin Hall, the new home for the nurses of Saint Mary's Hospital, Brooklyn, was dedicated by Bishop McDonnell on November 28. The building was erected at a cost of $50,000 as a memorial to the late Mrs. James Shevlin. Accommodations are provided for seventy nurses.

County Tuberculosis Hospital.—The Board of

Supervisors of Jefferson County, New York, has appropriated the $25,000 voted by the people of the county on November 2 for the establishment of a tuberculosis hospital. This sum is in addition to one of $15,000 previously appropriated by the Board. The site for the hospital has been selected and construction will begin shortly.

Navy Medical Corps.—The next examination for appointment in the Medical Corps of the Navy will be held at the various naval stations on or about February 23, 1916. Applicants for appointment must be citizens of the United States and must present satisfactory evidence of preliminary education and medical education. The first stage of the examination is for appointment as assistant surgeon in the Medical Reserve Corps; the successful candidate then attends the course of instruction at the Naval Medical School, beginning about October 1, 1916, and during his attendance receives a salary of $2,000 per annum. On the successful completion of the course he is commissioned an assistant surgeon in the Navy. Full information with regard to physical and mental examinations may be obtained by addressing the Surgeon General of the Navy, Navy Department, Washington, D. C.

New York State Medical Library.—Four years ago the New York State Library at Albany was wiped out by fire, including the medical portion. So quickly was the work of restoration undertaken, however, that to-day the Medical Section contains 19,600 bound volumes, several hundred more than it contained in 1911, several thousand pamphlets and reprints, and much unbound material. About 500 current periodicals are now received, and more than 200 of these are complete from the beginning. The library is prepared to loan these books to licensed physicians, full-time instructors or the faculty of any medical college, members of the house staff of any hospital, registered and certified nurses, and those engaged in pathological research, who offer suitable references. The books are sent by mail and the only expense to the borrower is the payment of return postage. Physicians coming from a distance to consult the library may have books, etc., reserved for them by notifying the librarian in advance. All requests should be addressed to the Medical Librarian, State Library, Education Building, Albany, N. Y. The library solicits gifts of books, periodicals and reprints, and points out particularly that even single volumes or odd numbers of periodicals of little worth to the owner may be of value in completing valuable sets.

School Certificates.—The Bulletin of the Department of Health calls attention to the fact that children and teachers in the public schools who have been out of school because of illness from or exposure to diphtheria or scarlet fever, will be readmitted to the schools only on permits issued by the Department. In cases of measles a certificate from a private physician is sufficient to obtain readmittance.

City Death Rate.—During the week ending November 27, the number of deaths in New York City was 1,318, giving a death rate of 11.84 per thousand of population; while for the corresponding week of last year the deaths numbered 1,389, giving a death rate of 12.98. There was thus an absolute decrease of 71 deaths. The week was one of the healthiest in the history of the city, according to the Department of Health, especially as regards the infectious diseases. Only one death was reported from scarlet fever, three from measles, and eighteen from diphtheria and croup, these figures being much lower than those of any corresponding week. There were 67 deaths from bronchopneumonia, as compared with 94 during the same week of 1914. The death rate for the first forty-eight weeks of 1915 was 13.54 per thousand, as against a rate of 13.71 for the same period of 1914.

Deaths in Chicago.—During the week ending November 27, there were reported in Chicago a total of 601 deaths, which was 55 more than for the previous week of this year, and 57 less than during the same week of 1914, the respective rates per thousand being 12.8, 11.6, and 14.3. Tuberculosis caused 80 deaths, pneumonia, 66, infantile diarrhea, 43, and diphtheria, 16.

Obituary Notes.—Dr. JONAS MULLER of Brooklyn, a graduate of the University and Bellevue Hospital Medical College, New York, in 1913, and physician to the Bedford Hospital and Dispensary, died at his home on December 2, aged 25 years.

Dr. PERRY JAFFA of Trinidad, Col., a graduate of the Gross Medical College, Denver, in 1900, a member of the American Medical Association, and the Colorado State and Las Animas County Medical Societies, and County Physician of Las Animas, died at Denver, after a short illness, on November 2, aged 45 years.

Dr. CLAYTON RANSOM of Mill City, a graduate of the Willamette University Medical Department, Salem, Ore., in 1903, and a member of the American Medical Association, the Oregon State Medical Association, and the Polk-Yamhill-Marion Counties Medical Society, was accidentally shot and killed while hunting near Wilson, Wyo., on September 17.

Dr. GEORGE RICHARD KUHN of Brooklyn, N. Y., a graduate of the Long Island College Hospital, Brooklyn, in 1872, a member of the New York State and Kings County Medical Societies and the Brooklyn Pathological Society, and visiting physician to St. Mary's Hospital, Brooklyn, died at his home, from paralysis, on November 5, aged 68 years.

Dr. MAJOR ALBERT VEEDER of Lyons, N. Y., a graduate of the University of Buffalo Medical Department, Buffalo, N. Y., in 1883, and a member of the New York State and Wayne County Medical Societies, of which latter he was secretary, and the Rochester Academy of Medicine, died at his home on November 16, aged 67 years.

Dr. FRANCIS L. GALT, surgeon on the Confederate cruiser Alabama during the Civil War, and a member of the party which first explored the head waters of the Amazon, and a graduate of the University of Pennsylvania, Department of Medicine, Philadelphia, in 1854, died at his home in Upperville, Va., November 17, aged 83 years.

Dr. NEHEMIAH DAVIS of Camden, N. J., a graduate of the Philadelphia College of Pharmacy in 1878, and of the Jefferson Medical College, Philadelphia, 1886, died at his home on November 11, aged 60 years.

Dr. KATHERINE KOLLOCK of Philadelphia, a graduate of the Woman's Medical College of Pennsylvania, Philadelphia, in 1887, and a member of the American Medical Association, the Medical Society of the State of Pennsylvania, and the Philadelphia County Medical Society, died at her home on November 17, aged 70 years.

Dr. JOHN HENRY DE WITT of Philadelphia, Pa., a graduate of the Jefferson Medical College, Philadelphia, in 1880, died at his home on November 15, aged 60 years.

Dr. AUGUSTUS W. DUVALL of Philadelphia, a

graduate of the Jefferson Medical College, Philadelphia, in 1877, died at his home from uremia, on November 11.

Dr. JOHN A. REESE of Philadelphia, a graduate of the Medico-Chirurgical College of Philadelphia in 1883, died on November 11, as the result of injuries received when he was struck by a motor car a few days before.

Dr. ROBERT DAVIS WEBB of Philadelphia, a graduate of the Medico-Chirurgical College of Philadelphia in 1893, died at his home on November 13, aged 44 years.

Dr. GEORGE M. BURDETTE of Lenoir City, Tenn., a graduate of the University of Georgia, College of Medicine, Augusta, in 1896, a veteran of the Civil War, having served throughout in the Confederate army, and a member of the American Medical Association, the Tennessee State Medical Association, and the London County Medical Society, died at his home from apoplexy, on November 5, aged 78 years.

Dr. WILLIAM MCKAY of Reserve Mines, N. S., a graduate of the Bellevue Hospital Medical College, New York, in 1873, and a member of the Canadian Senate since 1913, died at his home, after a short illness, on November 9, aged 68 years.

Dr. VALENTINE BROWNE of Yonkers, N. Y., a graduate of the New York University Medical College, New York, in 1875, formerly health officer and school trustee of Yonkers, consulting physician to St. Joseph's Hospital, and a member of the American Medical Association, and the New York State and Westchester County Medical Societies, died at his home, from angina pectoris, after a short illness, on November 19, aged 83 years.

Dr. CHARLES GRANVILLE STONE of Washington, D. C., a graduate of the University of Maryland, School of Medicine, Baltimore, in 1872, and a member of the American Medical Association and the Medical Society of the District of Columbia, died at his home, after a long illness, on November 11, aged 69 years.

Dr. JOHN F. RICHARDS of San Francisco, Cal., a graduate of the College of Physicians and Surgeons, San Francisco, in 1907, was accidentally shot while quail shooting on November 7, and died shortly after, aged 40 years.

Dr. GREGORY PAUL of New York, a graduate of the New York University Medical College in 1888, and formerly professor of medicine in the University of Aintah, Turkey, died in the Post-Graduate Hospital, New York, on November 23, aged 57 years.

Dr. JOHN P. DUNNIGAN of Washington, D. C., a graduate of the Georgetown University School of Medicine, Washington, in 1901, obstetrician to the Providence Hospital, and a member of the Medical Society of the District of Columbia, died in the Providence Hospital, after a long illness, on November 11, aged 41 years.

Dr. WILLIAM VIRGIL NEWSOM of Ocala, Fla., a graduate of the College of Physicians and Surgeons, Baltimore, in 1887, a member of the American Medical Association, the Florida Medical Association, and the Marion County Medical Society, and a former president of the last, died at his home after a long illness, on November 11, aged 57 years.

Dr. HORACE B. HEYSHAM of Norristown, Pa., a graduate of the Jefferson Medical College, Philadelphia in 1900, and formerly resident physician in the Charity Hospital Norristown died at his home on November 15 aged 42 years.

Dr. EDWIN FORREST PHILIPS of Tower City, Pa., a graduate of the Jefferson Medical College, Philadelphia in 1871, died at his home from pneumonia, on November 17, aged 67 years.

Dr. ROBERT H. MITCHELL of Memphis, Tenn., a graduate of the University of Pennsylvania, Department of Medicine, Philadelphia, in 1897, and a member of the American Medical Association, the Tennessee State Medical Association, and the Shelby County Medical Society, died at his home after a brief illness, on November 14, aged 41 years.

Dr. GEORGE EDWIN PINKHAM of Lowell, Mass., a graduate of the Dartmouth Medical School, Hanover, N. H., in 1863, a veteran of the Civil War, city physician of Lowell from 1866 to 1868, and a member of the Massachusetts Medical Society and the Middlesex North District Medical Society, of which he was president for two years, died at his home after a long illness, on November 15, aged 75 years.

Dr. GEORGE REULING of Baltimore, Md., a graduate of the University of Giessen, Germany, in 1866, emeritus professor of diseases of the eye and ear in the Baltimore Medical College, formerly surgeon-in-chief of the Maryland Eye and Ear Infirmary, and a member of the American Laryngological, Otological, and Rhinological Society, died at his home on November 25, aged 76 years.

Dr. JOHN PATRICK STANTON of Scranton, Pa., a graduate of the University and Bellevue Hospital Medical College, New York, in 1899, was instantly killed in an automobile accident on November 25.

Dr. JOHN HOCKENHULL of Cumming, Ga., a graduate of the University of Georgia, College of Medicine, Augusta, in 1855, died at his home on November 13, aged 83 years.

Dr. NATHANIEL RITTER died at Allentown, Pa., on November 21 as the result of an automobile accident at the age of 76 years. He was graduated from Jefferson Medical College in the class of 1861.

Dr. JOHN C. HUTTON died at Harrisburg, Pa., on November 21 at the age of 70 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1867.

Dr. FREDERIC W. MESSERVE died at Berlin, N. J., on November 22 at the age of 55 years. He was graduated from Hahnemann Medical College and Hospital of Philadelphia in the class of 1885. He was at one time resident physician in Hahnemann Hospital, and later professor of ophthalmology in Hahnemann Medical College, and ophthalmologist to the New Jersey Homeopathic Hospital in Camden and to the Children's Homeopathic Hospital in Philadelphia.

Dr. HENRY HARRISON RIEGEL died at Catasaqua, Pa., on November 25, at the age of 79 years. He was graduated from Jefferson Medical College in the class of 1857. He was at one time Pension Examiner, School Director, Burgess, and President of the Lehigh County Medical Society, as well as a member of the Medical Society of the State of Pennsylvania and a Fellow of the American Medical Association.

Dr. JOHN C. WEBSTER of Chicago, a graduate of the Harvard University Medical School, Boston, in 1867, and a member of the Illinois State Medical Society, and the Cook County Medical Society, died at his home on November 15, aged 72 years.

Dr. GEORGE HENRY WILKINS of Newtonville, Mass., a graduate of the New York Homeopathic Medical College and Hospital, New York, in 1883, died in the Woodside Cottage Sanitarium, Framingham, Mass., after a long illness, on November 17, aged 59 years.

Dr. FREDERICK WILLIAM RUSSELL, formerly of

Winchenden, Mass., a graduate of the New York University Medical College in 1871, a hospital steward during the Civil War, a former member of the Massachusetts and Worcester District Medical Societies, and an honorary member of the Dallas Medical and Surgical Association, died at the home of his son-in-law in Dallas, Texas, after a long illness, on November 20, aged 71 years.

Dr. FRANK JOSEPH SYKORA of Brainerd, Minn., a graduate of the Chicago College of Medicine and Surgery in 1909, and a member of the American Medical Association, the Minnesota State Medical Association, and the Upper Mississippi Medical Society, died in St. Joseph's Hospital, St. Paul, after a long illness, on November 17, aged 38 years.

Dr. WILLIAM HENRY MORSE of New York, a graduate of the Bellevue Hospital Medical College, New York, in 1871, and a member of the Greater New York Medical Association, died at his home from cerebral hemorrhage, on November 26, aged 65 years.

Dr. GEORGE WASHINGTON WELTY of Brooklyn, a graduate of the Bellevue Hospital Medical College, New York, in 1870, a director of St. Vincent's Home for Friendless Boys, and a member of the New York State and Kings County Medical Societies, died at his home, from heart disease, on December 1, aged 70 years.

Dr. PATRICK HENRY BUMSTER of Long Island City, a graduate of the New York University Medical College, New York, in 1893, a member of the New York State and Queens-Nassau Counties Medical Societies, and the Greater New York Medical Association, and visiting surgeon to St. John's Long Island City Hospital, died at his home on December 1, aged 56 years.

Dr. LEWIS LANZER of Brooklyn, a graduate of the University of Tennessee, Medical Department, Memphis, in 1896, and a member of the National Eclectic Society, the Associated Physicians of Long Island, the Brooklyn Medical Society, and the German Medical Society, died at his home on December 3, aged 50 years.

Dr. EUGENE J. GALLAGHER of Yonkers, N. Y., a graduate of the Albany Medical College, Albany, N. Y., in 1892, and a member of the New York State and Westchester County Medical Societies, died at the Polyclinic Hospital, New York, from renal disease, on December 3, aged 46 years.

Dr. WILLIAM JOHN ROE of Philadelphia, a graduate of the Jefferson Medical College, Philadelphia, in 1895, attending otologist to the Philadelphia General Hospital, and a member of the Medical Society of the State of Pennsylvania, the Philadelphia County Medical Society, the Philadelphia Pediatric Society, and the Philadelphia Pathological Society, died in St. Mary's Hospital, Rochester, Minn., following an operation for tuberculosis of the Kidney, on November 28, aged 46 years.

Dr. NATHANIEL A. GRAY of Milwaukee, Wis., a graduate of the New York Homeopathic Medical College and Hospital, New York, in 1867, and a member of the State Medical Society of Wisconsin and the Milwaukee-Ozaukee Counties Medical Society, died at his home on November 25, aged 75 years.

Dr. JOHN LANG BRAY of Toronto, Ont., a graduate of the Medical Faculty of Queen's University, Kingston, Ont., in 1863, and from 1897 to 1914 registrar of the College of Physicians and Surgeons of Ontario, died at his home on November 24, aged 74 years.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

ROYAL SOCIETY OF MEDICINE—PARATYPHOID FEVER.

LONDON, Nov. 20, 1915.

AMID the always accumulating literature concerned with typhoidal diseases a number of experiments and observations have recently occupied our attention. The most important perhaps, certainly the most interesting, relate to paratyphoid fever; but this is not to be regarded as a mere variety of typhoid, for although it resembles that fever in its course and other features, a distinction has been established between the two diseases both clinically and pathologically. Paratyphoid is due to two distinct bacilli, which closely resemble the *B. typhosus* both as to their form and general characteristics, but they differ so much that they are considered specific microorganisms. Accordingly, we distinguish the cases and speak of them as "para A" and "para B." The former prevails in India, where it has been accurately described and its organism investigated by officers of the Royal Army Medical Corps. Its incidence is greater than generally supposed; it is transmitted by carriers, so that early diagnosis and isolation are important. Food poisoning is liable to be confused with it, and other mistakes in diagnosis may arise from neglect of or incomplete laboratory examinations.

Two officers of the Royal Army Medical Corps, Captain Torrens and Lieutenant Whittington, have contributed to the *British Medical Journal* what they call a preliminary note on the clinical aspects and diagnosis of the disease, a paper sufficiently full and interesting to excite anticipation of their further report. The B variety is well known here, though for a long time cases were not separated from simple typhoid, the milder cases of which are frequently diagnosed as para, and vice versa. The differentiation between them is of less importance practically than to mistake the fever for lesions of less consequence. The army medical officers mentioned above say that most of their patients either came from India or had been closely associated with troops of Indian divisions, though some had been Territorials or men of new batallions who had been attached to units from India, and this indicates that para A has been brought westward by our troops as carriers. It is admitted that paratyphoid fever may be so mild and atypical that its presence can only be esablished by thorough bacteriological examination though these same slight indications may justify treatment of suspects until a negative is proved, which can usually be done at the earliest stage. On the other hand, we may meet with such severe cases as closely resemble the gravest typhoid. It is the mild cases that are chiefly considered in the paper before us, and they are the most likely to be confused with influenza, "trench fever," and other diseases. Typical para B lasts from ten to eighteen days, para A three or four days longer, though the symptoms in this latter are usually milder. The common assumption that a case cannot belong to the enteric group unless it presents some "typhoid" appearance or abdominal disturbance is controverted in this paper: so is the very gradual onset of the text-books, the majority of patients not considering themselves ill until they report sick, though if pressed they may admit having been out of sorts a day or so before.

Some 60 per cent. feel ill three or four days, but 40 per cent. collapse in the course of their ordinary duties. A man gets headache, slight abdominal pain, with a couple of days' diarrhea, but does nothing, expecting it to pass away. The diarrhea does, but aching pains in back and head increase till the fourth day, when he succumbs. Such is typical of the group of 60 per cent. cases. In the other group (40 per cent.) a man may go to sleep feeling well and wake up with pain, feverishness, etc., rapidly increasing. The authors of the paper give the result of an analysis of 100 cases of para B and 50 cases of para A, from which it appears that eight symptoms occur in at least 20 per cent. at the outset; these are in the order of frequency: Headache (85 per cent.); diarrhea (55 per cent.); abdominal pain (35 per cent.); aching pains in the limbs (30 per cent.); shivering (25 per cent.); extreme general weakness (25 per cent.); backache (25 per cent.); epistaxis (20 per cent.). Summarizing these we may say that in a doubtful case the most important features to look for would be: An onset of about four days with malaise, pains in head, back and limbs, tendency to shiver, abdominal discomfort with a short period of looseness of bowels, soft pulse, which is remarkably slow in relation to the temperature, enlarged spleen (not necessarily palpable), fever lasting for a week to a fortnight. When a case can be seen from the beginning and a temperature chart kept it is easy enough at the end to say it has been typhoid or paratyphoid, but how seldom it is that we can so watch the patient. Probably by the tenth or twelfth day spots or other indications may come to our aid, but this may not be so, and we then only have the history to guide us. In a typical case a patient will say he has been out of sorts three or four days, and questions bring out that he has had shiverings more or less distinct, relaxed bowels, but only slight, there is some dullness and lethargy, tongue furred but red at edges or tip, abdomen tumid, perhaps slightly tender, as, too, the spleen; later constipation may develop, making enema appropriate. Temperature 101° to 102° at night, with morning remission of 2° or more. Small pulse, 70 to 80, very comprehensible. Such a case should be treated as paratyphoid, as it most likely will prove to be. All the complications seen in typhoid may be met with in paratyphoid. Two definite tendencies deserve attention: (1) toward involvement of the large bowel; (2) liability to pus formation. The former is accountable for perforations which may occur; the latter is seen in such complications as suppurative orchitis, abscess in spleen, liver, lung, etc. The death rate of paratyphoid is very low compared with that due to *B. typhosus;* para A under 1 per cent., and para B a little over 4 per cent.

A discussion on paratyphoid was begun at the Royal Society of Medicine on the 9th inst., and has been adjourned. It was opened by Dr. B. Dawson with a tribute to the excellence of the arrangements at the Stationary Hospital 14, which make it possible to pursue a research to the very end of every case, not merely establish a diagnosis by finding the organisms, but also—a much more serious matter—to make sure of its absence in other cases. A brilliant feature of this war, he held, was the small number of enteric cases, including in this term all infections by *B. typhosus* and by A and B paratyphoid. The existence of the disease at all was due to carriers (man or insect), for there had been no epidemic and no infection of food supply. This result, next to inoculation and good sanitation, he attributed to abundant good food and the consequent excellent nutrition of the troops. Professor Dreyer than gave an account of the work which had proved that the paratyphoid is a distinct clinical entity, and Colonel Sir Wilmot Herringham related his experience of trench fever, which is not really characteristic of the trenches, but seen in the combatant and medical units. He did not think it conveyed by lice, but rather by some other insect.

Progress of Medical Science.

New York Medical Journal.

November 27, 1915.

1. A Sanitary Study of Condensed Milk. William H. Park, M. C. Schroeder, and Paul Bartholow.
2. Climatic Inducements for the Overmature and Early Senescent. J. Madison Taylor.
3. Modern Infant Feeding. George Dow Scott.
4. Enlargement of the Thymus. Jacob Grossman.
5. Atrophic Rhinitis. William Ferguson.
6. Hematuria in Renal Neoplasm. Charles Denaclara.
7. The Nonsurgical Treatment of Exophthalmic Goiter Israel Bram.
8. Chronic Constipation in Infants. J. Epstein.

1. **Condensed Milk.**—William H. Park, M. C. Schroeder, and Paul Bartholow present a study of the bacteriological content and chemical analysis of the different varieties of condensed milk now on the market from which they conclude: (1) That the minimum standard for milk suitable for condensed milk should be definitely enforced. (2) That the present method of making condensed milk offers a wide latitude in preparation, and must of necessity offer a wide difference in the finished product. (3) That a considerable portion of the condensed milk has a high bacterial count because of growth of bacteria left alive by the heating process or added through contamination after it leaves the holder or vacuum pan. (4) That steps be taken to make standards which shall cover the following points: (*a*) Quality of milk to be used for condensing purposes as shown by bacterial and chemical tests. (*b*) The process of manufacturing condensed milk, including sanitary conditions. (*c*) The prevention of bacterial infection of the milk after it has been condensed. (*d*) Requirements, both chemical and bacteriological, of the finished product as offered to the consumer. (*e*) Statements on label of can which shall show the approximate percentage composition. Dr. Bartholow presents the clinical study from which he finds that the value of sweetened condensed milk depends upon the care and cleanliness used in manufacture, and that there is a want of evidence that the bacteria or chemical constituents are capable of affecting the health. However, the use of only the best quality of sweetened condensed milk is to be recommended for infant feeding. He also states that sweetened condensed milk has a place in infant feeding and gives his reasons for this statement.

5. **Atrophic Rhinitis.**—William Ferguson makes a plea in this paper for the performance of submucous resection in selected cases of atrophic rhinitis. He states that he has obtained most marked improvement, if not cure, in these cases by operative procedures, and that the results are sufficient to recommend such procedures even though the pathologist has not elucidated a scientific basis for operation in this condition.

6. **Hematuria in Renal Neoplasm.**—Charles Denaclara presents a statistical study based on 409 case reports of tumors of the kidney from which he concludes that hematuria occurs frequently in renal neoplasms, both in children and adults, and is more frequent in malignant than in non-malignant growths. In

the majority of cases of renal neoplasm blood is present in the urine during the entire duration of the process. An early hematuria should cause suspicion that the case is very probably one of neoplasm of the kidney of malignant type.

7. **Nonsurgical Treatment of Exophthalmic Goiter.**—Israel Bram relates his experience with 24 cases of exophthalmic goiter which convinces him that exophthalmic goiter diagnosed early is amenable to proper nonsurgical treatment in at least 75 per cent. of all cases. The only conditions, in his opinion, justifying surgical operations are dangerous pressure symptoms and evidences of malignant changes in the goiter. He finds that all cases do not respond to the same treatment, though some measures are applicable in all cases. The most important drugs in the treatment of this condition are quinine hydrobromide, suprarenal gland, iron, arsenic, phosphorus, preferably in the form of lecithin, and ichthyol. Rest, hyperalimentation, and electricity are essential adjuvants to a successful outcome. He states that a large majority of his patients are well on the way to recovery after six months' conscientious treatment as he has outlined it.

Journal of the American Medical Association.

November 27, 1915.

1. Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis. Results Obtained by Twenty-four American Observers. Theodore B. Sachs.
2. Lesions of the Limbosacro-Iliac Region. A Study in the Various Types. Harry Leslie Langnecker.
3. Lymphoid Marrow and Tuberculosis. An Experimental Study. Leonard W. Ely.
4. Review of Recent Studies in Trichiniasis. W. W. Herrick.
5. Report of Cases Pointing to Purulent Infection as a Causative Factor in Mucous Colitis. J. W. Preston.
6. The Effect of Typhoid Vaccination on the Widal Reaction. C. D. Hamilton.
7. Radium in the Treatment of Carcinomas of the Cervix Uteri and Vagina. Howard A. Kelly and Curtis F. Burnham.
8. The Action of Radium on Cancers of the Pelvic Organs. A Clinical and Histologic Study. Henry Schmitz.
9. The Roentgen Ray Treatment of Skin Diseases. George M. MacKee.
10. Radiant Energy in the Treatment of Diseases of the Skin. Everett S. Lain.
11. Modern Treatment of Fractures of the Long Bones from the Orthopedic Point of View, with Clinical Observations and Conclusions. J. W. Cokenower.
12. Painful Feet. Causes and Treatment. Henry W. Frauenthal.
13. The Stability of the Infusion of Digitalis. Robert A. Hatcher and Cary Eggleston.
14. The Use of Mercury Salicylate in Syphilis. A Record of Its Influence on the Wasserman Reaction in Fifty Cases. Kent Nelson and E. A. Anderson.
15. Cause and Prevention of Constitutional Symptoms Following Deep Roentgen Therapy. Sidney Lange.
16. Pyorrhea Due to Organisms Other than the Amebas. George Howard Hoxie.
17. The Treatment of Cerebrospinal Syphilis; the Ogilvie Technic. Ford Eastman.
18. Some Clinical Manifestations of Focal Infections. Sverre Oftedal.
19. Hematemesis Following Apparent Acute Indigestion. Report of a Case Occurring in an Infant. George V. Duffy.

1. **Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis.**—Theodore B. Sachs reports the results obtained by twenty-four American observers and concludes that experience with artificial pneumothorax in the treatment of pulmonary tuberculosis is gradually modifying the sphere of its application. The trend is toward its use, regardless of the stage, in all progressive cases which fail, after sufficient trial, to respond to strict sanatorium regimen. Complications incident to the employment of this method, the great importance of continuous strict observation, and thorough clinical, laboratory, and Roentgen study of each individual case, the rest periods after each reinflation, the inability of outlining in advance the time of reinflations, in short, the close dependence of each successive step in pneumothorax therapy on the varying condition of the patient, are all factors which call, in the interest of safety and best results, for hospital or sanatorium supervision of each individual case in which the treatment is being applied. The present tendency, grown out of experience, is toward greater conservatism in the selection of cases. Through improvement of various details of technique and greater conservatism of action, pneumothorax therapy is gradually finding its definite place in the treatment of pulmonary tuberculosis which does not yield to other methods.

2. **Lesions of the Lumbosacroiliac Region.**—Harry Leslie Langnecker states that differentiation of the various types of these lesions is not difficult if one bears in mind the fact that in the traumatic group, injury with the sudden onset of symptoms is most important; in the static group, the defective posture with marked relaxation of the joints is present; and in the toxic group, the history of an inflammatory process with the tendency to fixation of the joints is found.

3. **Lymphoid Marrow and Tuberculosis.**—Leonard W. Ely presents an experimental study and states that in a paper read before the Section on Orthopedic Surgery, American Medical Association, San Francisco, John Fraser made the statement that red marrow was immune or practically immune to tuberculosis. This question is of great importance and they have been conducting a series of experiments in the laboratories of the Stanford School of Medicine to test the accuracy of Fraser's conclusions. He sums up the evidence to date as follows: (1) Tuberculosis is found only in those bones or regions of bones where lymphoid marrow is present. (2) Marrow tuberculosis is more common in children whose bones contain more red marrow. As age advances, marrow tuberculosis becomes rarer and less destructive. (3) After resections in adults, if secondary infection be avoided, the disease disappears. (4) Experiments show that lymphoid marrow is an excellent field for the growth of tuberculosis.

7. **Radium in the Treatment of Carcinoma of the Cervix Uteri and Vagina.**—Howard A. Kelly and Curtis F. Burnam base this report on a series of 213 cases of cancer of the uterine cervix and vagina treated with radium at the Howard A. Kelly Hospital between January, 1909, and January 1, 1915. Of these cases 14 were operable and 199 inoperable. Of the operable cases, 10 were operated upon and treated prophylactically with radium. Of these, 2 have been well for more than three years, 1 for more than two years, 4 for more than a year, and 3 for more than six months. These figures are quite suggestive when one considers that in 75 per cent. of all cases with operation there is recurrence and that 60 per cent. of these recurrences take place within one year following the operation. The total number of inoperable and inoperable recurrent cases is 199, of which 53 patients have been clinically cured, 109 markedly improved, and 37 not improved. Their series includes 35 cases of originally inoperable cancer of the cervix uteri or vagina in which the patients were clinically cured—in 2 cases for over four years; in 2 cases for over three years; in 4 cases for over two years; in 17 cases for over one year; in 10 cases for over six months. Excluding the operable cases, in which they had both operated and used radium, there were 203 cases left; in 57 of these the patients were clinically cured. One had lasted for six years; 3 for over four years; 4 for over three years; 5 for over two years; 29 for over one year, and 15 for six months. The authors feel convinced that radium is of exceedingly great value in the treatment of cancers of the cervix uteri and vagina. They believe that every inoperable cancer of the cervix uteri or vagina, provided general metastasis is not evident, stands a chance of at least one in four of cure by the radium treatment; and that this ratio in operable cases may be raised to three to four or better.

8. **The Action of Radium on Cancers of the Pelvic**

Organs.—Henry Schmitz reports that since April, 1914, he has treated 112 cases of malignant growths of various regions of the body with radium. Forty-eight of these were pelvic tumors and 41 are considered in this paper. Twenty-four of these cancers were inoperable, 9 recurrent, and 8 operable. He found that inoperable cancers that were not far advanced so that cauterization was not contraindicated, yielded satisfactorily to radium therapy and that advanced inoperable and recurrent cancers were ordinarily refractory toward the radium rays. Any improvement noted was at least very temporary. The patients treated with the rays after surgical removal of the organs did well, although in these cases the time which has elapsed since the treatment averages only eight months. The writer believes that patients suffering from cancer should be treated surgically and then radiologically, and that if surgery is contraindicated they should receive radium treatment, which at least relieves the subjective symptoms and often the objective ones. While the clinical and histological studies show that radium rays are a valuable addition to the therapy of cancer, it will require years of constant observation to demonstrate such results as anatomical cures.

10. Radiant Energy.—Everett S. Lain attempts a classification of skin diseases with reference to their histopathology and etiology which he believes will enable one to study the methods of treatment by radiant energy more intelligently. Under the first division he places diseases whose etiology is yet unknown though they are supposed to have their origin in some toxic product, such as dermatitis herpetiformis, the different varieties of erythemas, the lichens, psoriasis, etc. Under the second division he places those diseases which appear to be an inexplicable derangement of the superficial glands, or nerves, or of metabolism within cells, such as hyperhydrosis, pompholyx, pruritus, prurigo, herpes zoster, etc. In the third class are placed those diseases which are superficial in origin, such as staphylococcic and streptococcic infections. In the fourth class are all those diseases characterized by an increased development of pathological cells, whether of a benign or a malignant nature. In the first and second classes radiotherapy locally applied may give some temporary relief and may be recommended only as an aid to dermatological therapy. In that class of skin diseases chiefly local in origin radiotherapy has proved more satisfactory than any other mode of treatment. In the fourth class of cases the author has had very uncertain results in the treatment of different kinds of sarcomas. On the other hand, the treatment of superficial epitheliomas before the stage of metastasis has been very satisfactory, giving in a series of 162 cases 91 per cent. of apparent cures in that the patients are still alive and show no signs of recurrence.

11. Treatment of Fractures.—J. W. Cokenower states that all the fractures that can be adjusted manually and can be fixed in a position that will insure a good functional result, even though the Roentgen ray shows lack of perfect end-to-end approximation, are to be treated by the closed method. In all fractures with marked deformity, such as overlapping, angulation, lack of contact of fractured surfaces, evidence of soft or detached osseous tissue between the ends—of the bones, and especially compound fractures when it is apparent that union will not take place, the open method is invariably used. When the open method is used the writer prefers Lane's plates when sufficient smooth bone surface can be obtained for their attachment. When this cannot be done he prepares the ends of the bones for good and satisfactory apposition. If the bones are not sufficiently jagged he makes one lateral and one anteroposterior dovetail in the ends of the bones, after which he wires them. He believes that the bone graft inlay should always be used in nonunion, especially when the pathological softening of the ends of the bones is augmented by infection or displacement of the ends, including soft tissue between them, but it should not be used in simple fresh fractures. No rule can be made for the use of plaster of Paris and splints, except that the former should not be used when any swelling is present and should never be left in too long, but splints when properly made and adjusted are always satisfactory. One should always take advantage of whatever help the Roentgen ray can give in connection with the treatment of fractures.

13. The Stability of the Infusion of Digitalis.—Robert A. Hatcher and Cary Eggleston conclude that the infusion of digitalis is fairly stable when prepared and kept with ordinary care, no important change then occurring within a week. The addition of alcohol to the infusion is unnecessary. Old, and even moldy, digitalis and its infusion may give the typical digitalis actions qualitatively so long as they retain any considerable degree of activity. A properly made infusion of digitalis represents the leaf practically in its entirety, the action being qualitatively like that of the tincture. Owing to the variability in activity of the infusion as it is commonly obtained, the tincture should be preferred to it in therapeutic practice.

The Lancet.

November 13, 1915.

1. A Lecture on Wound Infections and Their Treatment. (Concluded.) Almroth E. Wright.
2. The Bradshaw Lecture on Nervous Affections of the Sixth and Seventh Decades of Life. J. Mitchell Clarke.
3. Gunshot Injuries of the Peripheral Nerves. Wilfred Harris.
4. Gunshot Injuries to the Peripheral Nerves. R. H. Jocelyn Swan.
5. Cases of Tetanus-like Spasm Localized to the Wounded Limb. R. D Rudolf
6. A Case of Oral Sepsis. Adolph Abrahams.
7. Zinc in Potable Water. Has It Any Effect Upon Health? John C. Thresh.

1. Wound Infections and Their Treatment.—Almroth E. Wright delivered this lecture at the opening of an Exhibition of Surgical Appliances for the Treatment of the Wounded, held at the Royal Society of Medicine from October 8 to 14, in which he gives a very comprehensive review of the methods hitherto used in the treatment of wounds. He states that before the war it was generally held that for the conduct of wound infection all that would be required would be to drain the wound, by making an opening at the most dependent point, then to wash it out with antiseptics, and finally to apply dressings. It was also thought that for the proper carrying out of this procedure any doctor who was on the Medical Register, or any trained nurse would suffice. Now the wind has swept all this away and it has come home to everybody that every wound is infected and that the infection is the really serious element in the wounds. Practically everybody has also become aware that the antiseptic system so far as the treatment of wound infection is concerned has completely broken down. The lecturer presents a scheme for the phylacacogic treatment of wound infections, following the different steps of treatment, in the field ambulance, at the casualty clearing station, and at the base hospital. The program includes irrigation with hypertonic salt solution (the physiological action of which, its effects and the indications for different strengths of the solution are discussed in detail) until the tissues are restored to their natural condition and there is merely surface infection. The wound is then irrigated with physiological salt solution until thé surface infection is extinguished or nearly so, and then the secondary suture of the wound is undertaken in one

or a series of successive operations. In concluding, the author urges a reorganization of hospital forces which will place a responsible head over a staff of men with both laboratory and clinical experience who will be deputed, one to each hospital, to exercise supervision as "physician in charge of wounds" over all that department of treatment which lies outside the sphere of operative surgery.

3. **Gunshot Injuries of Peripheral Nerves.**—Wilfred Harris states that although there is nothing new in the gunshot injuries of nerves in the present war, yet the large number of cases available for examination has impressed upon him several facts and has afforded opportunities of demonstrating the areas of sensation supplied by the various peripheral nerves. These facts are the importance of an accurate history of the details of the wound or wounds and of the immediate effects and the importance of a careful and methodical examination of the paralysis, both motor and sensory, in order to determine whether it matches with the known anatomical distribution or one or more nerves, or of a portion of a plexus, or whether it resembles the phenomena produced in hysteria. Careful charts of the sensory loss are more important than the presence of complete muscular paralysis, with reaction of degeneration, in estimating the severity of the injury of a mixed nerve. The various stimuli used in testing by hard or light pressure, pin-prick, scratch, camel-hair brush or cotton wool, are tests of different degrees of conductivity of the nerve, not of different systems of fibers. Hard pressure will still be perceived except in total interruption of the nerve conductivity by actual division or by its inclusion in a dense scar. Commencing recovery of sensation may in some cases be observed within a few days only of the secondary suture of the nerve. The sensation of the limb may vary from day to day within narrow limits, or according as the limb is warm or cold.

4. **Gunshot Injuries to the Peripheral Nerves.**—R. H. Jocelyn Swan reports on 63 cases of gunshot injury to peripheral nerves, of which 38 were operated upon, involving the exploration of 41 individual nerves. Thirteen cases showed complete anatomical division of the nerves. In cases of complete nerve division there is but one procedure to adopt—the ends must be dissected free, the bulbous proximal end removed until the nerve bundles can be seen, a small part of the distal end must be resected, and the two ends must be accurately joined. In cases in which the nerve is firmly embedded in scar tissue, the best thing to do is to resect the fibrous portion and join the two ends by accurate suture. The treatment of these cases does not end with the operation, but must be continued by such means as massage, electrical stimulation, and passive movements to the joints. In 17 of the author's cases voluntary muscle action returned at a date varying from six weeks to seven months. In cases in which the nerve had been completely divided and the ends freshened and joined improvement has been definite in four months, while sensation has returned earlier. In 15 cases operated upon four months ago no improvement has yet been noted, but probably sufficient time has not yet elapsed. The author has observed that voluntary action may return in previously paralyzed muscles some weeks before any reaction can be obtained by a strong Faradic current, although with the Lewis-Jones condenser a reduction in the stop from No. 10 to No. 5 or 6 has been found with the muscular return.

7. **Zinc in Potable Water.**—John C. Thresh says he has been consulted on a number of occasions as to the effect on health of small quantities of zinc in potable waters. He finds small quantities of zinc in all water conducted by galvanized ironpipes, but that statements made about the injurious effect of small quantities of zinc are entirely without foundation. In every sample of water which the writer has examined the zinc has been found in solution as bicarbonate. The whole is thrown out of solution by continued boiling. Evidence seems to show that zinc is quickly eliminated from the system and furthermore it is stated that the bicarbonate is devoid of poisonous properties.

British Medical Journal.

November 13, 1915.

1. The Clinical Aspects and Diagnosis of Paratyphoid Fever. J. A. Torrens and T. H. Whittington.
2. Recent Bacteriological Experiences with Typhoidal Disease and Dysentery. J. C. G. Ledingham, W. J. Penfold, and H. M. Woodcock.
3. Note on Tetravaccine: Typhoid + Paratyphoid A + Paratyphoid B + Cholera. Aldo Castellani and Ralph Mendelson.
4. Paratyphoid-A Fever. A. H. Safford.
5. The Treatment of Amebic Dysentery. George C. Low.
6. On a Case of Septicemia Treated by Intravenous Injection of Eusol. J. Lorrain Smith, James Ritchie, and Theodore Rettie.
7. On Wound Infections and Their Treatment. Almroth E. Wright.

1. **Paratyphoid Fever.**—J. A. Torrens and T. H. Whittington give the result of their impressions received while observing some three or four hundred cases of paratyphoid fever in hospital among the troops in France. The great majority of the patients came from India. Paratyphoid A fever has been rare in England and Western Europe and hence it seems probable that this type has been implanted among the troops by carriers from abroad. They find it more than unprofitable to attempt to discriminate clinically between paratyphoid A and paratyphoid B. One fertile source of error seems to be the assumption that a case cannot be one of the enteric group unless it presents a more or less "typhoid" appearance, or at any rate some abdominal disturbance in the direction of pain or diarrhea. After discussing the clinical symptoms in detail the writers state that in a doubtful case the most important individual features are probably: 1. An onset of about four days with malaise, pains in the head, back, limbs, a tendency to shiver, and abdominal discomfort, with a short period of looseness of the bowels. 2. A soft pulse which is strikingly slow in relation to the temperature. 3. An enlarged spleen, not necessarily palpable. 4. A fever lasting upward of a week or fourteen days. It is possible for paratyphoid fever to show all the complications and sequellae which are found in typhoid fever. There is, however, a marked difference, both actual and relative, in the frequency with which they occur in the two diseases. Attention is called to what seems to be two definite idiosyncracies of paratyphoid B: The first is a tendency to involve the large gut, and the second, a liability to pus formation, as shown by complications of a suppurative nature. The mortality from paratyphoid B was a little over 4 per cent. and of paratyphoid A a little under 1 per cent. in this series. The authors discuss the routine measures which must be adopted in order to place the diagnosis of a suspected case on as sure a basis as possible. A positive diagnosis can be made in one of two ways. First, the specific bacillus may be recovered from the blood, feces, or urine of the patient, and secondly, evidence may be discovered in his blood that he has acquired or is acquiring an immunity to a specific infection.

3. **Typhoid + Paratyphoid A + Paratyphoid B + Cholera.**—Aldo Castellani and Ralph W. Mendelson relate their somewhat extensive experience in Serbia with the tetravaccine, typhoid + paratyphoid A + paratyphoid B + cholera, which has also been used by one of the authors in Ceylon. They review the repara-

tion of the vaccine and the animal experiments which have formed the basis of the work and describe the technique of the inoculation. They state that the inoculation of the tetravaccines is harmless. They have had no septic or other accident in any of the more than 50,000 men that they have inoculated, which has entailed more than 100,000 injections, nor have they heard of any untoward accident from their colleagues who have vaccinated more than 120,000 men in Serbia with the tetravaccine. They have never observed any really serious reactions, either local or general. The inoculated persons develop protective substances for the four germs. The amount of agglutinins present for each of the four germs is practically the same as in control individuals, inoculated with typhoid paratyphoid A, paratyphoid B, and cholera monovaccines. They are of the opinion that tetravaccines should be used as a matter of routine to inoculate the troops taking part in the present war.

5. **Treatment of Amebic Dysentery.**—George C. Low states that he has been seeing many cases of dysentery in the Seamen's Hospital, and, after pointing out the difficulties attendant upon the administration of emetine by the mouth, recommends in acute cases of amebic dysentery in bed injections. In chronic cases with slight local lesions that one does not wish to keep in bed the mouth method may be employed. He uses one grain of emetine hydrochloride for each injection, two of these being given daily night and morning for the first two or three days if the case is a bad one with much blood, mucus, and pain. After that he gives a one-grain injection every night until 12 grains in all has been given. By this time all blood and mucus should have disappeared, and amebae should no longer occur. Sometimes a second course of injections may be necessary, but this need not be as long as the first, one grain until six grains have been taken usually sufficing.

Berliner klinische Wochenschrift.

October 18, 1915.

Influence of Filtered Roentgen Rays on Skin Diseases.—Meyer sums up the advantages of this mode of treatment as follows: In many diseases results are more prompt and certain than with other methods, and this is especially the case with chronic affections, while the damage done to the skin is trivial, because it becomes somewhat more sensitive to the rays. Dermatoses which have been pronounced incurable have been cured by this method, or only at the expense of severe injury to the skin. The chance of a reaction with filtered rays is small, and when reactions follow radiation, they pursue a mild course. Since large *x*-ray tubes are required when filtered rays are used, a correspondingly large surface of integument can be rayed at one time. The possibility of a stronger charge makes it possible to reach the intended dose in shorter time. The pains and time required for protection against unfiltered rays are greatly diminished. Finally, there is no longer—with filtered rays—any necessary distinction between superficial and deep radiation.

Experience with Infectious Diseases in the Army.—Grundmann has found antitoxin valuable in tetanus when given in the prodromal stage and when the first symptoms have developed—local tetanus, painful contractions and rigidity, hyperesthesia, sweating, etc., etc. He extends prophylactic injections to those soldiers who have slept with tetanus comrades. When the disease has developed he pushes both antitoxin and magnesia until the muscles relax. His mortality has been from 55 to 65 per cent. He saw sporadic cases of diphtheria in soldiers, and these were all severe in type, as the already overstrained heart was deeply influenced by the disease toxin. The cardiac weakness was readily perceived in the livid extremities and pressure points, hemorrhages, etc. The patients who had had the disease for several days received massive intravenous doses of antitoxin. There was one case of severe anaphylactic shock requiring camphor injections and artificial respiration. A few cases of measles seen included one of the hemorrhagic type which had been sent in as a typhus suspect. The presence of Koplik's spots and other symptoms readily led to the correct diagnosis. Scarlet fever was somewhat more common than measles. Of thirty cases treated none ended fatally. One patient with a mere roseola was mistaken at first for a typhus case. The so-called "second outbreak" (Pospischill) which comprises nephritis was not seen. But five cases of erysipelas were seen, none severe. Tuberculosis appeared under the strain of war in those of tuberculous stock or habitus. Cases of miliary tuberculosis were readily mistaken for typhoid. One of the patients recovered. The diagnosis was made in part by exclusion, but there was a tuberculous exanthem and the *x*-ray showed disease foci in the lungs. There was no sputum. The genesis of the disease was doubtless as follows: a hydrocele, evidently tuberculous, had been operated upon, with probable infection of the veins. The author saw a few cases of cerebrospinal meningitis in both the fulminant and ordinary acute types. The former is always fatal.

Münchener medizinische Wochenschrift.

October 19, 1915.

Treatment of Venereal Buboes with X-Rays.—Kull states that the chancroid is a mild affection *per se* and is only to be feared as a possible cause of bubo. The original treatment of the latter was poulticing followed by incision, this being ultimately followed by free incision and curettage, or extirpation of the lymph nodes. There is a closed or semi-closed treatment of these buboes which agrees with that for suppurating tuberculous lymphnodes. Owing to the power of the *x*-rays over the latter the author made a test of them in chancroidal bubo. They applied these both before and after suppuration. In the former class of cases the action of the rays is startling. The pain at once ceases and the nodes soon resume their normal size. This result may come about after one radiation, the patient being practically well within 48 hours. If the bubo has not become a great abscess the rays are able to destroy the leucocytes, which are probably absorbed. All signs of inflammation cease and the indurated infiltration is slowly absorbed. When an abscess has formed it should be evacuated by puncture, after which it will yield to the rays. Syphilitic buboes promptly subside under the rays. These results are only what should be expected, the author says, when we consider the power of the rays over tuberculous lymph nodes and lymphoma.

Two Cases of Swallowed False Dentures Treated with Apomorphine.—Gerstein, a marine surgeon, reports the case of a stoker who swallowed a plate with four incisor teeth in his sleep. The object could neither be seen nor felt with forceps. Three hours before he had eaten heartily. The author at once gave him an injection of apomorphine and placed him in the best possible position for vomiting (prone position, neck stretched and forehead supported. In five minutes came the first retch. The next in order brought away the teeth. Vomiting lasted 12 minutes. The second case was a duplicate of the first.

Insurance Medicine.

Meaning of "Abortion" in Insurance Policy.—In an action on a policy of insurance which exempted the insurer from all claims resulting from an abortion, the evidence showed that the death of the fetus, which caused the insured's death, was the result of an assault upon her by her brother-in-law about two weeks before her death. It was held that the waiver in the policy referred to an act done intentionally and unnecessarily, for the purpose of procuring an abortion. As ordinarily used among laymen and married women, "miscarriage" is understood to mean failure on the part of a woman, from causes beyond her control, to carry a fetus to maturity; while "abortion" is understood to mean the intentional causing of a miscarriage. Judgment for the plaintiff was therefore affirmed, on the ground that language used in a contract prepared by one of the parties thereto, which is susceptible to more than one construction, should receive such a construction as the party preparing the contract at the time supposed the other party would give to it, or such a construction as the other party would be fairly justified in giving to it.—Flory v. Supreme Tribe, Nebraska Supreme Court, 152 N. W., 295.

Inaugurating the Life-saving Campaign.—Mr. Frederick A. Draper in discussing Dr. Blackford's paper read before the fifth mid-year meeting of the Medical Section of the American Life Convention, said the adage, "An ounce of prevention is worth a pound of cure" had a very pertinent application to the subject under discussion. It should be considered not only in its relation to the discovery of diseases, already present, but in the prevention of diseases, particularly those resulting from improper methods of living. We had ample statistics demonstrating the increase in diseases of the heart, kidneys, and liver. The decrease in the mortality rate resulting from infectious diseases was offset to a considerable extent by the increase in rates just mentioned. While a decrease in certain diseases must be followed by increases in others, when considered in ratios, since all must eventually die, the increase in the mortality of certain diseases was of greater intensity and was found at younger ages than was fully explained by the decrease in others. What causes were operating, therefore, to produce these higher mortality rates; and were preventive measures possible and feasible? Mr. Draper answered this question by attributing the change in the mortality rates to modern modes of living which he sketched at length.

He said that the field directly open to insurance companies would seem to be restricted to the policyholders, but this was quite large enough, and the benefits were so immediate and extensive as to warrant careful study of the methods to be developed.

For the purpose of having the subject more adequately considered, he would suggest that the Section arrange for a special committee to consider methods for educational work, and if found expedient to report plans for interesting the life-insurance companies in joint endeavor. Such a committee in connection with similar committees from the Legal Section and the whole convention could formulate bills to be presented to Congress and the several States providing for the publication and distribution of manuals and for such other national and State legislation as might be found suitable and desirable. It could also arrange for cooperative work with other organizations, such as the U. S. Public Health Service, the "Live-a-Little-Longer" movement could be assisted, etc. The benefits that would follow such well-directed effort as would be possible to such a committee would be far-reaching in their scope.

The Life-Saving Movement.—Dr. M. O. Devaney, Medical Director Indianapolis Life Insurance Company, Indianapolis, Ind., in discussing Dr. Blackford's paper read before the fifth mid-year meeting of the Medical Section of the American Life Convention, said that some plan whereby people in general of all classes, could be taught and impressed with the advanced ideas of disease prevention would probably be more successful than a too great reliance on the movement outlined by Dr. Blackford, advanced by the insurance companies and policyholders. Theoretically, it seemed easy; but practically it was a tremendous proposition. People were slow to reform. They were slow to leave old ways of living. The ordinary health laws, irrespective of the efforts of the health officers, were violated continually. He repeated that progress had been slow up to the present, and it seemed to him that if they were in earnest, and wanted disease prevented and lives made longer, they must build a machine or organization, one that would bring the teaching of disease prevention and the right principles of living down to the individual family.

Medical Examiner's Report Contradicting Proofs of Death.—In an action on an insurance policy the plaintiff introduced in evidence, as tending to contradict and explain the statement of the attending physician in the proofs of death that the insured not only died of tuberculosis, but was suffering therefrom several weeks before the application for the insurance was made, the report made by the insurance company's medical examiner in connection with and attached to, the application for the insurance, in which it appeared that the examiner personally inspected the life insured and examined the subject to ascertain his fitness therefor. This report recited that the examiner had examined the insured's respiratory organs and found them in all respects sound, and that he possessed sound health and a good constitution. This, it was held, was competent and sufficient evidence to support a finding of the jury that the insured made no misrepresentation in obtaining the policy.—Clarkston v. Metropolitan Life Ins. Co. (Mo.), 176 S. W. 437.

General Statement of Examining Physician Not Contradictory of Positive Evidence.—In an action on a policy of insurance two disinterested medical witnesses testified that the insured suffered from tuberculosis at the time of application. Against this there was nothing but the general statement of the examining physician, not subject to cross-examination, that the insured appeared to be in good health, and recommending him as a good risk, which might all be true, and yet the tuberculous condition be present, as testified to by the other physicians. The examining physician's statement was in effect mere negative evidence of fairly persuasive collateral facts, which, in the absence of any other evidence, would sustain an inference that tuberculosis did not exist, but, in the presence of unimpeachable and certain affirmative evidence that it was in fact found to exist, was not sufficient to sustain a verdict, because it did not necessarily contradict such affirmative evidence.—McKnelly v. Brotherhood of American Yeomen, Wisconsin Supreme Court, 152 N. W. 169.

Book Reviews.

THE MEDICAL RECORD VISITING LIST, OR PHYSICIANS' DIARY FOR 1916. Newly revised. Price, $1.50. New York: William Wood & Company.

EVERY physician uses a visiting list; and the handsome volume before us fulfills all the requirements of even the most exacting. In addition to the ruled pages for the record of daily visits, the book contains a calendar, pregnancy table, dose table, notes on artificial respiration, signs of death, and the writing of wills. There are also blanks for the entry of consultations, obstetric engagements, confinements, vaccinations, deaths, cash accounts, and the addresses of nurses and patients. The book is of handy size, with paper of good surface and well adapted for the use of either pencil or ink.

THE PHYSICIAN'S VISITING LIST (Lindsay & Blakiston's) for 1916. Sixty-fifth year of its publication. Price, $1.25 for twenty-five patients. Philadelphia: P. Blakiston's Son & Co.

THIS popular visiting list, which has supplied the needs of several generations of medical practitioners, comes again with the close of the year to gladden its old friends and to appeal for approval to the army of young physicians just out of college or hospital and entering upon their life work. For the latter the twenty-five patients list will be ample, but if their hopes are high they may be glad to know that the book is made in sizes for 50, 75, or even 100 patients per day or week, so that having once begun its use they will not be forced to change when their practice assumes its expected proportion. The book is supplied with the usual reading matter, for emergency use, of incompatibles, treatment of poisoning, metric system of weights and measures, dose-table, etc. There are also blank pages for obstetric engagements, addresses of patients, cash account, and memoranda.

TEXTBOOK ON NERVOUS DISEASES. By G. ASCHAFFENBURG, Cologne; H. CURSCHMANN, Mayence; R. FINKELNBURG, Bonn; R. GAUPP, Tübingen; C. HIRSCH, Göttingen; FR. JAMIN, Erlangen; J. IBRAHIM, Munich; FEDOR KRAUSE, Berlin; M. LEWANDOWSKY, Berlin; H. LIEPMANN, Berlin; L. R. MÜLLER, Augsburg; H. SCHLESINGER, Vienna; S. SCHOENBORN, Heidelberg; H. STARCK, Karlsruhe; H. STEINERT, Leipzig; CHARLES W. BURR, Philadelphia. Authorized English edition. Edited by CHARLES W. BURR, B.S., M.D., Professor of Mental Diseases in the University of Pennsylvania; Neurologist to the Philadelphia General Hospital. In two volumes; 246 illustrations. Price, $12. Philadelphia: P. Blakiston's Son & Co., 1915.

THIS work, paged as a single volume contains 1132 pages, and as its title page implies, is virtually a cyclopedia of neurology. It is published as Curschmann's "Textbook of Nervous Diseases," although Curschmann's name is not mentioned anywhere as editor nor is it signed to the preface. Dr. Burr, in addition to his editorial functions, contributes a chapter on neurasthenia, psychasthenia, hysteria, and borderland states. The German sponsor, Dr. Curschmann, contributes the sections on the myopathics, and vasomotor and trophic disturbances. The first impression that one obtains from glancing through the work is that the contributors, while very far from unknown to the American public are not as a rule of the highest eminence, no less than seven being privat docents. Professor Krause, the distinguished brain surgeon, is of course not included among the neurologists proper. Aschaffenburg and Lewandowsky have themselves edited large works on neurological subjects and in general have shown vast literary activities. The former furnishes a section on the identical topics covered by Dr. Burr and the reason for this duplication is not apparent; the latter makes no allusion to it.

TRANSACTIONS OF THE AMERICAN PEDIATRIC SOCIETY. Twenty-sixth Session held at the Red Lion Inn, Stockbridge, Mass., May 26, 27 and 28, 1914. Edited by LINNAEUS EDFORD LA FÉTRA, M.D.

THERE are twenty-nine contributions to this volume, presenting a wide range of subject-matter in pediatrics. Among these may be mentioned the articles on "The Artificial Cooling of Sick Rooms in Summer," by H. Heiman; "Recurrent Vomiting," by C. G. Kerley; "Typhoid Fever in Children," by H. D. Chapin; "Diseases Connected with Meckel's Diverticulum with Special Reference to Diverticulitis," by J. P. Crozer Griffith; "The Pathogenesis and Prophylaxis of Rickets," by J. E. Winters; and "Endocarditis in Children," by F. M. Crandall.

REPORTS FROM THE LABORATORY OF THE ROYAL COLLEGE OF PHYSICIANS, EDINBURGH. Edited by J. J. GRAHAM BROWN, M.D., and J. RITCHIE, M.D., Vol. XIII. Edinburgh: Oliver and Boyd, 1915.

THIS volume comprises contributions made during 1913 and 1914 in the fields of protozoology, anatomy, biological chemistry, pathology, and bacteriology. There are four articles by J. P. McGowan dealing with the relation of sarcosporidia to the disease in sheep called "scrapie." Among the articles in the section on pathology may be mentioned those dealing with "A Comparison of the Lesions of the Nervous System in Distemper of the Dog with those of Human Poliomyelitis," by J. P. McGowan and J. W. Dawson; and a series of three articles by J. P. McNeil dealing with the relation of scrofula, acutely fatal illness, and anaphylaxis to the status lymphaticus. In the section on bacteriology there is a series of important articles, by A. P. Mitchell, concerning tuberculosis of the lymph glands, in children, and infection of children with the bovine tubercle bacillus.

DIFFERENTIAL-DIAGNOSTISCHE TABELLEN DER INNEREN KRANKHEITEN. Von Dr. med. J. CEMACH, Wien. 46 Tabellen mit farbigen und schwarzen Abbildungen sowie 8 Fiebertypen. Zweite, vermehrte und verbesserte Auflage. München: J. L. Lehmann's Verlag, 1915.

IN the second edition of this little volume the author added 12 differential tables and revised many of the older ones. Altogether the book contains 46 tables and 18 illustrations, some of them colored to aid in making the tables more easily understood. The author states that it was not possible for him to consider all possibilities in taking up a definite disease entity, hence he confines himself to the common and typical diseases. This little book of pocket size, bound in flexible covers, will be of help to practitioners who want to refresh their memories on the differential points of the more common diseases.

EXERCISE IN EDUCATION AND MEDICINE. By R. TAIT MCKENZIE, B.A., M.D., Professor of Physical Education and Director of the Department, University of Pennsylvania; Fellow of the College of Physicians of Philadelphia and of the American Academy of Physical Education; President of the American Physical Education Association, 1913-1915; President of the Society of Directors of Physical Education in Colleges, 1912; Sometime Lecturer in Anatomy and Medical Director of Physical Training at McGill University; Lecturer in Artistic Anatomy, Montreal Art Association, Harvard Summer School, and Olympic Lecture Course, St. Louis, 1904; M. P. E. Springfield College; Second Edition, Thoroughly Revised. With 478 Illustrations. Price $4.00 net. Philadelphia and London: W. B. Saunders Company, 1915.

THIS work comprises two parts, of which the first deals with exercise in education and the second with exercise in medicine. The introductory chapter defines and classifies the various exercises, and their physiological aspects are discussed in chapters on the behavior of the muscles and the lungs during exercise; the estimation of heart efficiency; the effects of exercise on the heart; the control of movement, nutrition, and excretion during exercise, and exercise in relation to age, sex, and occupation. The German, Swedish, and French systems of gymnastics are described in detail. Then follow chapters on physical education by athletics; physical education in Young Men's Christian Associations, and camps, Boy Scouts, Camp-fire Girls; municipal playgrounds and baths; physical education in schools, colleges, girls' schools, and women's colleges, the physical education of the blind and deaf-mute, and of mental and moral defectives. Part II includes chapters on the application of exercise to pathological conditions, massage, and vibration; treatment by exercises of flatfoot and clubfoot, deformities of the spine, abdominal weakness, visceroptosis, respiratory diseases, diseases of the circulation, obesity, and nervous disorders. The book is profusely illustrated chiefly with reproductions of photographs. It is an interesting and scientific exposition of a subject whose importance in education and medicine is now being given full recognition. The physician will find this book of eminent practical value.

Warp and Woof. By L. Pierce Clark. Riverside, Conn.: Hillacre Bookhouse, 1915.

One takes up this volume of short poems hardly knowing what to expect from the pen of a man who has devoted his medical life to the study and cure of epilepsy. After reading, there is borne in upon the mind and heart the fact that these poems, short as they are, display a depth of understanding of life astounding in its intellectual and emotional comprehension. They are prismatic, reflecting the rays of joy, pathos, humor, hope, despair, and love in rhythmical, liquid English. That there is an undercurrent of sadness through many of the poems is not to be wondered at, for the writer must come in contact with the fatalistic side of life, while such a poem as "The Forbidden Guest" and "The Psychoanalyst" give evidence of the influence of the Freudian outlook on human nature. "Convalescence," "The Paranoiac," "The Epileptic Crisis," and "The Master of the Clinic," are among his contributions to his work; "The Night Born," "A Christmas Jingle," "The Nuns," "How Love Dies," and "The Immutable" show his fellow touch.

Modern Biologic Therapeusis. A Concise and Practical Treatise on Biologic Products for the Use of Practitioners in the Modern Application of Immunology to Therapeutics. From the Medical Department of the Lederle Antitoxin Laboratories, New York. Cloth Binding. Illustrated. Price, $1.00. New York: Press of Joseph D. McGuire, 1915.

In this little book there are about three hundred pages of definite, scientific information on the history, use, dosage, and most approved methods of administration of vaccines and sera prepared by the Lederle laboratories. The field of vaccine and serum therapy is covered in an interesting, yet simple and direct manner, the information being based on the latest investigations and soundest scientific teachings. The illustrations include photomicrographs of the more common bacteria and half-tone reproductions of some of the men famous for their work in this field.

Die nichtgonorrhoische Urethritis beim Manne, von Professor Dr. C. Adrian. Price, 1.80 mark. Halle a S.: Carl Marhold, 1915.

The author considers sterile urethritis and urethritis due to bacteria other than Neisser's gonococcus, including experimental forms. He has produced within small compass a very superior monograph.

The Principles and Practice of Obstetrics. By Joseph B. DeLee, A.M., M.D., Professor of Obstetrics at the Northwestern University Medical School; Obstetrician to the Chicago Lying-In Hospital. Second edition. Price, $8.00 net. Philadelphia and London: W. B. Saunders Company, 1915.

The justification of a textbook which treats pregnancy as a disease and emphasizes the pathological side of obstetrics is found in the fact that a second edition of this work has become necessary after a lapse of only two years. This is all the more remarkable when one considers the size and the cost of the work. There is no more complete and elaborate presentation of the subject in the English language than is found here and the new edition has been so thoroughly revised that it is very largely rewritten. The author's opinion of "twilight sleep" is a very sane one and deserves wide publicity. The illustrations are numerous and excellent. The one criticism which might be made is in the price. The purchasers of the first edition must be annoyed to find that such an expensive work is good for only two years. How much more beneficial to the profession at large it would be to print the book on cheap paper with fewer and poorer illustrations. Then when the necessity for revision appeared all physicians interested in obstetrics would be willing and could afford to buy each new edition as it appeared. However such enterprise is hardly to be expected in this country. In the meanwhile the work is a necessity to the obstetrician and will be of the greatest value to all physicians who practise obstetrics.

A Compend of Medical Chemistry, Inorganic and Organic, Including Urinary Analysis. By Henry Leffmann, A.M., M.D. Professor of Chemistry in the Woman's Medical College of Pennsylvania and in the Wagner Free Institute of Science. Sixth edition, Revised. Price $1.00. Philadelphia: P. Blakiston's Son & Co., 1915.

In the preface to this and the preceding edition of this compend is the following: "In the present system in professional schools, students are obliged to meet two distinct requirements. They must study for the knowledge necessary for the practice of the profession and they must study to pass examinations. The latter are in so many cases arbitrary in scope, and affected by the personal equation of the examiner, that the student cannot be blamed for resorting to a concise presentation of the more important facts of the science, supplementing this by notes of the narrower and more strictly personal items of the teaching." This is undoubtedly true, and it is more true of chemistry than of any other subject in the medical curriculum. On the strength of this, we would strongly advise all the medical students attending Professor Leffmann's lectures to procure this volume.

Progressive Medicine. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., Professor of Therapeutics, Materia Medica and Diagnosis in the Jefferson Medical College, Philadelphia; Assisted by Leighton F. Appleman, M.D., Instructor in Therapeutics, Jefferson Medical College, Philadelphia. Price $6.00 per annum. Philadelphia and New York: Lea & Febiger, September, 1915.

The present instalment of this well known publication contains a summary of the following branches of medicine: Diseases of the thorax and its viscera, including the heart, lungs, and blood vessels, by W. Ewart; Dermatology and Syphilis, by W. S. Gottheil; Obstetrics, by E. P. Davis, and Diseases of the Nervous System, by W. G. Spiller. All of these writers have been contributing to this publication for several years, a fact which ensures a valuable continuity from year to year which is not often found in works of this kind.

The Ophthalmic Year Book, Volume XI., Containing a Digest of the Literature of Ophthalmology for the year 1914. Edited by Edward Jackson, M.D., Sc.D., Professor of Ophthalmology in the University of Colorado. Assisted by Theodore E. Schneideman, M.D., Philadelphia; William Zentmayer, M.D., Philadelphia; William H. Crisp, M.D., Denver; Casey A. Wood, M.D., Chicago; Wendell Reber, M.D., Philadelphia; Harry S. Gradle, M.D., Chicago; Robert Henry Elliot, M.D., London; Hugo W. Aufwasser, M.D., Denver; Meyer Wiener, M.D., St. Louis; Will Walter, M.D., Chicago; Florence Mayo Schneideman, M.D., Philadelphia; Nelson Miles Black, M.D., Milwaukee; Charles Zimmermann, M.D., Milwaukee, and Thomas B. Holloway, M.D., Philadelphia. Illustrated. Published with Assistance of the Knapp Testimonial Fund of the Section on Ophthalmology of the American Medical Association. Denver: Herrick Book and Stationery Company, 1915.

Volume XI. of the Ophthalmic Year Book contains 545 pages of text, about 100 more than is contained in Volume X. Its contents are associated under thirty headings. This volume begins with a preface, followed by Biographic notices of oculists deceased during the year 1914. Then comes the review of ophthalmological literature, the abstracts arranged in logical order. Four hundred and forty-four pages are devoted to the review, and seventy-five pages to bibliography. There are some illustrations in black and white. The abstracts are full and very satisfactory. This is the best work of its kind in English: it reflects great credit on its editor and founder and also on his collaborators. The work deserves the liberal support of all English reading ophthalmologists.

Syphilis und Nervensystem. Neunzehn Vorlesungen für praktische Aerzte, Neurologen und Syphilidogen von Professor Dr. Max Nonne, Oberarzt am Allgemeinen Krankenhaus Hamburg-Eppendorf. Dritte, neubearbeitete Auflage. Mit 155 Abbildungen im Text. Preis Mk. 30. Berlin: Verlag von S. Karger, 1915.

The previous edition of this work, which appeared in 1909, has been enlarged by about 200 pages, which are partly accounted for by the addition of 58 illustrations. The number of chapters is naturally unchanged, but the arrangement of the subject shows marked departures which may be ascribed to recent advances in neurology. The author in his preface states that a partial rearrangement has been necessitated as a result of the thorough discussion of such subjects as the *Spirochæta pallida*, Wassermann reaction, new cytology of the cerebrospinal fluid, the luetin reaction, and last but not least, salvarsan. In other respects the former order of the book remains the same.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held November 4, 1915.

THE PRESIDENT, DR. WALTER B. JAMES, IN THE CHAIR.

Dr. Francis Delafield.—Dr. THEODORE C. JANEWAY read this appreciation. (See page 929.)

The Management of Patients with Chronic Renal Disease.—Dr. THEODORE C. JANEWAY of Baltimore presented this paper, in which he said that it had been his fortune during the development of the tests for kidney function, both at the Presbyterian Hospital in New York City and during the past year at Johns Hopkins Hospital, to have for his associates a group of men actively interested in this field. During the last year, especially, Dr. Rosenthal and Dr. Rountree and their coworkers had, by their laboratory studies, quite definitely modified their practice in the wards. He would therefore give their present views on the practical management of the different types of chronic renal disease which were commonly met in general practice. Dr. Janeway said he had used the expression "practical management," because, except in the rarest instances, they had no real treatment of the disease. The problem of fundamental importance with reference to renal disease as its causation, and except for certain cases of renal involvement in secondary syphilis, possibly rare cases of nephritis due to malaria, lead poisoning, pregnancy, or some focus of infection, they could not speak of an effective causal therapy of chronic nephritis. The treatment of chronic diseases had two aims, the prolongation of life and the amelioration of the discomforts due to the disease. These two aims were achieved by two types of treatment: (1) safeguarding treatment which aimed to protect a weakened function from further damage by overstrain, and (2) symptomatic treatment. The estimation of the kind and degree of functional damage was of fundamental importance in determining treatment along either of these lines. Dr. Janeway said that chronic renal disease presented an endless variety of symptom combinations, but certain clinical types occurred with such frequency that we were all called upon to meet the problem of their management, and as they presented, in a way, specific practical problems he would consider them as such.

1. Patients in Whom Albumin and Casts in the Urine Were the only Evidence of Disease.—This was a large group in whom the condition was frequently discovered accidentally. In this group a searching inquiry must be made into the history for evidences of a past or existing infection. If such evidence were found, especially in young people, then a period of rest in bed and milk or bland diet should be given a thorough trial. If the treatment as of a true acute nephritis resulted in a steady subsidence of the albuminuria, it should be persisted in as though the patient had a known acute nephritis. If, however, there was no suspicion of a past infection, and if a week in bed on a milk diet had no appreciable effect on the albuminuria and casts, then bed and milk diet were unwarrantable hardships. In children there must be a differentiation of postural albuminuria. This was commoner than was supposed. Testing the separate urines passed at different times a day, and the effect of standing fifteen to thirty minutes in marked lordotic position would often clear up the diagnosis. The large amount of protein precipitable by acetic acid in the cold had been, in the writer's experience, an important feature of the albuminous urine in these cases. The treatment should be along lines of general invigoration, with medical gymnastics for the improvement of the posture. Their diet should be ample, not restricted. There was a large class of patients in whom the cause of the albuminuria was not evident, and in these the effects of exercise, cold baths, and so on, upon the albuminuria should be carefully studied. These patients should be watched over long periods of time in the interest both of science and of the patient. A tendency toward nocturnal polyuria, or fixation of specific gravity were almost certain danger signs; and until such symptoms arose symptomatic treatment was quite unnecessary. Safeguarding treatment, however, was important, but must not go beyond what was of proved efficacy. Soups and spices might wisely be excluded from the diet, gourmands should have their excessive appetite restrained, and obese patients should be moderately reduced. If the phthalein test was normal the writer said he saw no reason for the restriction of the protein, either qualitatively or quantitatively, below a moderate normal intake. Those who used large amounts of salt in their food should be told to reduce it partially as training for a possible subsequent treatment of edema. For diabetics with albuminuria, unless the phthalein test showed an excretion below 40 per cent., or there were definite symptoms, such as edema, the treatment similar to the dietetic treatment of diabetes, and the albuminuria should not be allowed to interfere with this.

2. Patients with Hypertension, with or without a Trace of Albumin, and with Slight Subjective Symptoms or None at All.—The vast majority of these patients certainly had changes in the renal vessels and in the arterioles elsewhere, but the clinical type did not have renal symptoms. Slight cardiac or neurasthenic symptoms were common. Safeguarding treatment was the entire problem of their management. They should be safeguarded from all influences that raised the blood pressure in the normal man, and the myocardium and to a certain extent the cerebral vessels and the kidney should be safeguarded. The worst hypertensive influence was mental strain, and especially emotional strain. The condition called for a reasonable adjustment of the everyday life. The limitation of the diet followed much the same lines as in the preceding class of patients, but physiological economy in nutrition should be insisted upon, and meals should not be bulky. High blood pressure was no indication of nitrogen retention, as Folin, Denis, and Seymour had shown; luxus consumption clearly should be, and it was possible that some patients would be better without meat. The moderate use of tobacco or light wines would have to be regulated according to their effects on the individual patient. Climate was not without its influence, the majority of these patients having more symptoms during cold weather.

3. Patients with Hypertension and Outspoken Myocardial Insufficiency.—The writer stated that this was one of the largest groups to be found in the medical wards of every hospital, and these patients were equally common in private practice. They presented primarily the treatment of a circulatory disease. For them both safeguarding and symptomatic treatment were essential. The symptoms demanding treatment in the majority of cases were edema, dyspnea, and the whole picture of cardiac failure. For those having anginoid pain the safeguarding treatment was rest. As a vasodilator fresh nitroglycerin tablets dissolved on the tongue and not swallowed fulfilled the indications and were free from the disagreeable publicity that the breaking of an amylnitrite pearl entailed. Theobromine might be valuable in some cases. The patients with ordinary myocardial failure should be studied by the nephritic test meal of Schlayer and Hedinger, which Rosenthal had adopted in their clinic at Johns Hopkins Hospital with excellent results. There should also be a phenolsulphonephthalein test as a preliminary to treatment. If in addition the blood urea and the Ambard coefficient could be determined, very valuable information might be obtained. The phthalein output was usually low, often under 30 per cent.; if normal, or nearly so, and the test meal showed no lowering of the nitrogen concentration in the urine, and no marked nitrogen lag, then it was rarely necessary to determine the blood nitrogen. Only in moribund patients could important retention exist. It was also essential to recognize the presence or absence of fibrillation of the auricles as a guide to the use of digitalis. All these patients required rest in bed or in a chair if they were orthopneic, as the essential safeguarding treatment for the heart. Those patients without auricular fibrillation, but with marked edema and a congested liver, should also be placed on digitalis. The method of the administration of this drug must be determined by the details of the case and the habits of the physician. Toxic effects of digitalis must be watched for and heeded; if it did not succeed alone with proper diet, then one of the caffeine diuretics, theocin, about 12 grains a day, or diuretin, about 40 grains in divided doses not oftener than every other day. It was important to have the fluid intake and the urine output accurately measured, and it was helpful to have the daily weight recorded. Regulation of the diet was one of the most essential features of treatment. Their functional studies had now enabled them to base this upon the individual requirements of the case, not upon so-called general principles. The three factors to be considered were the fluid, salt, and

nitrogen intake. Practically all these patients required limitation of their fluid intake. A high Ambard or a falling index of urea excretion, or blood nitrogen above the normal, indicated the need for limitation of the protein intake. Ambard considered the normal constant 0.07. Unpublished observations by Lewis in their clinic had shown that 1.09 was more nearly the upper normal limit. There was considerable difference of opinion as to the figure for urea which might be found in the blood of healthy persons, but their experience coincided with McLean's that 50 mg. per 100 c.c. was possible with very high protein diet. Apart from this 40 mg. should never be exceeded. The urea nitrogen was practically one-half of this. The total non-protein nitrogen should not pass 50 mg. per 100 c.c. under any circumstances. The practical means of accomplishing this limitation varied from a low protein diet, which could never be an exclusive milk diet, to an introduction of short periods of nitrogen starvation in the worst cases. Failure to eliminate salt made essential the reduction of the salt intake to a figure below the twenty-four-hour output. Where much edema existed a rigorous salt-poor diet containing less than 3 grams, if possible getting the amount down to 1 gram, was most desirable at the start. In patients with myocardial insufficiency and marked edema the Karell diet was ideal. This consisted of 800 c.c. of milk in twenty-four hours as the only food or fluid allowed. When diuresis was abundant and the dropsy was disappearing rapidly the amount of milk could be increased up to 1500 c.c., and then other appropriate food gradually added. It was desirable to determine the degree of restoration of the power of the kidney to excrete salt before allowing a return to a full diet. All such patients should be warned against the abuse of salt in the future and against other dietetic indiscretions. After recovery the return to physical activity must be by very gradual stages. Tobacco should be forbidden, but he was not sure that a little alcohol was harmful. Fibrillating cases, if they showed any tendency to a rate above normal, should take small doses of digitalis more or less constantly, the dose to be determined by observation.

4. General Edema Without Notable Myocardial Insufficiency the Prominent Symptom.—This group of patients was much smaller than the preceding and was met more frequently in hospital wards than in private practice. A considerable proportion of these dropsical patients had a subacute or chronic diffuse nephritis. This was what Dr. Delafield called chronic diffuse nephritis with exudation. A number of these patients under careful treatment would eventually make a functional recovery; others developed increasing renal insufficiency with uremia, and entered the next group. To the group under consideration belonged a few patients with obstinate edema and low blood pressure, showing amyloid kidneys at autopsy; others were examples of a degenerative lesion of the tubular epithelium and the pregnancy kidney. Their diagnostic criteria were the absence of blood elements in the urine and the low blood pressure. These patients showed a striking failure to excrete salt, the salt concentration in the urine being often as low as 0.1 per cent., and the daily output not over 1 gram for long periods. With this the amount of urine was naturally small. The important point in these patients was the determination of the degree of impairment of the ability to excrete water and salt. The treatment should always begin by a period of very low salt and water intake to promote rapid absorption of the dropsical effusions. When this was accomplished the response to increased water and salt intake should be tested from time to time, and care should be exercised to keep always below the tolerated amount. It was desirable to keep the patient in bed until normal function was established. Some of these patients required accessory dehydrating measures, of which hot-air baths had been in the experience of the writer most effective. Borderline cases between this group and the preceding required a suitable combination of cardiac therapy with that just outlined.

5. Advanced Renal Insufficiency; Uremic Symptoms Superimposed Upon One of the Foregoing Types.—This would be recognized as the classical picture of the end stage of chronic Bright's disease. The differentiation of the severe headache of uremia from that due to cerebral vascular disease, or of a uremic from an organic coma or hemiplegia might be very difficult. Lumbar puncture sometimes gave the clue and should be resorted to. However, the uremia under consideration scarcely permitted of confusion, except with similar toxic states, as in the end stages of liver disease. Changes in the optic nerve or retina were practically always present in true uremia, and the functional tests showed what might well be considered as quantitative renal insufficiency. The test meal could be safely used only in the early stages, and then should frequently have its protein content reduced. It indicated inability of the kidney to excrete the normal constituents in anything but low concentrations. The functional picture was constant in advanced contracted kidney, but might vary from week to week in diffuse nephritis. In their experience both nitrogen and sodium chloride concentrations had been equally reduced. The phthalein test was of diagnostic, prognostic, and therapeutic importance. The excretion was diminished in proportion to the renal insufficiency and, as a rule, paralleled closely the Ambard coefficient and the degree of increase of the non-protein nitrogen of the blood. The Ambard coefficient was always raised and was unquestionably the most accurate measure of the degree of impairment of the urea excretion. The Widal figures remained the nearest approach to a prognostic standard, if one remembered that they were obtained by the hypobromite method, and represented more nearly total non-protein nitrogen. With 50 to 100 mg. long survival was possible, though prognosis must be guarded. With more than that quantity no case lived more than two years. No case with over 300 mg. of total non-protein nitrogen per 100 c.c. or an Ambard above 0.4, lived many weeks. The treatment of the severest cases of renal insufficiency was purely symptomatic, and not a cheerful duty. Morphine was effective, but occasionally precipitated the rapid onset of anuria with coma, and once begun had to be used in increasing doses. Chloral hydrate in 5 or 10-grain doses, alone or combined with moderate doses of bromides, was sometimes very effective. Sodium nitrite, given fifteen minutes before bedtime, was sometimes effective as a remedy for insomnia. The gastrointestinal disturbances were of central nervous origin or eliminative. Lavage of the stomach and bowels was worth trying, but for the most part the control of these symptoms was a problem in the use of general sedatives. Diet was usually reduced to a minimum by the patient, for anorexia was the rule. In the early cases a low nitrogen diet was strictly indicated, with nitrogen starvation on days of severe symptoms, giving as much carbohydrate as possible. They had had a few remarkable improvements with this treatment. Of the direct measure to reduce the retention of poisons, bleeding took the first place, and had its greatest value in the case of sudden convulsive seizures. The removal of 500 or 600 c.c. of blood was regularly indicated, and recovery was common. Sweating seemed occasionally to fit the patient. The most important treatment in uremic cases was of associated myocardial insufficiency. Of equal importance, but less generally appreciated, was the urgent necessity for the treatment of any associated obstruction of the urinary tract. Back pressure from an enlarged prostate, combined with a slightly damaged kidney, might rapidly lead to severe renal insufficiency with uremia. The possibility of improvement by nephrotomy or decapsulation in certain cases both of acute and chronic nephritis, which did not respond satisfactorily to other measures, should be seriously considered by medical men. This field was peculiarly one for cooperative study. In closing, Dr. Janeway said that in spite of modern methods, we were not one whit nearer the goal of treatment—prevention or cure of the disease, and every attempt to approach this problem from a new viewpoint should be enthusiastically welcomed by the medical man.

Dr. Nellis B. Foster said that Dr. Janeway had made clear the temerity of attempting to treat renal disease without an exhaustive study of the case. Formerly our studies were directed toward arriving at an anatomical diagnosis while now we knew they must go further, since therapy depended on function. The treatment of chronic disease was the intelligent adaptation in demand on organic weakness. At present complete knowledge of renal function was acquired only through metabolic studies which were arduous and time consuming, and it was to be hoped that in the near future new tests would be discovered by means of which necessary facts could be learned with greater facility. The functional test was a short-hand method to metabolism results. In considering the type of chronic nephritis without edema Dr. Janeway had emphasized the fixation of the specific gravity of

urine as characteristic. Even more striking was the fixation of nitrogen concentration; while with a normal kidney the nitrogen concentration might reach to 2 per cent. on demand, the sclerotic kidney might not be able to excrete a urine of as much as 0.5 per cent. of nitrogen. The elasticity of function was gone, the limitation was definite and low. When the urine output was under 2 liters per day there was frequently a nitrogen retention with these cases. They had been interested at the New York Hospital in observing during their metabolism studies on these cases the effect of copious water ingestion on the nitrogen output, and they had noted that with many cases it was possible to secure a flushing out of large amounts of accumulated nitrogen in this way, the patient being evidently improved by this therapeutic measure. Of course, a certain danger lay in the burden thrown thus upon a heart probably of weak musculature, and this must be watched. Concerning the type of nephritis with edema, he regarded a pure chloride-water retention as rare. There was usually some nitrogen deficit, though it might be slight, and required a period of observation for demonstration. It was of some interest, perhaps, that analyses of muscles and tissues from cases of what appeared to be pure chloride retention indicated a nitrogen disturbance. There was, of course, an increase of water in these tissues, but even then there was a relative and absolute increase in extractive nitrogen. Whether this had any relation to the causation of edema we did not know. This accumulation seemed not to be found with cardiac edema.

Dr. Lewis A. Conner said he would touch upon only a few of the many important points brought out in Dr. Janeway's admirable paper. Referring first to the group of patients in which the kidney disturbance was shown only by the presence of albumin and casts in the urine, and especially to the adolescent cases, his experience had been that, while some of them were clearly instances of postural or orthostatic albuminuria, in others it was difficult to say whether the condition should be regarded as only of this type, or whether there was not some grade of actual nephritis present. In either case, he wished to endorse and emphasize Dr. Janeway's warning against too rigid dieting. These growing children required an abundant, nutritious diet, including the various forms of protein, and attention should be paid to their proper growth and nutrition rather than to the local condition. In the pure hypertension cases, his experience agreed entirely with that of Dr. Janeway that measures directed toward allaying mental strain and emotional disturbance were of much more effect than were any attempts to lower the blood pressure by means of drugs or other direct methods. Much could be done by readjusting the mode of life by the insistence upon bodily and mental rest, and by reassurance and encouragement. While the introduction of the sphygmomanometer had been of the greatest value in many ways, it had brought with it its own train of evils, and one saw many patients of this class whose condition was aggravated by their constant attention to, and their worry about, their high blood pressure, and whose spirits rose and fell with each insignificant fluctuation in the mercury column. Dr. Janeway had brought out an important point, and one which most had failed to recognize, in calling attention to the fact that in the cases of grave renal insufficiency the manifestations of uremia might be precipitated by failure of cardiac compensation. Finally he said he wished to endorse his view that in conditions of cardiac insufficiency complicating renal disease, digitalis might be of great value and should be used even when no fibrillation of the auricle existed, and when the cardiac rhythm was normal.

Dr. Warfield T. Longcope said that among the many interesting points which Dr. Janeway had so ably discussed, there was one which, with Dr. Foster, he should like to emphasize. For some time they had all been impressed with the necessity of limiting the intake of chlorides, the intake of water, and the intake of nitrogenous foods in many cases of nephritis, so that one almost forgot that there were cases, namely, the nonedematous types, with high pressure and poor concentration of chlorides and nitrogenous material in the urine, in which it was perfectly rational to give large quantities of fluids. In these individuals concentration of sodium chloride usually remained constant whether the patient excreted 500 c.c. of urine or 2 liters, and consequently it was rational to suppose that with the elimination of large quantities of urine, larger amounts of sodium chloride and nitrogenous material would be excreted. In certain selected cases when the excretion of water was not materially interfered with, they had employed one of the oldest methods in the management of nephritis, and had given the patients as much as two, three, or even four liters of fluid a day. In the severer cases hot packs had been employed, together with forced fluid. It had seemed to them that many of these patients had been more comfortable under this régime than under any other which they had tried in the individual instance. In certain cases, undoubtedly, forcing fluids was harmful, but in selected cases it might be used as a true therapeutic measure.

Dr. Louis Faugeres Bishop said that the elaborate and scholarly paper of Dr. Janeway, commencing with his well-deserved eulogy of our great teacher, Dr. Francis Delafield, represented a complete study of the excretory findings in kidney disease. Just as Dr. Delafield said the final word in the morphology of nephritis, so this paper might very well represent the final word in the studies of the ultimate chemistry of nephritis. From now on Dr. Bishop said he did not think this field would be very fruitful. Dr. Janeway had asked for suggestions that might lead to the further development of these studies. It seemed to him that this must be found in the study of the whole protein molecule rather than in the study of the final elements of its destruction. The work that Dr. Janeway had given us represented a continuation of the application of inorganic chemical methods to the study of disease. Inorganic chemistry, as a rule, was satisfied with the measurement and study of elements. What we needed for the further elucidation of these diseases was, first, an appreciation that they were really diseases of metabolism and not diseases of elimination; that they must make a new beginning, starting from the broad field of biochemistry and focussing finally upon the special organs involved, rather than working back from structural change and chemical end-products to original causes. The study of proteins in the blood was bound to be a barren field since it seemed pretty evident that the tissues and not the blood were the repositories of the cruder proteins as they came from digestion and the waste products as they formed. The blood was simply the temporary carrier of protein, and the quantity found would depend upon the time of observation rather than anything else, just as amino acids were found in the blood stream only after a meal as they floated from the intestines to the tissues. There was a fruitful field in the study of acquired sub-symptomal idiosyncrasies, particularly relating to the proteins of animal origin. These seemed to him to be the basis of much cardiovascular-renal disease, and the result of dietary treatment was very brilliant. Most people suffering from cardiovascular-renal disease were sensitive to meat, many were sensitive to fish, and not a few to eggs. It was in the nature of a mild anaphylaxis, which kept all the cells of the body in a state of mild irritation, and finally led to definite organic disease. So dietetics became rather a qualitative than a quantitative matter. The exclusion of the particular protein to which the person was sensitive limited the trouble and the symptomatic improvement was extraordinary. He had elaborated this theory in a whole book, so could hardly make it clear in a brief discussion. It was a very good thing to hear Dr. Janeway recommend exercise in the management of certain persons suffering from very high blood pressure. When this idea was first proposed a few years ago, it was subjected to severe criticism, but he was sure no one who had really tried it had any doubt that outdoor exercise was one of the best remedies for these people.

SECTION ON MEDICINE.

Stated Meeting, Held October 19, 1915.

Dr. T. Stuart Hart in the Chair.

An Outbreak of Typhoid Fever and Its Cause.—Dr. S. R. Blatteis presented this paper, in which he first reviewed briefly the history of a number of epidemics of typhoid fever occurring in New York, and considered the evidence pointing to the sources of such epidemics, as worked out by the Department of Health, through its division of epidemiology. Of these sources, milk appeared by far the greatest offender, with water, flies, and carriers as other sources of infection. Water had only in rare instances been proven to be the cause of a typhoid outbreak in this city. The relative increase of milk as the cause of typhoid fever in this

city compared to water differed from the results obtained from a study of 638 epidemics in other places, of which only 17 were traced to milk and 77.4 to water. The essayist cited the recent epidemic which prevailed on Hart's Island as illustrative of a fly epidemic. A personal inspection after the development of 14 cases, following the admission of a case in the incubation period, revealed such conditions in the improvised hospital ward, where young inmates were acting as nurses, that the number of cases subsequently developing totaled 95. Here were observed myriads of flies feeding on typhoid stools, carelessly spilled over bedding and floor. Flies invaded all corners of the institution, making it difficult to see how any food products could escape contamination. After referring to the rôle of the typhoid carrier as a source of the disease, Dr. Batteis described the typhoid epidemic which occurred in the Park Slope section of Brooklyn in the fall of 1914. This epidemic was traceable to an ice-cream and confection parlor, where an individual was employed from whose feces typhoid bacilli were subsequently repeatedly isolated, but who gave a history of never having had typhoid fever, and who in spite of specific treatment still showed the specific organism as late as two weeks ago. That the largest number of cases for which no source of infection could be discovered was due to typhoid carriers there was little room for doubt. Thus recent measures adopted by the Department of Health, such as making Widal tests of all food handlers and examining the feces in suspicious cases, had for their object some possible improvement in this respect. Oysters and shellfish played a minor rôle in the epidemiology of typhoid fever. More rare than infection by oysters and shellfish were the records of infection by vegetables and fruit, and nowhere among all the records or in the literature was there reported an instance of an outbreak of typhoid fever due to the eating of watermelons. The history of such an epidemic was as follows: On July 12, 1915, a group of children, eight or ten in number, all from one block near the Upper Narrows of New York Bay, went to the beach and noticed a large number of watermelons in the water. All the melons were either damaged along one end or split along the body, and the portion near the damaged end could not be eaten because of its salty taste. The children carried home what they could and distributed pieces to other members of the family. In from one to three days after the ingestion of the melon the children and a few adults, who had eaten of the melons, with but few exceptions, suffered from an acute attack of gastroenteritis, characterized by nausea, vomiting, severe abdominal cramps, diarrhea, and, in some instances, marked prostration. They all recovered, and, after a perfectly well interval, some of the children became ill. On July 24, twelve days after the melon party, appeared what was reported to be the first case of typhoid fever in a child eight years of age. Then in rapid succession 12 cases developed within about two weeks. No secondary cases developed. The clinical data in these cases did not differ from the average type of the disease. The evidence that this outbreak had its source in the watermelons was based upon (1) the period of incubation, which averaged eighteen days (the average given in the literature of a large series of cases); (2) the Widal test, which was requested in only five cases, three being positive, one doubtful, and one negative; (3) the Diazo reaction, positive in all seven cases examined; (4) examination of feces, done in eight cases, in fivt of which two examinations were made, with the result that typhoid bacilli were found; in three cases in which only a single examination was made the bacillus was isolated in one instance; (5) the duration of the disease, 25 7/10 days, which agrees with the average of 500 cases in which the duration was 29 days. Investigation of the milk and water supply gave absolutely negative results, and a detailed investigation by the Bureau of Food Inspection failed to produce any evidence in the food supply of that immediate vicinity that could be interpreted as a possible cause. The conclusive evidence pointed to the watermelons as containing the organism of this disease. The melons were picked up in the upper bay, immediately above the Narrows, where within a mile of each other two large sewers emptied, one of them draining the Bay Ridge section of Brooklyn, where at the time an epidemic of 100 cases of typhoid fever was raging.

Dr. Haven Emerson said he thought the chain of evidence pointing to the melons as the source of infection in these twelve cases of typhoid fever was perfect with the exception of the fact that a bacteriological examination of the melons had not been made. The Department of Health had for some time been studying the problems that presented themselves in connection with bathing in the waters of New York Bay. They had made bacterial examination of specimens of water taken at various points in the vicinity of the city and found the number of bacteria per cubic centimeter of water varied greatly. As bathing was a recreation that meant a great deal to the inhabitants of the city the Department of Health had been trying to work out some plan by which the waters about the city might be kept pure and they had presented the subject to the Academy of Medicine with the hope that some of the members might become interested in the matter and help them in devising some such plan. After such an epidemic as had occurred from eating the melons taken from the water the only safe course at present seemed to be that of closing all the public bathing houses along Gravesend Bay.

Dr. Alfred Meyer expressed the opinion that when it came to a question of revoking the licenses and closing the bathing houses, the argument based on the outbreak of typhoid fever caused by eating watermelons taken from the water would have to be eliminated. The bathing masters might contend that bathers did not eat food taken from the water as a rule, and they might defy the authorities to give a single instance in which bathing in the water had resulted in infection with typhoid fever. There were instances of conjunctivitis acquired while bathing in the waters about the city, but he knew of no instance in which typhoid fever had been acquired in this way.

The Use of the Roentgen Ray in Nonmalignant Conditions.—Dr. James A. Corscaden presented this paper in which he described the Roentgen ray and compared it with other therapeutic agents. He said that the Roentgen ray was different from other agents in that it might reach any part of the body or any part of the cell without being restricted in its action by the laws of fluids and osmosis. It reached the nucleus of the cell with no regard to cytoplasm and could, therefore, if the nucleus had a high power of absorption, affect this independently. The effect of small doses of the Roentgen ray upon the nucleus was to increase the cytolytic growth activity with more rapid mitosis and increase in the number of cells. In large doses this lawful activity became lawless and resulted in pyknosis and nuclear disintegration, and later vacuolization and rupture of the cytoplasm, ending in the death of the cell. The types of cells affected were those whose nuclear construction was least stable. Why, otherwise, one cell should be affected and another not, had yet to be definitely shown, but might lie in the fact that elements of different coefficients of absorption might require rays of special penetration quality for that absorption, and that this difference between cells might depend on the amount of those various substances contained in the cell. Applying this action to the tissues their susceptibility was found to be in about the following order: The lymphocytes, whether in the lymphoid structure, such as nodes, spleen, bone marrow, or blood, the thymus gland, the follicular apparatus of the ovary, white blood cells, such as myelocytes, polymorphonuclears, parenchymatous glandular structures, connective tissue, and bacteria. Myelocytes were readily destroyed, but myeloblasts were very resistant, persisting in the blood of leukemics in spite of all Roentgen ray treatment. The action of the Roentgen ray on bacteria had varied greatly, according to different observers. Basing his study on this varied susceptibility of the different tissues the writer has studied diseases of the lymphatic and blood system, the thymus gland, Graves' disease, chronic inflammation, particularly tuberculosis of the bone and lymph glands, with or without sinus formation, metrorrhagia, polycythemia, Banti's disease, Mikulicz's disease, and hypophyseal disorders. He had found that in diseases of the lymphatic and blood system the Roentgen ray was a valuable palliative agent, relieving symptoms and prolonging a comfortable existence, but was rarely curative. The immediate effect on the symptoms was an improvement in the anemia, the weight and strength are rapidly recovered, and the hemorrhages ceased, but the normal anatomical or clinical appearance was practically never reached and in the leukemias there were always present in the blood picture some, if only a few, of the abnormal white cells. However, the course of the disease might be prolonged from nothing up to three or four years. Cases with blood

changes of less than one year's duration did better than those of long standing. The prognosis was better in older persons, although they responded less to the treatment than the youthful. Hodgkin's disease derived the greatest benefit from the surgical removal of the gland, followed by radiation. Enlargement of the thymus gland could be so quickly diminished by the Roentgen ray that thymic asthma might be relieved in twelve hours. In Graves' disease, functional cures occurred in 25 per cent. of the cases treated either by attempting to destroy the thyroid gland or by destroying the thymus; some cures had persisted up to six years. In chronic inflammation, clinical cures, that was, disappearance of tuberculous lymph node enlargement and closure of sinuses, occurred in 66 per cent. of the cases treated in this way. Whether this was due to destruction of the invading organism, to increased lymphocytosis, or to stimulation of other resisting agents, was still *sub judice*. Bleeding from the uterus caused by disturbances of the factors governing menstruation or by fibromyomas causing passive congestion, but not pedunculated or ulcerated, could be permanently stopped. This result was obtained in women over thirty-eight years of age; in women under that age partial amenorrhea might be established where there was no new growth of the uterus. Fibromyomata in young women should be excised unless operation was contraindicated, when, if bleeding, they should be treated by the Roentgen ray. The speaker presented a number of patients, illustrating some of the conditions considered in his paper, who had been greatly improved by the application of Roentgen-ray therapy.

Dr. E. W. CALDWELL said that Dr. Corscaden's paper had given an excellent review of the literature and left nothing to be said as to what had been done in the *x*-ray treatment of non-malignant conditions. But in his experiments as to the physiological effects of the *x*-ray he had been struck with the fact that the data as to dosage and the application were not as plain as he would like to have them. For instance, taking white light for comparison they knew that it was composed of all the colors of the spectrum and that each color had a different wave length; likewise in the *x*-ray there was a difference. They knew that the chemical effect and the physiological effect of the violet and red rays were very different, and when they used them all together they did not know which ones were responsible for a certain effect when they got it. They knew that in the body certain tissue elements had a higher absorptive power for the *x*-ray than others. They also knew that iodine and phosphorus were more absorptive than hydrogen, nitrogen, and oxygen. Hence if they knew the chemistry of a particular tissue they could get more startling effects from the use of the *x*-ray than they did now. Again another difficulty was that of obtaining a deep effect without getting too much superficial effect; a selective action would be better. One knew, for example, that red light passed readily through a very thick piece of red glass and that it was absorbed almost completely by a thin sheet of green glass, therefore if one knew the absorption characteristic of different tissue cells better results might be obtained. Another difficulty lay in measuring the intensity, whether a given amount of radiation takes place in a shorter or longer time. Suppose that one assumed that a physical effect was produced by a certain amount of radiation in a short time and the same amount was applied over a long time, the question arose whether the same result would be obtained. These were a few of the many problems that remained to be worked out. There was a great deal still to be done and until some of these problems were solved they did not know what would or could not be accomplished by the *x*-ray.

A Case of Hydro- or Pyo-Pneumopericardium Complicating a Spontaneous Pneumothorax. — Dr. ALFRED MEYER presented this communication (see page 991).

Dr. MAX TASCHMAN said that this patient had first come under his observation in the tuberculosis clinic of the Mount Sinai Hospital and was found so ill that only a hurried examination was made, and he was immediately transferred to Dr. Meyer's hospital service. The clinical picture presented by this patient was interesting. The patient appeared gravely ill, his face was pinched, clammy, and cyanosed, like that seen in severe cases of pneumonia just about the time of crisis. The cyanosis was so extreme that but for the rapid breathing it might have suggested argyrosis. The breathing was labored, shallow, and painful. His pulse was rapid, thready, and irregular. Examination of the chest revealed the usual signs of infiltration, involving the upper half of the right lung front and back and the upper part of the left upper lobe. Over the greater part of the left lung, posteriorly, the percussion note was hyperresonant, the respiratory murmur diminished, and almost absent at the base, with metallic fremitus. The condition of pneumothorax was at once recognized. Pleural effusion was sought for, but was not found. These signs were likewise evident anteriorly, but less marked. While auscultating the left chest behind, the speaker said he was struck with a physical phenomenon that he had never before encountered. This was a loud, metallic, splashing, churning sound, synchronous with the heart beat and of appreciable duration. It was heard louder behind than in front and much more distinctly with the unaided ear applied to the chest wall than with the stethoscope. It was evident that they were dealing with a cavity containing air and fluid and lying close to the heart. A diagnosis was therefore made of left-sided pneumothorax with a secondary cavity in the lung containing fluid adjacent to the heart. An *x*-ray examination clearly demonstrated that this secondary cavity containing air and fluid was situated within the precordium. McPhedran, in his article on pneumopericardium with effusion, in Osler's "System of Medicine," stated that the diagnosis of this condition must be differentiated from pneumothorax on the one hand, and, on the other, from a large pulmonary cavity with fluid lying adjacent to the heart. Within the past few years he had had the opportunity of studying a fairly large number of cases of induced pneumothorax, and in no case were the heart sounds audible over the area of pneumothorax behind. In those cases complicated by pleural effusion the same held true. It was conceivable that where an extensive pleuro-pericardial-epicardial adhesion existed that the heart's contraction might be communicated to the fluid in a case of left-sided hydropneumothorax. Moreover, the opportunity for this physical sign presented itself in the fairly frequent condition of precordial or pericardial cavity in instances of pulmonary tuberculosis, but neither in these cases nor in those of bronchiectatic cavity, situated above or to the left of the heart, even with marked pulling over the heart into the axilla, had he ever been able to elicit the metallic churning sound so clearly evident in the case presented by Dr. Meyer. This sign, heard loudest with the unaided ear, was almost pathognomonic of this pneumopericardium with effusion. The *x*-ray was of great value in the study of this condition.

Dr. HENRY WESSLER said that he had studied this case with Dr. Meyer and had nothing to add, though he might emphasize the point that the linear shadow might be due to displacement of the mediastinum. It was possible that the mediastinal shadow might produce an effect like this, but by placing the patient in various positions, if there was air in the pericardium, one would get the shadow in all positions. The lateral and dorsal positions would show the linear shadow and the heart could be seen surrounded by air in front and on both sides, and this made the significance of this particular shadow fairly certain.

Dr. MAURICE FISHBERG stated that the case reported by Dr. Meyer was very interesting, but he believed that pneumopericardium, while an uncommon condition, was not as rare as would be expected considering that it was so rarely mentioned in medical literature. Still, in Leube's textbook on diagnosis there was given a rather complete description of the etiology and symptomatology of the disease. He had met with several cases of a splashing sound synchronous with the cardiac systole. The last one he detailed and presented *x*-ray plates showing a hydropneumothorax, though there was no air visible within the pericardial sac. In his case the splashing systolic sound was preceded by pleuropericardial friction sounds for two days. After lasting for about three days, the plashing sound disappeared but then a metallic tinkle was audible, as was frequently the case in hydropneumothorax. The patient made a good recovery, as regards the pneumopericadium; the pneumothorax was absorbed and the underlying phthisical process went on its course.

Dr. L. T. LE WALD stated that he had slides of three cases of spontaneous pneumothorax on the left side, which he would like to show. Two of these cases made a complete recovery and the other was still under observation. These were instances of spontaneous pneumothorax *without tuberculosis*. The first case was

that of a man 25 years of age who suddenly felt something give way while taking a shower bath. Roentgen examination showed left-sided pneumothorax. After the patient had been put on proper exercise (blowing in bottle, etc.) for two weeks a second radiograph was taken, which showed complete disappearance of the pneumothorax. There had been no evidence of recurrence. The second case occurred in an errand boy 16 years of age, and was due to a slight traumatism. He was knocked down in the street, became unconscious for a short time and developed the pneumothorax involving the left side. The air was aspirated and after two weeks he had recovered full lung expansion. The third case, occurring in a boy 12 years of age, was also a spontaneous left-side pneumothorax. All of these three cases were on the left side and Dr. Meyer's case was on the left side, making it seem that there was a predilection for the left side in this condition. In this boy the heart was displaced toward the right side. He did not go through so favorable a course as did the two previous cases, but at the end of one month still had the displaced heart, and at the end of six months his condition was about the same as before.

Dr. Alfred Meyer, in closing the discussion, said that Dr. Fishberg's case had impressed him as one in which there might be pericardial adhesions which would give a peculiar splash during systole and might lead one to believe that the peculiar splash to which he had referred was present. As to the splash that occurred with hydropneumothorax, whether spontaneous or the result of the injection of nitrogen, they had made every attempt to check it up with other conditions, but they could not get this characteristic splash nor could they get positive proof that others got it. If one thought that he might be dealing with a case of hydropneumothorax he should determine whether he got the peculiar splash in all positions of the patient and then having heard it he should get a radiograph to see whether it was not a heart pumping through air and fluid in the pericardium, this condition complicating hydro-pneumothorax.

COLLEGE OF PHYSICIANS OF PHILADELPHIA

Stated Meeting, Wednesday, November 3, 1915.

The President, Dr. James C. Wilson, in the Chair

Some Physical Facts About the Radioactive Elements as Applied in Medicine.—Dr. William S. Newcomet called attention to some of the more common misconceptions of the radioactive elements and emphasized the desirability of establishing centralizing an institution where radium, thorium or other such agent might be obtained in desired amount and therapeutic activity. He believed that the usefulness of radium would be impaired just so long as it remained in the hands of private institutions, or worse still, in private hands. Radium and its allied elements were divided into two groups: (1) For the purpose of irradiation; (2) for the employment as medicine internally. In its local use the principal and most penetrating ray of radium was the *x*-ray, analogous to the Roentgen ray. A second ray known as the beta ray was analogous to the cathode ray; a third, the alpha ray, was said to be practically worthless in external applications, although 90 per cent. of the energy of the radioactive elements was of this form. It was to be remembered that radium was merely the parent and gave forth the elements which gave rise to the "active deposit." While the rays of thorium were still more penetrating than those of radium its use was necessarily confined to the applicator method and its manipulation from a chemical standpoint was difficult. An instance demonstrating the need of laboratories supplying these preparations and accurate measurement was that of a reputable dealer who had for sale two tubes of radium which he stated had been purchased from a well known chemical house, the price having been $400 and $1,400. The actual value of the radium had been found to be 40 cents and $30. Attention was called to the confusion between the so-called rays emanating from the different radium elements, and the emanation which was an element and a gas, subject to all the laws of other gases, and which when confined within a tube could not escape. It was pointed out that in the internal administration of radium or of thorium, it was the radioactivity and not the elementary base which affected the system. Radium might be given as a salt, soluble or insoluble; or, it might enter the system as a gas in the form of an emanation. The salts gave off the emanation in proportion to their age, continuously and in a definite ratio as long as they were contained in the system. It was to be remembered that insoluble salts allowed only about 2 per cent. of the emanation to escape. Radium might be obtained in solution and its strength and dosage estimated. The exact effect of the sulphates of the body upon it was said to be not definitely known. While in the body it gave forth its activity, changing slowly into the emanation, the emanation in turn to the "active product." Should an insoluble salt be administered it passed along the alimentary canal unabsorbed but gave off the emanation and active product which were absorbed. The major portion of this emanation, however, it was said, remained occluded within the intermolecular spaces of the insoluble powder and its effects continued until it was eliminated. Although given in solution water containing emanation should be used at its source. When this was not possible the commercial emanation, though not very efficient, should be used under the best conditions. The desirable product for the internal administration of thorium, it was said, was thorium X, and this had about the same period of life as radium emanation. Since it was a salt instead of a gas it remained within the system undergoing a very rapid change to emanation and "active product" and was, therefore, more powerful than the radium product. Although the therapeutic value of these extremely powerful agents had by no means been yet established, they were being employed by persons with little comprehension of their effects. While beyond doubt they were of value the results obtained were in proportion to the skill with which they were administered.

Dr. Solomon Solis-Cohen said that in estimating the value of any method of treatment which was to a certain extent new or unfamiliar certain difficulties arising were: (1) from the extravagant statements of those who used the treatment without much thought of what was to be expected and without much ability to criticise results; (2) from the skepticism of those who had made no use of the method but denied its value *a priori*. The greatest difficulty of all, however, he thought arose from its use, even by intelligent persons, with extravagant expectations of what was to be accomplished. Failing to realize such expectations, the method was condemned as valueless. Personally Dr. Cohen had seen no convincing explanation of the therapeutic effect of radium emanation water, yet it was known that in some pathological conditions, certain definite changes might reasonably be expected to follow, although not in every case. In his early experience with radium emanation water in a few cases of arteriosclerosis and in a few cases of high tension from other causes in which it was used, a marked lowering of blood pressure had been observed. In other cases exactly similar in every respect, so far as he could observe, this effect had not been produced. He had found three forms of radium emanation apparatus trustworthy. In selected cases of a limited number of affections, chiefly of the joints, and of certain metabolic aberrations, he stated that with this agent reasonably good results were obtained in an uncertain proportion of cases,—and in his opinion that was all that could be expected. In one case of long-standing osteoarthritis of the spinal column and in a number of cases of arthritis deformans of the extremities he had seen better palliative results by this methd of treatment than he knew how to obtain by other means; also in a number of gouty patients there had been considerable amelioration. He had seen no case of arthritis deformans or of any other chronic affection of the joints, or gout, or chronic metabolic disturbance cured by means of radium emanation. It was to be remembered that radium emanation was an agent of limited power which was to be used with discretion and intelligent appreciation of the laws underlying its action.

Dr. A. B. Hirsh asked Dr. Newcomet's opinion of the intravenous injection of radium.

Dr. Newcomet, in closing, said he had not attempted to speak upon the physics of radium and called to mind the presentation of a paper before the College a year ago by Dr. Goodspeed in which the different methods of measurement were given. His aim had been to call attention to common mistakes in the use of radium and especially to emphasize the desirability of establishing a central station for supply that every physician might obtain radium, thorium, or other agent, in desired amounts and possessing therapeutic activity. Reply-

ing to Dr. Hirsh, Dr. Newcomet said that he had mentioned in his paper the soluble and insoluble salts of radium and also the gas—the emanation; it should be remembered that radium sulphate was the most insoluble salt known; just what effect the sulphur of the human economy would have upon radium was still unknown.

The Occurrence of Miliary Tuberculosis of the Liver in the Course of Pulmonary Tuberculosis.—Dr. ROBERT G. TORREY presented this paper, which was based upon a study of the reports of 132 autopsies upon subjects showing pulmonary tuberculosis. The frequency with which an apparently recent and widespread miliary tuberculosis of the liver was found at autopsy in cases of pulmonary tuberculosis, and the finding that in cases of phthisis dying from other causes, as fatal hemorrhage, acute peritonitis, septicæmia, lobar pneumonia, etc., miliary tuberculosis of the liver was not found, made it appear that the hepatic involvement might be an important factor in determining the fatal issue. The author thought it probable that infection of the liver frequently took place by way of the spleen, where the tubercles were of varying age, and lie in close relation to large blood spaces directly connected with the portal vein.

Dr. WILLIAM M. L. COPLIN recalled two cases with unusual features. One was that of a girl of 14 who at operation showed extensive miliary tuberculosis of the peritoneum with voluminous ascites. The serosa was studded with gray tubercles. Nodules were present, which macroscopically appeared to be composed of tubercles within the liver. Upon excision of a fragment intrahepatic tubercles and contained bacilli were demonstrated. The patient recovered from the tuberculous peritonitis and from the lesion in the liver and has married and borne children. In the other case the liver contained tubercles clearly of different ages; one group had apparently developed shortly before death. Dr. Coplin had not found the so-called sub-miliary tubercle of the French writers so frequently as it was said to occur. Of special interest he felt was the relation of lipoids to immunity, especially to the immunity of tuberculosis. He thought it possible that in certain extremely fatty livers frequently found in patients in whom all conditions appeared favorable to the development of hepatic tuberculosis, the liver escaped because of the intracellular lipoids. He did not recall an instance of intense miliary tuberculosis in a very fatty liver.

Creeping Eruption of the Skin, with Histological Examination and the Demonstration of the Burrows and the Larvæ in the Epidermis.—Dr. FRANK CROZER KNOWLES gave a short review of the general subject of creeping eruption, referring to the fact that the histological examination had been successful in but three cases, including the one reported in the paper. The paper was based upon the study during the last three years of 3,000 serial sections from the present case. Quite a number of stains had been employed in order to bring out the various salient features of the eruption. The investigation had been most successful in that fully 150 sections showed excellent views of the burrows and thirty presented various portions of the larvæ. The present instance was the first in which the larvæ causing creeping eruption had been found in sections and also the first time that a successful histological examination had been made in America. The paper was illustrated by lantern slides in which three clinical pictures of the case were shown, four illustrations of the burrows, three drawings of the larvæ in sections, and a photograph of magnified skin showing the clinical appearance of the burrows. In comparison photographs were exhibited of the burrow caused by the mite itch, the acarus scabei and ovæ in sections, the burrows of creeping eruption from the case of Rille's and Riece's, and Sokolow's drawing of the larva. A notable fact was that while the burrow of scabies is found in the middle and upper horny layer, that produced by the larva in creeping eruption was found in the lower horny layer at the junction with the rete and also in the upper portion of the latter epidemic layer. Some of the burrows were without contents, but the majority were either partially or entirely filled with granular debris, degenerated epithelial cells, free nuclei, eosinophiles, polymorphonuclear cells, and lymphocytes. A complete histological examination had been carried out in reference to all the various layers and structures of the skin. The classification, incubation period, and mode of infection of the individual by the larva were also discussed.

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

THE OPERATIONS OF SURGERY. By R. P. ROWLANDS, M.S., London, and PHILIP TURNER, M.S., London. Published by The Macmillan Company, New York. Volumes 1 and 2; sixth edition, with 797 illustrations; (forty in color); 1030 and 934 pages.

VIEWS ON SOME SOCIAL SUBJECTS. By SIR DYCE DUCKWORTH. Published by The Macmillan Company, London; 320 pages.

BACTERIOLOGICAL METHODS. By ALBERT SCHNEIDER, M.D. Published by P. Blakiston's Son & Company, Philadelphia; 87 illustrations, and 6 full page plates; 288 pages. Price, $2.50.

THE NOSE, THROAT AND EAR. By BEN CLARK GILE, M.D. Published by P. Blakiston's Son & Company, Philadelphia; with 131 illustrations, eight of which are printed in colors; 456 pages. Price, $2.75.

GENERAL MEDICINE. Practical Medicine Series. Vol. VI. Edited by FRANK BILLINGS and J. H. SALISBURY; published by the Year Book Publishers, Chicago; 359 pages. Price, $1.50.

GENERAL MEDICINE. Practical Medicine Series. Vol. VII. Edited by JOSEPH B. DE LEE. Published by the Year Book Publishers, Chicago; 230 pages. Price, $1.35.

TEXT-BOOK OF FORENSIC MEDICINE AND TOXICOLOGY. By R. J. M. BUCHANAN, M.D. Published by William Wood & Company; eighth edition, revised and enlarged; 417 pages. Price, $3.25 net.

AN EPITOMIZED DIAGNOSIS OF GASTRO-INTESTINAL DISEASES. Published by Reed & Carnrick, Jersey City, N. J. 64 pages.

ANATOMY OF THE BRAIN AND SPINAL CORD. By HARRIS E. SANTEE. Published by P. Blakiston's Son & Company, Fifth Edition, Revised and Enlarged, with 158 illustrations, 46 of which are printed in colors. 474 pages. Price, $4.00 net.

DIAGNOSTICO DE LAS ENFERMEDADES DEL CORAZON. Por ANTONIO MUT. Hijos de Reus, Editores—Canizares, 3 duplicado—Madrid. Price, 7.50 pesetas. 504 pages.

EL PROBLEMA DE LA MENINGITIS. Por el Dr. CESAR JUARROS. Hijos de Reus, Editores—Canizares, 3 duplicado—Madrid. Price, 4.50 pesetas. 272 pages.

MANUAL PRACTICO DE ANESTESIA. Por J. BLUMFELD, M.D., Cantab. Hijos de Reus, Editores—Canizares, 3 duplicado—Madrid. Price 3.50 pesetas. 193 pages.

PEG ALONG. By GEORGE L. WALTON, M.D. Published by J. B. Lippincott Company, Philadelphia and London. 192 pages. Price, $1.00 net.

INJURIES OF JOINTS. By ROBERT JONES. Published by Oxford University Press, New York and London. 189 pages. Price, $1.25.

MEDICAL HINTS. By J. EDWARD SQUIRE. Published by Oxford University Press, New York and London. 128 pages. Price, $1.00.

NERVE INJURIES AND SHOCK. By WILFRED HARRIS. Published by Oxford University Press, New York and London. 127 pages. Price, $1.25.

WOUNDS OF THE THORAX IN WAR. By J. KEOGH MURPHY. Published by Oxford University Press, New York and London. 156 pages. Price, $1.00.

SURGERY OF THE HEAD. By L. BATHE RAWLING. Published by Oxford University Press, New York and London. 150 pages. Price, $1.25.

THE STRETCHER BEARER. By GEORGE M. DUPUY. Published by Oxford University Press, New York and London. 138 pages. Price, $1.00.

ABDOMINAL INJURIES. By Prof. RUTHERFORD MORRISON and Lieut. Col. W. C. RICHARDSON, R.A.M.C. (T). Published by Oxford University Press, New York and London. 114 pages. Price, $1.00.

PRACTICAL PRESCRIBING AND TREATMENT IN THE DISEASES OF INFANTS AND CHILDREN. By D. M. MACDONALD. Published by the Oxford University Press, New York and London. 199 pages. Price, $1.50.

MANUAL OF SURGERY. By ALEXIS THOMSON AND ALEXANDER MILES. Vol. I. Published by the Oxford University Press, New York and London. 801 pages. Price, $3.50.

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Original Articles.

BLOOD PRESSURE WITH SPECIAL REFERENCE TO THE DIASTOLIC.*

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BLOOD-PRESSURE from the systolic standpoint has been so thoroughly investigated and its normal averages at the different ages so well established, that owing to the brief time at my disposal, little attention will be paid to it.

An analysis of 18,637 records from our approved male cases during the years 1912 to 1914, inclusive, gives the systolic pressures by quinquennial periods, as shown in Table I.

TABLE I

Age Periods	Cases	Mm. Hg.	Average Systolic Pressure
15–19	187	22,316	119
20–24	1,690	205,695	122
25–29	3,351	412,908	123
30–34	4,011	498,924	124
35–39	3,934	494,350	126
40–44	2,883	367,343	127
45–49	1,550	199,992	129
50–54	677	89,254	132
55–59	257	34,697	135
60–64	76	10,411	137
65–66	21	2,917	139
All ages.	18,637	2,338,807	125

The large number of cases involved and the close agreement between these pressures and those of the Northwestern Mutual and the Mutual Benefit as reported by Dr. Fisher[1] and Dr. Van Wagenen[2] makes the correctness of the pressures at the various ages seem very certain as they practically represent a total of 36,104 cases. At no age group is there a variation of more than 3 mm. among the different records.

The limits within which this pressure may vary, under normal conditions, seem to be almost as thoroughly established (Table II) for 9,370 records in 1912 and 1913, and 9,268 in 1914, each gave a variation for all ages of 15 mm. Hg. above and 15 mm. Hg. below the average. It will be noticed that the range is a trifle smaller at the younger ages.

TABLE II—NORMAL SYSTOLIC RANGE

Ages	No. of Cases (1912-13)	Range	No. of Cases (1914)	Range
15–39	6,416	28	6,758	28
40–66	2,954	30	2,510	30
15–66	9,370	30	9,268	30

*Read at the 26th Annual Meeting of the Association of Life Insurance Medical Directors of America, Oct. 15, 1915.

SELECTED EXAMINERS

Ages	No. of Cases (1914)	Range
15–39	1,043	28
40–66	415	36
15–66	1,458	30

Dr. Fisher[1] evidently agrees with 15 mm. above as he states that, "We take our average for the age and where the blood pressure is 15 mm. in excess of that average we call that a high blood pressure, and we call for additional tests." It seems quite as reasonable to suppose that 15 mm. below is equally as accurate. This is also demonstrated by Table II, and attention is called to the fact that the range in the two groups, 1912-13 and 1914 was exactly the same.

We wish to emphasize the fact that from ages 15 to 66 there is a gradual increase in the average systolic pressure and the limits within which it may be considered normal, as shown by Table III, at no point, even in the young ages, fall below 104 mm. or at the older ages rise above 150 mm. It is felt, however, that a pressure somewhat below the low limits is not usually as serious an impairment as one equally above the high limits.

TABLE III—NORMAL LIMITS OF SYSTOLIC PRESSURE

Ages	Low - 15 mm.	Average Mm. H.	High +15 mm.
15–19	104	119	134
20–24	107	122	137
25–29	108	123	138
30–34	109	124	139
35–39	111	126	141
40–44	112	127	142
45–49	114	129	144
50–54	117	132	147
55–59	120	135	150
60–64	122	137	152
65–66	124	139	154

An attempt has been made to determine the effect of pulse rate on systolic pressure—Table IV indicates, where there are enough cases to be of any value, that for each increase of five pulse beats, the pressure rises 1 mm.

TABLE IV—SYSTOLIC PRESSURE BY PULSE RATE IN NORMAL WEIGHTS

ALL AGES

Pulse Rate	Cases	Systolic Pressure
50–54	9	124
55–59	18	117
60–64	202	122
65–69	591	124
70–74	3,783	124
75–79	2,293	125
80–84	1,184	126
85–90	224	127
50–90	8,304	125

Table V shows where there are enough cases to be of any value that there is a slight rise in pressure in the overweights; the underweights give no indication as to the effect on pressure owing to the small number of cases.

Table V—Systolic Pressure by Weight

Weight	Cases	Mm. Hg.	Pressure
30% under	8	1,030	129
20–29% under	312	38,931	125
Normal	16,738	2,095,921	125
20–29% over	1,225	157,280	128
30–39% over	313	40,472	129
40% over	41	5,173	126
Total	18,637	2,338,807	125

In Table VI the effect of height is shown. As the difference between those 5 ft. 6 in. and under and those 5 ft. 7 in. and over is but 1 mm. the effect of height is practically nil.

Table VI—Systolic Pressure by Height

Height	Cases	Mm. Hg.	Pressure
5 ft. 2 in. and under	171	21,420	125
5 ft. 3 in. to 5 ft. 6 in.	3,718	464,454	125
5 ft. 7 in. to 5 ft. 10 in.	10,858	1,262,787	126
5 ft. 11 in. and over	3,890	490,146	126
Total	18,637	2,338,807	125

DIASTOLIC PRESSURE.

In 1876, Marey devised an instrument for measuring the diastolic pressure and propounded the theory that the maximal oscillation occurred when the external pressure exactly equaled the intra-arterial and this maximal oscillation corresponded to the diastolic pressure. In 1897, Hill and Barnard invented a spring instrument for the measurement of this pressure. As the methods for reading these pressures were dependent on maximal oscillation and palpation, the results were not satisfactory.

It was not until 1905 that it was possible to take the diastolic pressure, for clinical purposes, with any degree of accuracy. In this year Korotkow announced the auscultatory method. Since then more attention has been paid to this pressure, but it is only within the last three years that it has received anything like general consideration.

The point at which to take this pressure has caused much discussion. Korotkow[4] said it should be taken at the "end tone" or beginning of the fourth phase, while Ettinger[4] believed it occurred at the beginning of the fifth phase or disappearance of all sound. Erlanger[4], in 1910, after considerable experimental work, stated it should be read at the point where the maximal oscillation became smaller, and Warfield[4], after a series of experiments, believed it occurred at the change from the clear to the dull tone or beginning of the fourth phase. Hooker and Southworth[4], on the other hand, agree with Ettinger, that it should be read at the fifth phase. Most observers now support Korotkow, in his original contention. For practical purposes, in the vast majority of cases, the difference between these two phases is so small as to be of no material significance as there is a difference between them, in normal cases, of from but 2 to 8 mm. In young subjects the difference is apt to be greater than in those advanced in age.

In spite of the fact that diastolic pressure has been so long neglected and is at the present time but slightly considered by many able clinicians, it is felt by the writer that this is the fundamental pressure upon which to base our interpretation of blood pressure readings and for the following reasons:

1. Systolic pressure is the expression in mm. Hg. of the intraventricular pressure and is subject to wide variations from physiological causes. That its variations may be great and indicate hypertension when such does not exist has been frequently demonstrated in our office.

2. Being intermittent it is less liable to produce pathological changes in the heart and arteries than is the constantly high diastolic pressure, although if long continued it, of course, has a very marked effect.

3. The diastolic pressure or peripheral resistance, is much less influenced by emotion, etc., and therefore a more accurate guide where but one or two readings are obtainable.

4. It is constant and consequently more effective in causing changes, especially in the arteries.

5. It is the constant resistance which the heart has to overcome before it can drive the blood forward, and is, therefore, the fundamental pressure as it represents:

A—The constant pressure to which the arteries are subjected.

B—The pressure which the heart has first of all to overcome.

C—The constant strain which has to be borne by the aorta and aortic valves.

It is evident, therefore, that without knowledge of this pressure it is impossible to estimate the pulse pressure, or understand the real significance of the systolic.

PULSE PRESSURE.

The pulse pressure is the expression in mm. Hg. of the head pressure or force of the heart after the diastolic pressure has been overcome. It may be entirely normal while the diastolic and systolic pressures indicate severe circulatory disturbance. It is useful only in showing whether or not the circulation is being properly maintained. The limits of this pressure have been variously estimated, as follows: Hirschfelder, 30-45; Faught, 25-40; Nicholson, 25-40; Janeway, 25-40; Erlanger, 30-40; Barach and Marks, 20-70; Warfield, 30-50; Jackson, 25-40.

Warfield[6] says: "The diastolic has been estimated to be about 45-48 mm. Hg. lower than the systolic, and consequently these figures represent the pulse pressure."

Weysse and Lutz[7] state the average pulse pressure is 35 mm.

Barach and Marks[8] have given figures which appear to be in excess of the normal range and it is felt that any pulse pressure below 25 or above 60 mm. should call for further investigation, provided we are certain as to the competency of our examiner to take the reading.

Melvin and Murray[9] regard the normal readings for the various pressures in young subjects as follows:

Systolic	Diastolic	Pulse Pressure
111.8	65.7	46

and give the range of the pulse pressure as 22-73 and of the diastolic pressure as 50-82.

Returning to the diastolic, the quotations below serve to justify the opinion previously expressed that it is the most important pressure with which we have to deal in our work.

Weysse and Lutz[7] state: "The minimum (diastolic) blood pressure is very uniform throughout the day and is little affected by the ingestion and digestion of meals . . . the average minimum blood pressure for healthy young men in the neighborhood of 20 years of age is 85 mm. Hg."

MacWilliam and Melvin[10] state: "The importance of estimating the minimal or diastolic pressure is now becoming more generally recognized and with the easy applicability of the auditory method there is no difficulty in the way of its routine use."

"As long as the diastolic pressure remains low even with very high systolic readings, the tendency to the giving way of the vessels (cerebral hemorrhage, etc.) seems to be relatively slight."

P. Ballard[11] states: "In estimating the blood pressure, the minimal pressure is much more instructive than the maximal, as Pachon reported in 1913, urging that the minimal arterial pressure be accepted as the standard for comparison."

"The maximal pressure may vary within a wide range, but the minimal pressure of 5 cm. Hg. or 50 mm. seems to be the lowest at which the blood is able to keep circulating."

Martin[12]: "The diastolic pressure appears to be more stable than the systolic and has less often shown any deviation from the normal without pathological cause. The systolic appears to accommodate itself to the diastolic more readily than the latter to the former."

Janeway[13]: "I should like to lay stress on the importance of the simultaneous measurement of systolic and diastolic pressure in determining normal conditions. (The difference between the two is ordinarily 25 to 40 mm., in my experience the lower figures being more common in women—in old men, 50 mm. may be found)."

" . . . A pulse which shows less than 20 mm. difference between systole and diastole, I think is abnormally small and over 50 mm. similarly large."

Nicholson[14] says:: "Second, the importance of routinely taking the diastolic pressure as well as the systolic as the pulse pressure . . . is often invaluable in determining the amount of arteriosclerosis present."

Nicholson[15]: "I wish to emphasize the fact that blood pressure observations should not consist of systolic pressure alone, such readings tell less than half the true situation. It is essential to determine the diastolic pressure. . . . The whole significance of the blood pressure depends on the taking of systolic, diastolic, and pulse pressures."

Barach and Marks[8] make the following comment: "As time goes on and our observations accumulate and are being interpreted, we believe that more importance will be attached to the height of the minimal pressure (diastolic) and that the height of the maximal (systolic) pressure will be considered of lesser clinical importance than heretofore. Certainly the maximal (systolic) pressure alone is of no value except as a starting point for a guess as to the activity of the circulatory system."

Warfield[16] says: "Moreover, the conviction is growing that it is the height of diastolic (minimal) pressure rather than that of the systolic pressure that is really the vital point in blood pressure determination."

Halls Dally[17] says: "Hence, the maximal and minimal pressures between which arterial pressure normally varies are the important criteria which in every case we must definitely determine. . . . To record the maximal pressure, while despising the minimum, not only affords no indication of what the mean pressure is likly to be, but resembles attempting to solve a complicated problem of which one factor only is given. . . . Now that we are in a position to institute a comparison between the maximal and minimal pressures it will probably be found that of the two the diastolic is the more important."

The above quotations clearly indicate the recognition that is now being given to the importance of the diastolic pressure. The fact is, the systolic by itself gives very imperfect information. A high systolic pressure may exist for several weeks as a result of some temporary condition which would disturb the diastolic to a much less extent, or it may be normal with serious disease and therefore taken by itself be misleading.

There is no desire to minimize the value of the systolic pressure, for when continuously high it is always a warning. That this is true has been shown most clearly by Dr. Fisher[1], and each addition made to his original report demonstrates this fact more and more.

To establish the normal diastolic pressure with its normal variations and range is far from being easy, as there are few statistics covering these points.

Barach and Marks[8], after a very interesting series of observations on young adults, arrived at the following conclusions: "The maximal blood pressure, systolic, is under 150 mm. Diastolic was found to be as follows: In 96 per cent. of a series of 338 cases at the fifth phase it did not exceed 100 mm. In 87 per cent. of a series of 312 cases at the fourth phase it did not exceed 100 mm., and reexamination of the remaining 13 per cent. of the 312 cases showed a minimal pressure not over 100 mm. In 96 per cent. of the total 650 cases the diastolic did not exceed 100 mm., at the first examination."

Nicholson[15] says: "The diastolic pressure is between 60 and 105 in healthy individuals." . . . "Even if the systolic pressure were below 150 mm. Hg. a diastolic pressure above 105 mm. Hg. would be a sure indication of hypertension, regardless of the age of the patient."

Norris[18] says: "The diastolic pressure, constantly above 100 mm. Hg. is definitely pathological at any age. The height of the diastolic pressure is often more important than that of the systolic tension. . . . A constant diastolic pressure of or above 100 mm. indicates hypertension regardless of whether the systolic pressure be 180 or 140 mm."

Again: "Given a patient with a well-marked hypertension, 190 mm. systolic, 110 diastolic, we are *de facto* warranted in assuming that the patient is suffering from Bright's disease, at least until further investigation has shown that the hypertension is due to some other cause."

Stone[19]: "Since the diastolic pressure measures the peripheral resistance it is a better index of hypertension than the systolic pressure. A sustained diastolic pressure of from 100 to 110 signifies hypertension. The diastolic is less influenced by physiological factors than the systolic pressure."

As before said, there are few statistics indicating the high and low limits for diastolic pressures. In reviewing the literature, however, one is impressed with the fact that the diastolic rarely exceeds 100 mm. Hg. unless there is some pathological condition which will account for it.

An analysis of our cards with diastolic records has been made by separate years, to show the changes in pressure in both the diastolic and pulse pressures, as the examiners became more expert. In order to increase the number of cases we had 1,103 available cards for 1915 partially analyzed, making a total of 5,018 diastolic records.

Table VII.

Ages	1912-13, 1,216 Cases				1914, 2,699 Cases			
	Cases	Systolic	Diastolic	Pulse Pressure	Cases	Systolic	Diastolic	Pulse Pressure
15–19	16	120	85	35	24	122	85	37
20–24	89	123	88	35	222	122	87	35
25–29	235	124	92	32	491	123	87	36
30–34	249	125	92	33	652	125	89	36
35–39	244	128	95	33	561	126	90	36
15–39	833	125	92	33	1,950	125	89	36
40–44	188	128	95	33	402	129	92	37
45–49	113	130	99	31	221	129	91	38
50–54	52	131	96	35	86	133	94	39
55–59	21	139	108	31	34	137	100	37
60–64	8	137	108	29	4	141	101	40
65–66	1	140	110	30	2	149	99	50
40–66	383	130	98	32	749	130	93	36
15–66	1,326	127	94	33	2,699	126	90	36

It will be noted in Table VII that the 1914 figures for diastolic pressure are below those of 1912 and 1913, while the pulse pressure has increased—further, there is a rise in diastolic pressure with age similar to that of the systolic, but the pulse pressure remains practically constant during all ages. This is further demonstrated by Table VIII, which is a condensed analysis and includes the 1915 cases.

Table VIII—Combined Diastolic and Blood Pressures

Year	Total Cases	Total Systolic, Mm.	Total Diastolic, Mm.	Average Systolic, Mm.	Average Diastolic, Mm.	Average Pulse Pressure, Mm.
Ages 15–39						
1912–13	833	103,997	76,697	125	92	33
1914	1,950	242,885	172,658	125	89	36
1915	786	98,274	69,268	125	88	37
Total	3,569	445,156	318,623	125	89	36
Ages 40–66						
1912–13	383	49,829	37,340	130	98	32
1914	749	97,151	69,378	130	93	37
1915	317	41,011	28,807	129	91	38
Total	1,449	187,991	135,521	130	93	37
All Years						
Ages 15–39	3,569	445,156	318,623	125	89	36
40–66	1,449	187,991	135,521	130	93	37
Ages 15–66	5,018	633,147	454,144	126	91	35

An examination of the 1915 records in this table shows a further reduction in the diastolic readings and an increase in the pulse pressure, over the preceding years. It is believed that as the examiners become more familiar with taking the diastolic pressure and our records increase in volume, there will be a further reduction in the diastolic figures with an increase in the pulse pressure over that now shown.

An attempt has been made to determine the range of diastolic pressure as shown in Table IX.

In order to ascertain, as nearly as possible, the normal diastolic range we took records from reports completed by some examiners in whose ability to give us proper readings we had every confidence, and 1,458 such records were used giving for all ages a constant range of 36 mm. This is lower than the figures from all the records, but it is felt that these are still too high; that the diastolic range should be greater than the systolic seems hardly possible, as this pressure is more constant and less influenced by emotion, etc. The total range given in this table, it will be noted, is twice the range between the high and low averages.

Table IX—Diastolic Range

Ages	Cases	Average High, Mm.	Average, Mm.	Average Low, Mm.	Total Range, Mm.
1912–1913					
15–39	833	104	92	83	42
40–66	383	111	98	86	50
15–66	1,216	106	94	84	44
1914					
15–39	1,950	97	89	78	38
40–66	747	103	93	83	40
15–66	2,699	101	90	79	44
Selected Examiners' Cases Year 1914					
15–39	1,043	96	87	78	36
40–66	415	101	91	83	36
15–66	1,458	97	89	79	36

From our figures the diastolic range is then 18 mm. above and 18 mm. below the normal average for any given age.

Table X—Normal Diastolic Limits

Ages	Minimum −18 mm.	Average Year 1914	Maximum +18 mm.
15–19	67	85	103
20–24	69	87	105
25–29	69	87	105
30–34	71	89	107
35–39	72	90	108
40–44	74	92	110
45–49	73	91	109
50–54	76	94	112
55–59	82	100	118
60–64	83	101	119
65–69	81	99	117

Using this range Table X was prepared in an endeavor to show the minimum and maximum limits within which this pressure may be considered normal. It is believed that the limits as given here are excessive and for this reason Table XI was constructed considering from 25-60 mm., the normal pulse pressure and using the average systolic pressures as a basis.

Table XI—Normal Diastolic Limits by Pulse Pressure

Ages	Average Systolic	Minimum Diastolic −60 mm.	Maximum Diastolic −25 mm.
15–19	119	59	94
20–24	122	62	97
25–29	123	63	98
30–34	124	64	99
35–39	125	65	100
40–44	127	67	102
45–49	129	69	104
50–54	132	72	107
55–59	135	75	109
60–64	137	77	112

These limits are within those given in Table X and are probably nearer the truth. It is evident from Table XI that a maximum diastolic pressure over 100 mm. under age 40 or over 110 mm. above that age must be looked upon as abnormal. This agrees with quotations previously made.

Table XII shows the average pulse pressure for the different years and indicates that it is slightly

larger over age 40 than under; also that with greater accuracy on the part of the examiners it is increasing.

TABLE XII—PULSE PRESSURE

Ages	1912-13 Mm. Hg.	1914 Mm. Hg.	1915 Mm. Hg.
15-39	33	36	37
40-66	32	37	38
15-66	33	36	37

In concluding this paper I wish to quote from a recent article from MacWilliam and Melvin[20], dealing with the diastolic blood pressure:

"The estimation of diastolic pressure by the auscultatory method is a process which takes very little time and trouble and yields very definite and valuable information. The procedure is one calculated to produce less circulatory disturbance in abnormally sensitive cases than the stronger (obliterative) constriction of the comparatively large vascular area involved in systolic determination.

"Moreover, diastolic estimation is much less, if to any comparative extent, at all, affected by the main sources of fallacy in systolic estimation . . . variation in the resistance of the arterial wall, possibility of reflected waves, etc.

"Even comparatively slight changes in diastolic pressures, unless dependent on alterations in the pulse rate, are of considerable significance as indications of circulatory conditions (changes in peripheral resistance, etc.).

"Diastolic pressure estimation by the auditory method is not only as simple in application as the systolic estimation, but is comparatively little, if at all, influenced by many of the complications as regards local conditions, etc., which may in some cases introduce serious fallacy into systolic estimations; it also causes less disturbance (circulatory, etc.), in very sensitive subjects, much less constriction of the limb being needed.

"Changes in diastolic pressure, of relatively small amount, unless dependent on an altered pulse rate, are of much significance as indications of circulatory conditions."

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STIGMATA OF TUBERCULOSIS.

A STUDY OF CERTAIN ANATOMICAL DEFECTS, THEIR ORIGIN AND SIGNIFICANCE, IN RELATION TO THIS DISEASE.

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To the layman, it is no difficult matter, here in their adopted haunts to "spot the lungers," even by a casual glance. What a boon it might prove should it be possible for the medical man with equal facility to select those who are especially predisposed to tuberculosis before infection actually occurs!

True, there have been described "tuberculous types" of individuals, presenting two widely different appearances—the excessively fair, fine-haired, blue-eyed, *spirituelle* sort of persons, and the thick-lipped, broad-nosed, pasty-skinned sort. Yet after viewing the subjects of actual infection, this classification seems scarcely justified.

Are there any easily observable physical characteristics that may serve to guide the practitioner in advising his patients to be on guard, or at least in keeping himself on guard against the appearance of this disease? Or, if he be concerned in the recruiting of the various military services, to make him especially wary as he passes upon applicants for enlistment?

During several years of observation of the tuberculous, the fact that the majority of them exhibit those signs that are described as stigmata of degeneration has constantly borne itself in upon me. And of these stigmata, the most common, as well as the most striking and easily observed, are the various malformations of the pinna. Next to these, ill formed palates, and gross facial asymmetries abound.

Search of the records of 189 cases that have been examined by myself and discharged from this hospital prior to December, 1914, revealed a note of such stigmata in 117 cases, or 61.9 per cent. Of 233 patients now in the hospital, 188, or 80 per cent., show stigmata of the kind mentioned. The following table shows the result of the examination of these patients, including 210 whites and 23 others (Asiatics, Negroes, Filipinos, Chamorros, one Kanaka, and one Costa Rican):

	Total Examined	Total Showing Deformities of Ears, Palate or Face	Total Showing Deformities of Ears	Percentage of Deformed Ears	Total Showing Deformities of Palate	Percentage of Deformed Palates	Total Showing Facial Asymmetry	Percentage Showing Facial Asymmetry	Total Showing Combinations of Deformities	Percentage Showing Combinations of Deformities
Whites	210	169	154	73 3	47	22 4	24	11 4	70	33 3
Others	23	19	16	69 6	3	13	2	8.7	5	21.7

As it was chiefly deformities of the pinna that inspired this examination, it seems worthy of note that in addition to the numerous irregularities and defective mouldings that were observed the following classical types were encountered: Darwin, 16;

Wildermuth, 16; Stahl No. 1, 11; Blainville, 7; Morel, 5; Stahl No. 2, 2.

In the first class are included the large number of cases that showed asymmetries between the two sides, but one of which showed an unduly prominent Darwin tubercle; in no instance were cases included concerning which a notation like "approach Morel type," etc., was made, but only those believed to fully answer the classical description.

Levy[1] states that 75 per cent. of the tuberculous have deformities of the nasal chambers.

It does not appear fanciful that these manifestations of external physical imperfection should be accepted as indices of defective, or at least poorly resistant, viscera. On the contrary, it would seem most reasonable that if these stigmata (aplasias and developmental retardations) indicate a likelihood that mental instability may be present and eventuate in psychosis, should the individual find himself in unfavorable environment; they should also indicate that visceral aplasia or other defect resultant from malembryopathy is present and may render such individual unduly susceptible to infectious influences and therefore more likely to become tuberculous.

The fact that the work of Lombroso has apparently been, to a degree at least, discredited, does not mean that these accepted stigmata have lost or indeed altered, their significance.[2] It was never considered that the possessor of a Blaineville ear was therefore mentally defective. The significance of its possession is that, if found in conjunction with other stigmata, its owner should be more carefully observed than the ordinary individual and care taken, should his nervous system show any sign of instability, that the stresses of life be not permitted to bear too heavily upon him. So, too, this same individual, exposed to the same dosage of tubercle bacilli and subjected to the same exposure and exhausting labor as a completely normal person, is far more prone to contract tuberculosis.

On the basis of this theory, then, may we not conclude that the "stigmata of degeneration" of the psychiatrist may be accepted as "stigmata of susceptibility" by the phthisiologist. Should further evidence be demanded, the fact that the insane—the possessors of confirmed external stigmata—are of all individuals most preyed upon by tuberculosis is confirmatory. Stoddart,[3] in his recent book, says (italics in this and following quotations are mine):

"The death-rate from phthisis in our large [British] county asylums, as compared with that in the general community, is so alarming that a few years ago the Medico-Psychological Association appointed a special committee 'to make some practical suggestions for the isolation of phthisical patients in asylums.' This action of the Association was the direct outcome of a prize essay by Dr. F. G. Crookshank, 'On Phthisis Pulmonalis in Asylums,' and a paper by Dr. Eric France on 'The Necessity of Isolating the Phthisical Insane.'

"Dr. Crookshank pointed out in his essay that, although not more than 7.5 per cent. of the insane are phthisical on admission, the official death-rate from phthisis among the insane, which is probably too low by one-third or one-half, is 14.6 per 1,000 of the average resident population in English asylums; whereas the phthisis death-rate among the general population of England and Wales is 1.46 per thousand living. *In other words, death from phthisis is ten times as frequent in asylums as it is among the general population.*

"The causes of the frequency of phthisis in asylums are not far to seek; for it is found, on examination, that in most of our large county asylums every etiological factor is at work.

"In the first place it has been pointed out by Dr. C. J. Shaw, assistant medical officer to the Murthly Asylum, that *the insane are, as a class, more liable to tubercular infection than the sane*, their capacity of resistance to tubercle, as estimated by the opsonic index, being deficient (0.8 to 0.9). The opsonic power is especially deficient during the acute stages of mental disorder and in cases of dementia præcox and general paralysis."

Maurice Craig,[4] in the section of his book devoted to Insanity and Physical diseases, says:

"The relationship of phthisis to insanity is very close. In one family will be found some insane and some phthisical members. A tubercular parent may beget children who later become insane. When the two diseases are associated in the same individual, it is necessary to consider which appeared first. Phthisis has been in the past, and is even at the present day, one of the commonest causes of death in our large asylums. The great majority of these patients develop phthisis in the institution—that is to say, *the tubercular disease is secondary to the insanity.*"

American authorities concur; thus Huber:[5]

"It seems that a disproportionate number of the insane develop tuberculosis during their stay in asylums. One account states that in seventy-four consecutive cases of pulmonary consumption, in ages between twenty and sixty-two years, only three had evidence of this disease before admission to these institutions. It is furthermore observed that those who enter an asylum with tuberculosis have little chance of recovery while they are inmates.

"It seems that tuberculosis is apt to follow insanity. It does not precede the latter. Several phases of life among the insane, which do not obtain in normal circumstances, would explain this condition of things. Many will not complain or tell of their symptoms, and thus do not for a time manifest tuberculosis. Indoor life, even cell life, is essential for many of them. . . . Then the tissues of many asylum inmates are apt to be vitiated and of lowered tone, so that they are predisposed to infection, tubercular or otherwise; this is particularly so of the melancholic and demented types.

". . . In insane asylums two sorts of tuberculous subjects are encountered—those who have suffered from the disease before their admission, in whom the condition progresses slowly, *and those who become infected after admission, in whom the disease progresses rapidly.*

"Dr. James Greenwood, of the Southwestern Insane Asylum, Texas, considers tuberculosis by far the most serious of the asylum diseases. . . . The asylum with which this observer is connected has a tuberculosis record of twenty-one plus per cent., or eighty-five among 392 deaths during the twelve years of its existence. Nine-tenths of such patients are between twenty and fifty-five years of age, and eleven-twelfths of the deaths from tuberculosis are found to have occurred during these years.

"The total death-rate per thousand in the United States for this period is about ten, of which 4.4 to 4.8 are due to tuberculosis. In this asylum for twelve years past there has been an average yearly death-rate of thirteen per 1,000 among the inmates, due to tuberculosis alone. *This is three times as many as are caused by tuberculosis in the United States within the age limits stated.*"

White,[6] in the report for the Government Hospital for the Insane, for 1914, gives the following table.

In view of this relation between mental disease, tuberculosis and external stigmata, is it not likely that there is some fundamental cause operating upon the tissues at a time when ectoblastic (furnishing central nervous system and skin with its appendages) and entoblastic (furnishing bronchopulmonary system) derivatives were still directly subject to the same influences, that is prior to the primary differentiation of the layers? And does not blastophthoria, as described by Forel,[7] which at the instant of conception stamps upon the fecundated ovum irradicable inability to develop perfectly, satisfactorily account for these phenomena?

Of blastophthoric influences alcohol easily stands first. Let us then examine the influence of alcoholic ancestry on insanity and on tuberculosis.

PULMONARY TUBERCULOSIS IN THOSE WHO DIED DURING THE YEARS ENDED JUNE 30, 1885–1914

Date	Deaths	Post-Mortem Examinations	Cases Not Examined, Post-Mortem	Deaths Due to Pulmonary Tuberculosis	Well-Marked Pulmonary Tuberculosis Cases, Post-Mortem	Cases of Latent or Limited Pulmonary Tuberculosis Found in Autopsies	Total of Pulmonary Tuberculosis Cases Examined, Post-Mortem	Cases of Pulmonary Tuberculosis Among Those Not Examined by Autopsy, Based Upon Clinical Diagnosis	Total of all Cases of Death with Pulmonary Tuberculosis, Clinical and Post-Mortem	Percentage of Pulmonary Tuberculosis Cases Among Those that Died, Recognized Clinically and at Autopsy	Percentage of Those Examined, Post-Mortem, Which Showed Pulmonary Tuberculous Lesions	Cases of Death from Other Diseases than Pulmonary Tuberculosis
1885	105	69	36	13	18	3	21	2	23	21 9	30 4	92
1886	102	72	30	24	26	1	27	8	35	34 3	37 5	78
1887	92	49	43	13	9	1	10	9	19	30 6	20 4	79
1888	120	79	41	14	14	6	20	8	28	23 3	25 3	106
1889	114	67	47	23	19	3	22	10	32	28 0	32 8	91
1890	140	108	32	20	22	10	32	6	38	27 1	29 6	120
1891	128	79	49	21	13	5	18	13	31	24 2	22 7	107
1892	153	96	57	13	13	9	22	9	31	20 2	23 0	140
1893	181	117	64	22	34	9	43	8	51	28 1	36 7	159
1894	167	115	52	28	27	13	40	13	53	31 7	34 7	139
1895	179	125	54	18	20	6	26	11	37	20 6	20 8	161
1896	187	119	68	21	23	11	34	12	46	24 6	28 5	166
1897	162	90	72	13	15	4	19	9	28	17 2	21 1	149
1898	197	85	112	19	17	3	20	14	34	17 6	23 5	178
1899	193	81	112	31	22	3	25	20	45	23 3	30 8	162
1900	184	94	90	25	17	6	23	10	33	17 9	24 4	159
1901	226	109	117	31	27	14	41	16	57	25 0	37 8	195
1902	177	92	85	19	20	7	27	7	34	29 3	29 0	158
1903	258	125	133	36	25	18	43	15	58	22 5	34 4	222
1904	243	103	140	28	15	5	20	13	33	13 6	19 4	215
1905	236	114	122	28	18	6	24	12	36	15 2	21 0	208
1906	202	114	88	29	18	11	29	11	40	19 8	25 4	173
1907	216	128	88	33	16	15	31	17	48	22 2	24 2	184
1908	201	128	73	14	12	15	27	4	31	15 4	21 0	187
1909	255	164	91	38	30	29	59	9	68	26 6	35 9	217
1910	260	161	99	25	21	28	49	16	65	25 0	30 5	235
1911	280	165	115	41	28	29	57	8	65	23 2	31 7	239
1912	332	182	152	44	21	59	80	27	107	32 2	43 9	288
1913	321	173	148	40	35	48	83	17	100	31 2	47 9	281
1914	322	123	199	30	14	26	40	16	70	21 7	32 5	292
Tot.	5933	3326	2509	754	609	404	1012	350	1376	23 2	30 4	5179

Concerning insanity, Peterson urges that: "Hereditary equivalents, *including drunkenness*, should be sought in determining the factor of heredity in investigating a case of insanity." [8]

The following table, prepared by Otto Diem,[3] in the study of heredity, sufficiently illustrates the place of prenatal alcoholism in the production of insane:

	Parents of 370 Sane	Parents of 370 Insane
Insanity	17	68
Alcoholism	32	63
Senile dementia	1	10
Eccentricity	22	67
Suicide	2	4
Total abnormal	74	212
Total normal	666	528
Total of all parents	740	740

The following observations are made by Craig:[4]

"In the families of alcoholic parents nervous diseases of all kinds appear; the child may be imbecile from birth, or may early develop epilepsy, and in time may help to swell the already large number of insane. Children of alcoholic parents are not uncommonly vicious in their habits and criminal in their tendencies."

The striking fact is noted by Forel[7] that:

"The recent researches of Bezzola seem to prove that the old belief in the bad quality of children conceived during drunkenness is not without foundation. Relying on the Swiss census of 1900, in which there figure 9,000 idiots, and after careful examination of the bulletins concerning them, this author has proved that there are two acute annual maximum periods for the conception of idiots (calculated from nine months before birth): the periods of carnival and vintage, when the people drink most. In the wine-growing districts the maximum conception of idiots at the time of vintage is enormous, while it is almost nil at other periods. Moreover, these two maximum periods come at the time of year when conception is at a minimum among the rest of the population; the maximum of normal conceptions occurring at the beginning of summer.

"If these facts are confirmed by further research, we may conclude that even acute alcoholism has a blastophthoric action. We may, therefore, assume that when a germinal cell leaves its gland at the moment when it is impregnated with alcohol, and achieves conjugation, it is unable to return to its normal condition, for want of opportunity to be completely and promptly cleansed by nutrition and the circulation. This explains how it may transmit to the individual which develops from it all kinds of taints and defects."

And in summing up the relation of alcohol to disturbance of sexual function, the same author says:

"Creation of hereditary alcoholic blastophthoria [occurs], either as the result of a single drinking bout, or from habitual drunkenness. *The offspring tainted with alcoholic blastophthoria suffer from various bodily and physical anomalies*, among which are dwarfism, rickets, predisposition to tuberculosis and epilepsy, moral idiocy and idiocy in general, a disposition to crime and mental diseases, sexual perversions, loss of suckling in woman, and many other misfortunes."

Of some value in this connection are the following tables, prepared by Thomas,[9] giving the results of the application of the Binet tests to certain criminals, confined in the Naval Prison at Portsmouth, N. H.:

(A) CONVICTED OF SODOMY AND SCANDALOUS CONDUCT

Mental Age	Cases	Average Years in School	Alcoholic	Abnormal Family History
			Per cent.	
10	1	5½	70	Tuberculosis, 4 Alcoholic, 3 Epilepsy, 2 Insane, 1
11	3			
12	2			
13	4			

(B) CONVICTED OF THEFT

9	1	7	30	20 per cent. alcoholic
10	1			
12	2			
13	6			

(C) MEN WHO HAVE LOST ALL GOOD TIME BECAUSE OF MISCONDUCT

10	1	5	66	Feeble-minded, 1 Tuberculosis, 2 Epilepsy, 1
12	4			
13				

Here, though the number of cases is small, alcohol and tuberculosis seem to rank about as high as actual mental disease as blastophthoric factors.

In the earlier annual reports of the Henry Phipps Institute at Philadelphia, most interesting data, pertaining to alcohol in its relation to tuberculosis, were recorded. In the report for the year ending February 1, 1908 (the last I have at hand), concerning the alcoholic histories of patients treated at the institute, the following appears:

SUMMARY FOR FIVE YEARS.[10]

Alcoholism in patient..... 921 (20.62%)
Alcoholism in preceding generation. 901 (20.17%)
Out of 4,466 cases.

Are not these facts, gleaned from such widely different sources, and set down with such various purposes, sufficient to condemn alcohol as a powerful blastophthoric agent, and at the same time, to show that its degenerative influence may be exhibited in the form of insanity, tuberculosis, or criminality? Yet it might not be greatly out of place to inquire whether or not these manifestations are truly evidences of blastophthoria. From the lurid statement of a Hobson accrediting 2,000 deaths a day in America to Demon Rum, to urgent claims of the brewers and distillers that alcohol is a food, the use of which is justified by the jovial ex-

ample of every generation, since Noah celebrated winning the 300-cubit ark trophy, all sorts of statements concerning the results of alcohol have been made. The following, quoted from the paper from W. F. Boos,[11] on the relation of alcohol to industrial accidents and to occupational diseases, is surely authentic and to the point:

". . . As a result of other German studies, it was determined that if the accidents caused by the use of alcohol could be eliminated, 7 per cent. of all accidents would be prevented.

"Most industrial houses confine their efforts to the prohibition of intoxication or the use of alcohol during working hours. They have, however, no effective method to control surreptitious drinking up to the point of actual intoxication. When a workman has taken enough to become intoxicated, this fact is immediately self-evident, and the offender is promptly ejected. Gross intoxication may therefore even act in a measure as a safeguard against accidents. But the damage may have been done long before the man is really drunk. If, on the other hand, he is an habitual drinker who never gets drunk, he forms a source of constant danger to himself and to his fellows. . . . Monday accidents result from the paralyzing effect of a Saturday night and Sunday debauch, the 'hang over' from which may last for from twenty-four to forty-eight hours. The victim of the 'hang over' appears normal to the casual observer; *he is not, however, in complete control of his faculties, and he is therefore much more liable to have an accident.*

"A study of the industrial accidents occurring in Zurich, during the years 1900 to 1906, inclusive, shows that the average for accidents on other week days except Monday is 15.7 per cent., while the average for Monday is 22.1 per cent.

"The habitual daily drinker is perhaps the greatest source of danger, for although the quantities of alcohol he takes each day may not suffice to produce intoxication, they suffice, nevertheless, considerably to reduce his alertness. *Drinkers of this class suffer loss of acuteness of hearing and of vision; in fact, all their mental processes are retarded (experiments of Joss, Smith, Kraepelin, Aschaffenburg). Consequently these men are less careful and accurate in their work, and are also slower to perceive or appreciate danger.* . . . The continued use of alcohol also retards tissue repair after injuries."

If it is true that alcohol thus profoundly affects the central nervous system, the muscles and the coordinating mechanisms in general, and in addition, produces the scleroses which pathology unerringly places to its credit, how can it be questioned that the generative glands share in the same processes, with the result that their product is defective if not actually diseased?

Among other blastophthoric influences syphilis, lead, and other cachexias are important, as are also tuberculosis and insanity themselves. Perhaps, too, psychic influences, concerning which few data are available, as fright, fear, and anger on the part of the mother might be included.

Should these facts and deductions be accepted, then it would appear that the more marked stigmata would be more apt to be precursors of actual insanity or of more hopeless tuberculosis. In the one case, this is accepted as true—the insane ear, for instance, being more truly a symptom than a stigma. While I have not preserved the data, I am convinced that the death rate among those patients showing more marked stigmata at this hospital has been extremely high compared to those who show slight or no such defects. Of the nine patients now in the hopeless ward, all show stigmata of the kind referred to in this paper.

If, however, one is inclined to reject the blastophthoric theory, then there is still to be explained in some other way the inevitable fact that the alcoholic (or other grave) iniquity of the father is visited upon the children in tremendously increased susceptibility to tuberculosis, insanity, and criminality. And I submit the statement that their inheritance, while it may be written on fleshly tables of their hearts, giving rise to pernicious instincts and a tendency to unhealthful or vicious habits, is also written upon their features, in stigmata so plain that he who runs to their aid in the time of mental stress or physical strain may read, if he but will.

Conclusions.—1. Stigmata of degeneration may be considered as stigmata of susceptibility to tuberculosis.

2. Extreme stigmata in tuberculosis indicate a less favorable prognosis.

3. Stigmata of degeneration, central nervous system and pulmonary (and probably other visceral) defects have a common blastophthoric origin, alcohol ranking high.

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TRANSIENT ATTACKS OF MANIC-DEPRESSIVE INSANITY.

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Mild and short attacks of a manic-depressive psychosis which may closely resemble the normal variations in mood, have been described by writers on psychiatry; but, for the most part these reports have been of attacks of more than a week's duration. I desire to place on record, not attacks of a week, but of days, and even of only a few hours' duration. Such attacks, I am led to believe from a review of the literature, are rare. In Stransky's[1] recent extensive monograph on manic-depressive psychosis, such short attacks are referred to as possibilities, but none is recorded which shows the disorder in short attacks only.

Furthermore, I find no expression of opinion that such attacks are common. In fact, the emphasis seems to be the other way. Thus Weygandt[2] speaks of short attacks of a week's duration, and suggests the possibility of those of even a day; whereas, from my experience in the Psychopathic and Alcoholic Wards of Bellevue Hospital, I am led to the conviction that such very fleeting attacks are by no means rare; in fact, are quite frequently observed.

In 1908[3] I called attention to a special group of allied manic-depressive states, which I termed atypical, and which consisted of cases of very short, almost transitory duration. These patients, I then pointed out, were suffering from some form of atypical intoxication or pathological drunkenness. In addition to their toxic symptoms, they presented

the characteristic syndrome of a manic-depressive psychosis, such as typical flight of ideas, irritability, loquaciousness, and motor restlessness. In some of these cases, the manic-depressive symptoms persisted after the ordinary signs of intoxication had subsided, often within twenty-four hours, and the patient cleared up entirely.

At that time I said that the mental state of these patients presented special difficulties from the standpoint of diagnosis, and that one might consider them on the one hand as the reaction of a manic-depressive personality to alcohol, or, on the other hand, as short attacks of manic-depressive psychosis, complicated with alcohol. After further observation I now feel that the latter viewpoint is more correct, and that these are instances of typical manic-depressive attacks in which alcoholism has been an accidental or incidental factor.

It is also by reason of this very feature of the accidental alcoholism that the real nature of the difficulty has been hidden, and, furthermore, the alcoholism has been at the same time the factor that has served to emphasize the features of a manic-depressive psychosis, which, without a certain accidental exaggeration, might not have attracted attention.

From their fleeting nature and transitory character, these mild attacks of manic-depressive psychosis rarely attract the attention of those with whom the patient comes into immediate contact, and at times they even fail to make any impression on the patient himself, unless the symptoms are accentuated by some outside factors, among which, as we have seen, alcoholism is the most common.

It is due to this complicating alcoholism that these patients find their way into the alcoholic wards, where they constitute the majority of the formerly so-called "pathological drunkards," "dipsomaniacs," and "periodic drinkers." In the alcoholic wards of Bellevue Hospital this underlying mental disorder is seen in fleeting attacks lasting from a few hours to a day or two, when it had been regarded as "pathological drunkenness." If the attack had been of longer duration, lasting from several days to a few weeks, it had been looked upon as "dipsomania," or as a phase of an alcoholic psychosis.

All of the phases of a manic-depressive psychosis can be observed. Here one may see excited, depressed, and mixed states, although the last are most difficult to recognize. These patients have been admitted and discharged from the hospital many times, without the nature of the real, fundamental, mental disease having been recognized. They swell the number of so-called "rounders" and "repeaters" found in the alcoholic wards.

The careful anamnesis of these patients shows that at first they drank only periodically—the so-called periodic drinkers. Although some of them still remain such, many of them have gradually become habitual and continuous imbibers as well, with episodic outbreaks of the fundamental mental disturbance. Many of the so-called alcoholic cures, semi-reputable as well as charlatanistic, derive their chief support from this type of patients.

A few case histories, selected from a large number, illustrate the different transitory phases of the manic-depressive psychosis as it appears in the alcoholic wards.

CASE I is an example of the short excited attacks, which are ordinarily called pathological drunkenness:

P. S., 42 years old, has been coming to the alcoholic wards about once every six to eight weeks for the past eight years. He is one of the notorious repeaters, who is known as an "excited, violent, and ugly drunkard." On admission, with very few exceptions, he is alert, talkative, flighty, irritable, quarrelsome, and meddlesome, and makes many keen and cutting personal remarks; he becomes violent and assaultive at times, and requires restraint. His pupils are dilated; his skin is moist; an alcoholic tremor is present, but he shows none of the psychic nor motor incoordination characteristic of alcoholic intoxication. He has never suffered from any hallucinosis and has never been delirious except once, two years ago, when he also had pneumonia. His excitements never last longer than twenty-four hours. The day after his admission he is quiet, mild-mannered, and gentle, and appears to be ashamed of his previous conduct. He says that he does not begin to drink because he likes it, but that "a queer feeling comes over him," which he describes as a sudden feeling of being unusually happy, and then he wants to have a "good time." One maternal aunt has had mental trouble. For the last two years he has also been drinking moderately between attacks.

CASE II is similar to the former, except that the alterations of excitement and depression have been apparent.

M. S., a robust female, 32, domestic, born in Ireland. The meager family history as given by the patient is negative. She has frequently been an inmate of the alcoholic and prison wards since 1906. At times she is very excited and boisterous, and must be brought to the hospital by several policemen. At almost every visit she disables one or more of the policemen who bring her to the hospital. She has spent a goodly part of several years in the workhouse, from which she was, at one time, committed to the Matteawan State Hospital, where she remained several weeks. She is talkative, alert, flighty, destructive, abusive, quarrelsome and meddlesome. This condition usually lasts from twenty-four hours to two or three days. She shows signs of alcoholism, such as dilated pupils, moist skin, tremors, coated tongue, etc. She has never been delirious and has never suffered from hallucinosis. Occasionally she comes as a voluntary patient, when she is depressed and despondent, quiet and inactive, talks very little and has made several attempts at suicide, outside as well as in the hospital. On some occasions she has ideas of self-reproach and unworthiness. She always exhibits signs of over-indulgence in alcohol, but never to the extent of delirium or hallucinosis.

CASE III is an example of one who has short attacks when he would be considered a pathological drunkard, and longer attacks which were incorrectly diagnosticated as dipsomania.

H. A., male, native of New York, now 48 years of age, a graduate of Yale, has been admitted to the alcoholic wards fifteen times since 1904, and eighteen times to the psychopathic wards since 1903. He is always very much excited on admission, talks a great deal, is flighty, irritable, and threatening, shows considerable motor activity in spite of a state of acute intoxication on admission. He is keen, alert, meddlesome, and quarrelsome. In general appearance he is unkempt and uncleanly, which is consistent with his alcoholism. His face is flushed, the pupils are dilated, the tongue is coated and tremulous. There is marked general tremor at times, suggesting the approach of a delirium, but he has never been delirious. On one occasion he had an attack of hallucinosis, which disappeared in a short time. His attacks last from two days to a week, and on several occasions they have lasted for several months. He has tried all of the alleged cures, but his aged mother, who was a literary woman, was told that these cures were not successful because of the weakened will power of the patient. When the attacks are of longer duration, he has been considered to be suffering from an alcoholic insanity, and has been repeatedly committed to sanatoria and State hospitals, where he remains a short time.

Because of his irritable and quarrelsome disposition at the onset of his disorder, he has, on several occasions, been committed to the workhouse for periods of three to six months, on charges of disorderly conduct. Since the death of his mother, two years ago, it is significant to note that he no longer comes to the hospital,

but is sent to the workhouse as an intoxicated and disorderly person. When his attacks are very short, he is looked upon as a quarrelsome drunkard, as I have already stated, but when they are of longer duration, he is committed to a sanatorium as suffering from an alcoholic psychosis.

CASE IV is quite similar to the preceding as regards the duration of the mental disorder, but it differs from it, however, in that he has alternate attacks of depression and excitement, and very frequently the attack of excitement is preceded by one of depression.

P. M., 42, born in Ireland, laborer. His mother was once melancholy. He has been admitted eighteen times to the alcoholic wards and four times to the psychopathic wards since 1908. He has been regarded as an alcoholic repeater, who, at times, becomes insane as the result of his alcoholic excesses and is then sent to the psychopathic wards. He is excited, as a rule, on admission. His attack usually lasts from a day to a week, and at times is longer, when he must be committed to a State hospital. He is active, talkative, irritable, has great notions about himself, maintains that he knows as much as the physicians and nurses, and offers suggestions about the treatment of the patients. He is officious, meddlesome, and may become assaultive at the least provocation. He shows all of the physical signs of a recent alcoholic debauch. There is no clouding of consciousness, no disorientation, and he has never become delirious. As a rule, however, he shows an hallucinosis of a peculiar character which shortly disappears. He maintains that all sorts of inanimate objects, such as the wall, the force of gravitation, the bed in which he lies, and the pictures on the wall, talk to him. He may clear up in two days, or he may suddenly develop a state of depression when the mental picture is the antithesis of his previous condition. He is then depressed, quiet, inactive, complains of headache, inability to think, and shows no interest in his surroundings. This condition may also disappear in two days and he is discharged recovered. Between the attacks he is a total abstainer, and claims to have a pronounced distaste for alcohol. His stated reason for drinking is that he suddenly feels hopeless, melancholy, and that he cannot do anything. He drinks to cheer up. I quote from his history while in the hospital during an attack in December, 1911. "His sister says that he suddenly came home drunk, remained in bed for two days, was downhearted and melancholy. He thought that everyhody was against him and that they wanted to get him out of the way. On the midnight of the second day, he suddenly brightened up, sang in a loud voice, and was brought to the hospital." When admitted he was in a typical attack of excitement. He said that the reason why he was singing was because, when at home in a melancholy condition, suddenly "the joy of gladness came to his heart" and he could not stop singing. He recovered in six days. This man has been regarded as a troublesome drunkard and discharged from the alcoholic wards eighteen times. and committed twice to State hospitals since 1908.

CASE V may be cited as a mixed phase of a manic-depressive psychosis.

W. L., 57 years old, born in the United States, clerk by occupation. He has held important positions in labor unions, and in many respects is above the average in intelligence. He is very temperate in his habits between the attacks. This man has been admitted to the alcoholic and psychopathic wards eleven times since 1907. As a rule he averages three attacks a year, mostly in the summer months. On admission he exhibits a picture of anxious restlessness. He is very active, talks a good deal, is distractible, and at times somewhat flighty. Emotionally however, he is always sad. He has ideas of ruin and unworthiness: "Why is everyone so kind to him; he does not deserve it;" "he had no intention of drinking;" "something like a shadow came over him;" "he felt out of sorts," etc. He shows all the signs of recent alcoholic excesses—moist skin, dilated pupils, coated tongue, tremor, almost verging on delirium, but has never exhibited delirium nor hallucinosis. Two out of his eleven attacks were excited periods. He was jovial, singing, dancing, happy, optimistic, restless, meddlesome, flighty, etc. These attacks last, as a rule, three or four days, after which he develops insight into his condition and seems greatly distressed. This patient being an intelligent man, I was able to investigate his state of mind immediately before he began to drink. He stated that at times he feels as if a shadow suddenly comes over him, which makes him, as it were, absolutely helpless. He cannot think, has no energy or initiative to do anything, feels exceedingly blue. He remembers that in his first attack, while in this condition, he thought of the oft repeated phrase, "have a drink and cheer up," and then, as it was convenient for him to do so, he began to drink. That since that time he begins to drink whenever he experiences the same peculiar feeling. That during his "joyful attacks" (the excited attacks referred to) he drinks because he feels so happy. One of his attacks was of longer duration, requiring treatment in a sanatorium for six weeks.

CASE VI is another example of a mixed phase.

M. A., a woman, 35, family history unascertained. She has been admitted twelve times to the alcoholic and four times to the psychopathic wards since 1907. On admission she is always perfectly quiet and mute. It is impossible to get any response from her. She assumes an attitude of haughty elation, with an expression which varies from a self-contented smile to ecstacy. She seems to observe her surroundings and understand what is said to her, but gives no response to questions. In other words, a picture of psychomotor retardation, with emotional exaltation. This condition may last from twenty-four hours to three days, when she begins to make random, flighty remarks, or suddenly screams, and occasionally the clinical picture may change to one of typical excitement.

On admission she shows physical signs of alcoholism, except that the pupils are contracted and her knee jerks exaggerated. However, the serological examination is negative and there is no evidence of any organic disease. She recovers, as a rule, within a week. Two of her attacks were of longer duration and she was committed to State hospitals. This patient is also one of the notorious repeaters.

CASE VII, my last patient to be cited, was admitted to the hospital on April 24, 1912. He is of interest in that he has a history of having had definite attacks, which are known to be independent of alcoholism, because the character of his occupation is such that for stated periods he had no opportunity to drink.

J. S., 23 years old, an oiler on a tramp steamer, born in England. His father was a periodic drinker and would become excited while drinking. The patient had variola and mastoid disease some years ago. For the past five years he has had periodic attacks of drinking which last from eight hours to several days, and which are repeated a number of times a year. In the interim, he is a total abstainer, and has no taste for alcohol. At the onset he becomes depressed and, as he states, has no ambition, no will power to do anything, feels as if his mind had stopped working. He begins to drink, and may remain in this state for twelve to twenty-four hours and he then recovers. Or, after the usual initial stage of depression, when he begins to drink, instead of remaining depressed, he suddenly may become excited, talkative, quarrelsome, and destructive, and this condition may also last from twelve to twenty-four hours. Almost all his attacks ashore are associated with alcoholism. This patient being an oiler on a steam vessel, is at sea the greater part of the time, and has had a number of attacks there. These latter attacks have been precisely the same as the others, with the exception of the absence of the alcoholic features. That is, he suddenly becomes depressed, loses ambition and will power, and is unable to think or do anything. He states that his mind would suddenly become "blocked;" this would last from twelve to twenty-four hours, and then he becomes normal. He remembers every detail and suffers no loss of consciousness. He states in addition, that some of his attacks take the form of great activity; he becomes very energetic and wants to do the work of two or three men; becomes meddlesome and interferes with the work of his shipmates, so that they keep him in his bunk for a day or two, until the attack passes. It is interesting to note that during these attacks at sea he has no

craving for alcohol, and claims that he does not even think of it.

I have chosen these examples from a great number, as being typical, in that most of these patients have also shown attacks of longer duration, which were unmistakable attacks of manic-depressive psychosis. There are, however, many patients in whom the attacks are of fleeting character, from a few hours to several days' duration, and remain so throughout.

The purely depressed phases of manic-depressive psychosis associated with alcoholism are equally as frequent, I believe, as the excited ones, although it is more difficult to recognize them. An excited case will compel attention, whereas the depressed type may easily escape notice, because of its resemblance to a toxic depression and hallucinosis.

As a rule, manic-depressive patients do not suffer from alcoholic delirium. This is especially true of those with excitement. As has already been stated, most of these patients drink periodically only, and the taking of alcohol is an incident of the psychosis. A relatively small quantity of alcohol in addition to the exhilaration of the manic-depressive condition so excites the patient that he immediately attracts attention and is brought to the hospital before he has had the opportunity of taking a sufficient quantity of alcohol, or drinking long enough to produce delirium. Even those who use alcohol in the interim between the attacks are not heavy drinkers as a rule.

In the depressed types, however, although alcoholic delirium is equally infrequent, hallucinosis is quite often met with. In the depressed phases, excessive or prolonged taking of alcohol, likewise, does not occur, but, for an entirely different reason. While the exhilaration which is characteristic of the manic phase is lacking here, the general retardation which is the striking feature of the depressed stage prevents the ingestion of much alcohol, hence the infrequent occurrence of delirium. It may also be pointed out that some of the depressed cases may begin with an excited or mixed phase, and rapidly change into depressed types.

In considering the differential diagnosis, especially from uncomplicated alcoholism or alcoholic psychosis, it is of interest to note that manic-depressives are not fearful and apprehensive, but rather depressed and despondent. They react not at all, or less actively to hallucinations. The content of the hallucinations is less absurd, and as a rule is based upon some actual experience of the patient. Manic-depressives never plead for their lives, stating that they are going to be shot, cut up, poisoned, burned alive, electrocuted, etc. There is always a trace of self-reproach; people talk about them, and accuse them because they deserve it; "they have blundered in the past"; "they deserve their punishment." The manic-depressive is inactive and does not show the apprehensive restlessness of the typical alcoholic hallucinosis. There is no confusion or disorientation. Suicidal thoughts and attempts at self-destruction are very common.

Transitory attacks of a manic-depressive psychosis which are not associated with alcoholism, I think, are also very frequent, although it is difficult to demonstrate them. As has already been stated, the milder attacks pass unobserved, even by the patient himself, unless his conduct calls attention to it. Excited cases of this class are usually regarded by physicians as hysteria, or as psychic epilepsy. The milder depressed cases are looked upon by physicians as attacks of billiousness, liver trouble, blues, sick headache, migraine, neurasthenia, psychasthenia, etc.

The following case may be cited as an example in which short attacks of manic-depressive psychosis may be accentuated by other factors than alcohol:

Case VIII.—A young girl of 19 has had attacks of depression and excitement, which are coincident with the menstrual epoch, beginning shortly before and ending with its cessation. She was admitted to the hospital three times during periods of excitement. Since her discharge she has been employed in one of the hospitals as a waitress, and we learn that she suffers from short attacks of depression and excitement, which occur independently of menstruation, and are of so mild and fleeting a character that they do not necessitate her being brought to the hospital. Some of these attacks are only an hour or two in duration. While at work she suddenly sits in a chair and states that she cannot do any more work; will only answer questions in monosyllables, complains of her head, and at times appears bewildered and unable to leave her chair. She remembers, however, everything that transpires, and states that she has a queer feeling which makes her unable to think, speak, or do anything. These attacks had been looked upon as hysteria, coincident with menstruation.

As in the cases associated with alcoholism, patients may associate their attacks with other conditions. For example, a patient of mine, whenever he has a short attack of excitement, leaves his business and takes the first train for a neighboring city. He knows that he is taking the train for that city, and after the attack passes off, he is able to give a detailed account of his trip. He feels happy and restless, active and jovial, and has an irresistible impulse to go to that city because he had a pleasant experience of a sexual character there some years ago.

Another patient burns up everything having a red color, during these short attacks, as she had an unpleasant experience in seeing the bloody clothes of a relative who was killed in an accident. This patient also had one longer attack which necessitated her commitment to a sanatorium.

Transitory depressed attacks are frequently interpreted by the patient as some common physical ailment. The motor retardation and inadequacy seem to be so much more pronounced than the purely psychic symptoms, that they attract the attention of the patient almost to the exclusion of the latter. In other words, the patient's mind is centered on the motor phenomena, so that he endeavors to find a physical counterpart for his mental disorder. If he realizes his psychic shortcomings at all, he ascribes them to the motor inadequacy, which he has converted into physical symptoms.

Some of these cases are so distinctive that one may speak of them as somatic phases of manic-depressive psychosis. These patients are considered and treated by physicians as suffering from physical disorders, and multiply the number of cures by the various cults after having been unsuccessfully treated by medical men.

I shall give a brief résumé of four cases, illustrative of this phase of the disease:

Case IX.—A man 73 years of age; has been subject to periodic nervous attacks, as he calls them, for over forty years. These manifest themselves in neuralgic pains, generalized as a rule, but more severe in places. He describes them as unbearable, like nerves being torn out of the flesh, etc. Treatment for these pains has been given by various physicians, among whom were specialists in nervous diseases. He had taken innumerable remedies and various treatments, such as electricity, baths, mechanotherapy, for the pains,

especially for those in his lower limbs, which were called neuralgia by his physicians. Three of the attacks, occurring within forty years, were of longer duration, lasting from about two to three months, during which, in addition to the neuralgic pains, he was despondent, frequently thought of, and once attempted, suicide. When closely questioned as to the character of these pains, he will describe them as follows: That they are all over his body—in his eyes, ears, nose, head, and particularly in his arms and legs; that they are not cutting, shooting pains, but more of an ache, lack of feeling, heaviness, nervous pains; that he feels the weight of his limbs, etc. Pressure on the nerve trunks, joints, or any particular part of the body does not increase the pain. There is absolutely no evidence of any organic disease. An analysis of his mental condition shows that he suffers from manic-depressive attacks. This patient has converted the motor retardation into a physical symptom, namely, pain, and because this particular symptom of motor retardation is more prominent in his psychosis, he has ignored his psychic inadequacy, or looks upon it as a sequence of his physical disorder.

Case X.—A woman, 42 years of age, whose mother is said to have had two attacks of melancholia, has been suffering from periodic attacks of, as she terms them, "stomach and liver trouble," during which she is despondent, and has on several occasions seriously thought of suicide. She describes her condition as follows: That whenever she has this indigestion, which comes on suddenly, she becomes very sad, seems to lose all ambition and initiative, cannot do her work as she is unable to concentrate. She has queer feelings in her head, which she describes as lack of feeling and numbness. Physically she is completely tired and worn out and must sit or lie down until she recovers from her attack of indigestion, which lasts from three to five days. During one of her attacks she was brought to the hospital, because she made an unsuccessful attempt at suicide. There is no evidence of any gastro-intestinal disorder. Her mental status shows that she is suffering from a typical attack of a depressed phase of manic depressive psychosis.

Case XI.—An elderly woman, has periodic attacks of depression, lasting from two days to a week, which she ascribes to cardiac trouble. During these attacks she retires to her room, will not speak to members of the family, becomes morose and irritable, and complains of distress in the region of the heart. Her physician states that although she has a slight cardiac murmur, it is not of such a character as to cause the discomfort or the distress complained of. At times there is a history of sudden overactivity, psychic and physical. This patient has a daughter who is suffering from the circular type of a manic depressive psychosis.

Case XII.—A physician suffers from periodic attacks of headache which last for several days, during which he retires to his room. He is quiet, inactive, morose, irritable, and becomes quite despondent. He complains of inability to think or do anything. He describes the headache as a lack of feeling in his head and pressure on top, over the occiput. He has taken coal tar products, and many other remedies for headache, without relief. There is no evidence of syphilis or any organic trouble. These attacks sometimes last one or two days, and on one occasion he was compelled to remain in his room for a week. Here again the patient has converted the psychotic symptoms into a physical ailment, namely, headache.

Finally, it may also be added, that many sudden and unexpected suicides, without any history of previous ill-health or any difficulty, are due to fleeting attacks of a manic-depressive psychosis. I am led to this belief from examination of hundreds of cases of attempted suicides which are annually brought to the prison wards of the hospital.

In conclusion I would present the following summary:

1. Short attacks of a manic-depressive psychosis, ranging in duration from a few hours to several days, are very frequent—I believe much more numerous than longer attacks requiring hospital treatment, but they are difficult to recognize unless accentuated by some exogenous factor.

2. These fleeting attacks are frequently marked by these very exogenous factors and are misinterpreted as mental states, due to the incidental factor, which in reality is merely accidental or incidental to an attack of a manic-depressive psychosis.

3. Alcoholism is the most frequent exogenous agent and the great majority of periodic drinkers, especially so-called pathological drunkards, are really examples of short attacks of manic-depressive psychosis associated with alcoholism.

4. These fleeting attacks when mild in type and uncomplicated by alcoholism, are often mistaken for transitory mental conditions of other character, such as hysteria, psychic epilepsy, migraine, neurasthenia, etc.

5. These short attacks of manic-depressive psychosis may be associated by the patient with disturbances of bodily functions and interpreted as common physical ailments. These conditions are frequently regarded by the general practitioner as nervous dyspepsia, nervous heart, liver, and intestinal trouble, etc.

6. The recognition of the true character of these attacks is of the utmost importance, from the standpoint of treatment, as misdirected therapeusis will frequently intensify the underlying condition.

7. Important medicolegal questions frequently arise, for, during such attacks, patients may commit overt acts, such as assault, crimes of sexual character, attempted suicide, and even homicide.

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Seventh Avenue and Fifty-fifth Street.

CONSERVATION WORK AS APPLIED TO LIFE INSURANCE.*

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If a life is of sufficient worth to an insurance company to assume it as a risk, it is fair to suppose that there is also an interest in the prolongation of that life. The present physical soundness of a subject seeking insurance is important, but the prospect that he will continue sound through a given number of years, is equally important. While actuarially we deal with classes, fundamentally we are dealing with individuals—if the individuals are healthy and so continue, the "classes" will be safe.

The history of medicine is replete with changes which have been occurring from earliest times.

Once little was known of the causation of disease; all that was sought for was some nostrum or method that would effect a cure. The idea of prevention was unknown, and although the same microbes and bacterium were in activity and in evidence, in those days, as now, it was the Pasteur School in France, and the School of Koch in Germany which gave to the scientific world the new idea, so tremendous and far-reaching in its effects, that there were specific causes for the diseases that were attacking men and animals. This idea was that a germ or microbe could reproduce itself, but that it might be destroyed or annihilated before

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manifesting its attendant symptoms and results in the human organism.

Metchnikoff foresaw this era when he gave expression to the view that "the microorganisms inhabiting our bodies have set going there a 'poison factory,' which cuts short our existence by secreting poisons that penetrate all of our tissues, injure our most precious organs, the arteries, brain, liver, and kidneys. Man balked of his full term of life, feels himself unhappy and is ready to accept any solution to the problem of gaining happiness and health." If then man is balked or deprived of his full term of life, the problem confronting him is not alone concerning the output, product, or resulting effects of the "poison factory," but the regulation, and closure of it before it does its work, with attention on the "in-put" as well as on the "out-put."

It is easier to retain health than to regain it, and the gauge of any civilization is the standard it sets for the health and morals of its people, and the effort it puts forth to surround them with sanitary safeguards, and health-prolonging measures. No phase of this question is more important than the prevention of the so-called degenerative diseases, manifesting themselves at middle life and affecting the period of the greatest productivity.

For years the industrial system in this country seemed to bend its energies to the efficiency of the corporation. Then followed a period of amalgamation of the corporation for greater profit and efficiency. To-day we are entering up an era where the corporation, and the industrial and commercial world are beginning to realize that efficiency in its truest sense must begin with the conservation of the health and strength of the individual, and they are placing a higher estimate upon the value of the human machine, realizing that a man is greater, than a mill, the producer more important than the product, and that what injures the man will injure the machinery.

In all of this the life insurance companies may well have a share, in endeavoring to conserve and prolong the lives of those with whom they come most closely into relationship, and through them those dependent upon them.

What protects the breadwinner, will protect the breadconsumer, what safeguards the home, will likewise safeguard those under its roof. Measures intended to prolong the life of the provider of income, education and life's necessities, must also benefit those immediately dependent thereupon.

But from a more personal and even selfish viewpoint, the prolongation of the life of the individual policyholder, will add revenue to the company itself. Dimes thus expended may return in dollars to its tills.

In the case of a company which pays $20,000,000 a year in death losses, the prolongation of the life of each policyholder for one year beyond its present duration would have the following annual financial effect: The company would save one year's interest on $20,000,000, which at 4½ per cent. amounts to $900,000. One additional year's premiums would be paid in each case, which we can consider after deducting a year's dividends and commissions, as averaging $25 per thousand and amounting to $500,000 for the year. We, therefore, see that the total annual savings would be approximately $1,400,000. This sum is 7 per cent. of the company's gross mortality loss, or from 10 to 15 per cent. of the company's net mortality loss. This percentage (10 to 15) is more significant, as the net mortality loss shows the money paid out in excess of the reserves already accumulated on the policies involved. Looking at it from another point of view, the saving effected would probably equal one-third to one-half the gain from loading of participating premiums over expenses. All of this may be termed commercial selfishness, but if so it is an enlightened selfishness for it benefits "him who gives, as well as him who receives."

Some life insurance companies are beginning to realize this fact, and are placing in operation, and within the reach of the policyholder, means and measures for the early detection of disease, and pointing out a warning that the "poison factory" in the body is working overtime, and that the wheels should be slowed down or stopped. In all of this the company that I have the honor to be associated with is having a modest part, and endeavoring to contribute its portion to this end.

In July, 1914, we placed before our body of policyholders the opportunity, accompanied with an invitation, to avail themselves of a free medical examination, for the purpose of detecting and bringing to light any impairment or insidious physical impairment, not openly manifest. This examination was made without prejudice to the insurance record of the party applying, and the papers were entirely destroyed after a certain length of time.

We have been studying the problem, as well as feeling our way, and up to a recent date had accumulated records of 2032 full health examinations and 1178 (urinary only) examinations, the latter form consisting of a certain number of questions bearing on the health record, and a careful laboratory examination of the urine.

While these figures are not large, they furnish an interesting as well as instructive study. In observing the following tables, showing the relative frequency of impaired and unimpaired risks, it must be considered that many, and perhaps the majority of these policyholders who availed themselves of a full physical examination, did so because they felt that their health was not of the very best, or, at least, were suspicious of some physical impairment. This is, no doubt, the explanation of the high percentage of impaired lives.

The following table of full health examinations is interesting as showing somewhat the distribution by ages of impairments as follows:

	Ages to 29		30 to 39		40 to 49		50 to 59		60 and Over		All Ages	
Impairments noted by examiner	132	62%	312	65%	415	66%	300	70%	242	86%	1401	69%
Ailment noted by insured only	34	16%	106	22%	130	20%	84	20%	26	9%	380	19%
No impairments noted	47	22%	61	13%	88	14%	42	10%	13	5%	251	12%
	213	100%	479	100%	633	100%	426	100%	281	100%	2032	100%

As might be assumed, the highest ratio (22 per cent.) of unimpaired risks is among the youngest, the lowest ratio (5 per cent.) among those of 60 years old or older. Likewise, among the young it is to be found the lowest ratio of impaired risks (62 per cent.) as against 86 per cent for those 60 years old or older. From 16 to 26 per cent. of the policyholders put certain impairments in their ex-

amination blanks which medical examiner did not consider serious enough to note.

Relative to the nature of the impairments and to their number, we have listed the cases in accordance with the most serious ones that were found. Excluding the 76 insured who were 70 years old or older, we found that the most serious impairment affected the

Circulatory system in	493 cases or	24%
Genito-urinary system in	410 cases or	20%
Pulmonary system in	79 cases or	4%
Digestive system in	133 cases or	7%
Nervous system in	83 cases or	4%
Miscellaneous	127 cases or	6%
Entirely without impairments	251 cases or	12%
Minor impairments of little or no importance*	380 cases or	19%
Old age cases (70 to 85 years old)	76 cases or	4%
	2032	100%

*Such as occasional headaches, poor eyesight, slight indigestion, occasional dizziness, etc., etc.

In the majority of cases the impaired condition is caused not by one, but by several ailments of importance.

Regarding the 798 examinations, without impairments, 522 policyholders mentioned other impairments of more or less seriousness, as the blanks which the insured fill out ask many questions.

While all of this is an experimental state, it nevertheless goes to show the frequency of impairments in adult life—and during the "insurance age"—and instances might be cited to show the apparent beneficial result to those who by our examination have had their attention called to the necessity for immediate medical attenton and received benefit thereby.

These few suggestions are offered merely to direct attention to a subject that I believe will more and more receive consideration and form a part of legitimate life insurance work.

METASTATIC CARCINOMA OF THE BRAIN WITH UNUSUAL OCULAR SYMPTOMS.

CLINICAL HISTORY AND AUTOPSY REPORT OF A CASE.

BY SAMUEL HORTON BROWN, M.D.,

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IN the latter part of March, 1915, a patient was referred to me by Dr. N. S. McDowell of Philadelphia, on account of an intractable corneal ulcer. The patient had but recently come under his observation, and response to ordinary treatment being delayed, he preferred the patient having special attention. Accordingly she came under my care, and ultimately was seen in conjunction with Dr. Frederick Krauss in the latter's service at the Episcopal Hospital, Philadelphia.

The patient (No. 5,100—1914-1915) was a woman, fifty-eight years of age, a native of Germany, white in color, married, and engaged in the ordinary household duties. Her immediate trouble was an ulcer in the right eye. This had existed for several months, and according to the patient's statement had followed an operation on the side of the head for the relief of intractable neuralgia on that side.

Leaving the past medical history for future elaboration we examined the right eye and found several features of unusual interest. The conjunctiva of the lids and globe was intensively congested and a pinkish zone surrounded the cornea. Almost the entire cornea with the exception of a peripheral ring was involved by a process of infiltration that rendered it a dirty white color and densely opaque. The surface epithelium was wrinkled, but fluorescin failed to stain any denuded areas. The lower half of the cornea seemed to represent the remains of a previous sloughing ulcer. No view of the fundus was possible. The conjunctiva, the lids, the globe, and the entire cornea were anesthetic. There was very little discharge from the eye, but the condition of the lids caused such as there was to accumulate, requiring constant attention. The patient had been using atropine (grains 4 to the ounce) twice a day, but the pupil was only semidilated. A 5 per cent. dionin solution was being used twice a day for the relief of the pain in the eye, which pain was paroxysmal in character. There was no vision in this (the right) eye. The patient gave a history of double vision before the operation, and, of course, before the sloughing ulcer made its appearance.

Examination of the extraocular muscles of the affected eye showed orbicularis movement normal, levator palpebræ movement lost, all the recti movements lost, and the oblique movements lost. There was anesthesia of the skin of the right side of the face. The tongue turned to the right when protruded, and there were impaired taste and ordinary sensation on the right side of the tongue. Hearing was practically normal.

The left eye was normal in every particular until within a few days of dissolution. All movements were intact and the vision was five-sixths.

The patient was decidedly uncomfortable with this constantly exposed right eye, and it required continued attention to prevent accumulation of the discharge, slight as it was, and consequent infection. This attention was productive of far better results than anticipated, and while the ocular movements were not restored nor the cornea cleared the eye was brought into a comparatively comfortable condition free from discharge and annoyance. She left the city in pursuit of an occupation at the seashore (still having the pain in the side of her face), but returned in the early part of August, 1915, with some symptoms referred to the nose and throat, very much emaciated, and rather jaundiced, although her original color was of this nature, complaining of pain in the right side of the face, but worse in character than before. She was brought into the hospital a few days later in a semi-comatose condition with symptoms resembling meningitis, and died within a week after her admission. At this time there was pronounced exophthalmos of the right eye. The left eye showed blurring of the edges of the nerve, obliteration of the cup, and pronounced venous congestion (August 17, 1915). The history which follows seemed to indicate a metastatic growth in the brain, which diagnosis was confirmed at autopsy. The past medical history throws considerable light on the condition.

For several years the patient had been under the observation of Dr. Laura Chapin for various complaints, but who, on account of an increase in abdominal symptoms, had referred her (May 6, 1913) to Dr. Barton Cooke Hirst, who performed an exploratory laparotomy upon her (May 20, 1913) and found the intestines matted together by carcinoma. Nothing further was done at this operation except to close the opening in the abdomen. The patient was found to have also a large uterine fibroid. What happened to the fibroid is a matter of conjecture. Dr. Hirst's notes record nothing further concerning it, and the autopsy report makes no comment of it, although every detail of the uterus is noted.

In December (about December 8), 1913, the patient came under the observation of Dr. George E. Pfahler of Philadelphia on account of the increasing severity of the abdominal symptoms. Pain had become very great, requiring morphine frequently, and there was obstinate constipation. The entire abdomen was tender and there was general rigidity, and one could feel masses everywhere, according to the statement of Dr. Pfahler in a personal communication to the writer. The treatment was of an intensive sort and resulted in burning of the skin severely in several places.

On June 17, 1914, six months later, Dr. B. C. Hirst again examined the patient and reported that there was nothing left of the original condition except a very small mobile mass on the left side. A small sinus had meanwhile formed in the abdominal wall which Dr. Hirst seemed to regard as beneficial in allowing drainage. Several other surgeons, at Dr. Pfahler's request, examined the patient about this time, and with the exception of "a slight firmness" in the left iliac region found no evidence of malignant disease as originally noted by Dr. Hirst. This sinus, already referred to, developed above the pubes and was regarded by Dr. Pfahler as incidental to the discharge of necrotic tumor tissue, and was not connected with the bowel. The autopsy record notes the ultimate course of the sinus.

Dr. Pfahler noted at this time that the patient complained of the slow healing of the *x*-ray burns, and of more pain, especially in the head, than the condition seemed to warrant, and fearing metastasis to the brain

made an *x*-ray examination of the head August, 1914, but found nothing abnormal.

November 6, 1914, she was admitted to the surgical wards of the Episcopal Hospital, from the records of which department the following history is obtained:

The family history showed that the mother died of paralysis, the father died of heart disease, one brother died of tuberculosis, and grandmother died of cancer of the breast. Patient was married and divorced. Husband living and well. Patient has one son, living and well, but had had four miscarriages. The patient had had neuritis of the legs four years previously. Nine years ago she had a uterine-suspension operation performed. Menopause had taken place at fifty-two years of age and she had had no subsequent bleeding or discharge. Reference was made to the operation one year ago by Dr. Hirst in which "a tumor of the bowel was removed." Eleven months prior to admission she stated that she began to have *x*-ray treatment for cancer of the stomach which was followed by great improvement although attended with erythema and vesication.

One year previous to admission she noticed a numbness and dull pain under her right eye, which was accompanied by some pain and paralysis of the face, eyelids, and mouth. Gradually these symptoms extended to include the whole right side of the face, scalp, and mouth, and simlarly the inside of the mouth and tongue, presumably on the right side. There was also paresthesia on the right side of the face. Previous to the face conditions she had had pain in the right eye for several months. She had no headaches in the ordinary sense of the word; although she was constipated the appetite was good. There was no edema or pain in the feet. Cough was absent. Loss of weight to the extent of ten pounds within a year was noted.

On admission (notes by Dr. Robertson, resident physician) the patient appeared to be well-nourished, well-developed, and of a large frame. There was no adenopathy. The skin was warm, dry, and wrinkled. Tortuosity and some sclerosis of the peripheral arteries were present, but there was no cough, cyanosis, or dyspnea.

Concerning the head, the notes record iron-gray hair, ptosis of the right upper eyelid, slight weakness of the right side of the face, and almost complete anesthesia of the right half of the head, face, nose, mouth, and chin. The tongue and lower jaw deviated to the right very much. There was considerable deafness in the right ear. The tongue was slightly coated on the dorsum. The teeth were in good condition. No view of the throat was obtained.

Gross examination of the neck was negative in its results. Examination of the lungs was also negative. The breasts were normal. The heart was normal in position, although there was slight enlargement to the left. The sounds were of good quality, regular, and no murmurs were heard. The second aortic sound was accentuated.

External examination of the abdomen revealed the presence of old burns with scars and granulations on both flanks. A mid-line scar corresponding to the site of a previous abdominal incision, at the end of which was a sinus discharging pinkish, purulent material with a foul odor, was observed. The abdomen was flabby and there was some tenderness in the lower left quadrant. The spleen and liver were not palpable.

Examination of the extremities showed no weakness or paralysis or disturbances of sensation. Reflexes were present, but were sluggish. Station and gait were normal.

The patient's principal complaint was pain in the right side of the head which was constant but with acute exacerbations from time to time. Contact with draughts of air, and the taking of food increased the severity of the pain. Lacrimation of the right eye was observed. The patient never complained of headache in the ordinary sense of the word, of nausea, or of vomiting. Until after operation she had no disturbance of vision. A few days after admission she complained of toothache in the lower left first molar tooth. The *x*-ray burns and the sinus previously noted made slow progress toward recovery. One week after admission she was examined by Dr. John L. Bromley of the Eye Service who reported the eyes to be normal, and by Dr. Charles C. Biedert of the Ear, Nose, and Throat Service, who likewise reported these several structures and their adjacent sinuses to be normal. A day or two later, the teeth were examined by Dr. Cameron of the Dental Service, who found an alveolar abscess connected with the upper left first bicuspid tooth and a carious lower second left molar. On the right side of the mouth there was nothing abnormal. A bridge was being worn below that might possibly have been causing some pain.

The interne in his notes at this time observed no intermissions in the pain, but also recorded a confusing observation that there was some pain and diplopia in the left eye. The burns on the left side of the abdomen were almost well at this time, but otherwise the patient had made little or no progress.

Twelve days after admission it was noted that the patient was beginning to become despondent. In accordance with the desire to eliminate every etiological factor, she was given 0.6 gram of neosalvarsan intravenously in order to secure a provocative Wassermann reaction. Lumbar puncture was performed and about ten cubic centimeters of clear fluid were removed. Both serum and spinal-fluid Wassermann tests were later reported as negative in their results.

During the following week vomiting and pain were prominent symptoms unrelieved by a host of therapeutic agents, including galvanic current, codeine, mercury, iodides, aconitine ointment, hot water bags, freezing with ethyl chloride, and morphine. The latter caused temporary mental unbalance.

A few days later (February 27, 1914), attempts were made by the use of the Levy-Voudouin cannula to inject 90 per cent. alcohol into the superior maxillary and mandibular branches of the right trigeminal nerve at their points of exit from the foramen rotundum and foramen ovale. The first division of the nerve was injected at the supraorbital foramen. Apparently these attempts were successful since two days later the record reads that there was present almost complete anesthesia of the parts supplied by the right trigeminal nerve, although less perfect over the lower lip, chin, and lower cheek. The patient, however, noticed no lessening of the pain. There were present also some swelling of the right side of the face and slight ecchymosis of the right upper eyelid. The *x*-ray burn on the left side of the abdomen was noted as healed at this time.

The face appeared "puffy" for several days following this operation. Headache was present as was also the pain in the face. The blood pressure at this time was 193 systolic, and less than thirty ounces of urine were voided in twenty-four hours. The lungs were clear but the heart was hypertrophied. Nephritis was present at this time.

On December 7, 1914, excision of the Gasserian ganglion was performed by Dr. H. C. Deaver at the Episcopal Hospital. A horseshoe incision was made beginning one inch in front and ending one inch behind the external auditory canal. This flap together with the periosteum, temporal fascia, and muscle was then turned down. With a hand drill a hole was then trephined in the skull just above the external auditory canal, and the opening in the skull was enlarged with rongeur forceps. The petrous portion of the temporal bone was then exposed. Bleeding from the diploë was free and was controlled by Horsley's bone wax. By means of a dural separator and the finger, the dura was stripped from the base of the brain. The brain was then held up by the bent handle of a spoon. The middle meningeal artery was not seen. The Gasserian ganglion was located and by means of a blunt hook and long blunt dissectors was freed, and the three branches and root were isolated. With a long hemostat the ganglion was held while it was excised by long uterine scissors. The ophthalmic division with the corresponding portion of the ganglion was then removed. The brain was replaced. The flap of skin, fascia, and muscle was sutured with silkworm gut interrupted sutures. The right eye was irrigated with boric acid solution and covered with an eyepad and a shield. Dressings were then applied to the wound in the side of the head.

On the day following the operation, the patient noted a feeling of numbness and tingling in the right side of the face and on the succeeding day acknowledged that the pain was less. Four days after operation it was observed that the cornea was anesthetic and there was slight injection of the conjunctival vessels. The convalescence from the operation was good, with the exception of irritability and occasional delirium, but subjectively the patient was no better than before the operation.

Nine days after operation, Dr. Bromley noted that the right cornea was anesthetic, motion of the lids was good with the exception of slight ptosis of the right upper eyelid. The right eye could be moved upwards but motion in all other directions was absent. A linear

ulcer was present at the lower central portion of the cornea. Dr. Bromley expressed the opinion that there had been some injury to the motor nerves of the eye in the course of the operation.

From this time on the symptoms appeared to be centered about the right eye. In the first place the patient refused from time to time to permit the nurse to irrigate the eye. It must have been painful to her to have it done. Edema of the lids and conjunctiva appeared and became progressively worse. The conjunctival vessels became injected. The original corneal ulcer became larger and a second superficial ulcer appeared on the cornea. With the progress of the edema and corneal ulcers, the lids failed to cover the eye perfectly and the condition was further aggravated. While the general condition of the patient was good, mental irritability was more or less constantly present and delusions of persecution were in evidence at times.

While the edema of the conjunctiva became less and the cornea became clearer, and, altogether, the patient was in a much better condition within a few days, she felt that she was not receiving satisfactory attention and signed the release so that she could go home, but changed her mind, after notifying the office of the hospital, and decided to remain. At this time the chief conditions consisted of an almost healed *x*-ray burn on the right side of the abdomen (December 22, 1914), fistula at the lower end of a scar in the abdominal wall, and anesthesia of the right side of the face with cloudiness of the cornea of the right eye with disturbances of motility of the globe.

The condition of the cornea of the right eye fluctuated considerably during the following three weeks. At first the cornea was steamy with radiating streaks in it; the pupil was partially and irregularly dilated, and the anterior chamber appeared shallow. At the end of one week improvement was noted, but a slight linear corneal ulcer was observed in the left eye. The latter lasted four or five days. The condition of the right eye remained stationary for about one week and then marked improvement followed, so that by January 16, 1915, the notes showed the right eye to have very little edema and congestion of the conjunctiva, and a hazy cornea but not in the process of ulceration or inflammation.

During this last three weeks, the patient improved mentally as well as physically and had very little pain. Some of the healed *x*-ray burns broke down but promptly healed up again. January 16, 1915, the patient was discharged as a house case, in very good condition.

After a period of treatment at the Out-patient Department she came under my observation about April 1, 1915, through the reference of Dr. N. S. McDowell as previously noted, with the condition as already given in detail. She was seen at St. Christopher's Hospital for Children but for convenience she was again referred to the Episcopal Hospital, but this time to the service of my very good friend Dr. Frederick Krauss, with whom she was studied in detail.

At this time there was a decided trophic ulcer of the cornea involving almost the entire cornea, suggesting impending sloughing of the cornea. Under the influence of a supporting bandage closing the eyes continuously, the free irrigation of all secretion, and the instillation of atropine, holocain, and dionin, the immediate distress of the eye was ameliorated, but even after three months of the closest attention, the cornea was still intensely clouded. At no time was it possible to get any view of the fundus in the right eye. The left eye was normal in every particular.

During the patient's attendance at the Out-Patient Department, she seemed to be in fairly good health although she did complain of more or less continuous painful sensations over the right side of the face unrelieved by any medication. The use of the local remedies mentioned served to restore the cornea and conjunctiva to comparative health, although exacerbations of the ulcerative condition were quite frequent. Despite the condition the patient's general health remained about the same and she left the city to seek employment in Atlantic City in June, 1915.

In the early part of August she was observed in the Nose and Throat Clinic, very much emaciated and cachectic, and in a most despondent frame of mind. Shortly afterwards she was taken suddenly ill at home and lapsed into a semicomatose condition. Her original physician, Doctor Chapin, had her returned to the Episcopal Hospital immediately (August 17, 1915). The history given to the interne, on admission, was that for two or more weeks previously the patient had had impairment of hearing, taste, and smell. For the last three days prior to admission she had had severe headache. Two days before admission she was found unconscious on the floor, since which time she had been in coma with loss of speech and incontinence of urine. She was constipated but had had no vomiting, convulsions, or demonstrable paralyses.

Examination on admission showed semicoma with stertorous breathing resembling the Cheyne-Stokes type. The ears and nose were negative. The tongue and pharynx were covered with mucus and crusts. The tongue deviated to the right when an attempt was made to move it although the patient was unable to protrude it. Attempts at speech resulted in irregular rolling of the tongue, but articulate sounds were incapable of production. The ocular examination showed right total ophthalmoplegia, exophthalmos, marked conjunctival injection, no view of fundus on account of corneal scar. In the left eye, venous engorgement of the fundus was marked, the veins being especially tortuous. Blurring of the optic disk and complete effacement of the physiological cup were noted.

Examination of the heart, lungs, and abdomen revealed no new condition. Examination of the extremities showed little or no movement of the left leg and arm, the leg being held flexed and somewhat rigid. The arm was nearly, although not quite, flaccid. Knee jerks were absent and there was no ankle-clonus or Babinski sign. The neck was stiff and Kernig's sign was present on both sides.

The temperature on admission was 102.2° but dropped to 99.2° within a few days and slight improvement was noted. It then abruptly rose to 103° with pulse 128, and respirations 24, and within twelve hours the patient had developed edema of the lungs, which edema ended in dissolution on the fifth day of her sojourn in the hospital. The patient came to the autopsy table with the provisional diagnosis of Metastatic Carcinoma of the Brain secondary to Carcinoma of some of the Abdominal Viscera, and Nephritis. The autopsy performed by Drs. Dibble and Kirchner under the supervision of Dr. C. Y. White, pathologist of the Episcopal Hospital, showed the following to be present: Ptosis of the transverse colon and hernia; chronic interstitial nephritis; traumatic ventral hernia; adenocarcinoma (medullary) of the sigmoid; metastatic carcinoma of the peritoneum; metastatic carcinoma (medullary) of the right frontal lobe of the brain.

The detailed findings showed the heart and lungs to be normal except for slight dilatation of the heart and slight anthracosis, hypostatic congestion, and edema in the lower lobes of the lungs.

The abdominal examination showed many old and firm adhesions causing distortion of the viscera. The transverse colon had dropped far down, a loop of it occupying what appeared to be a large ventral hernia. The stomach, duodenum, jejunum, and ileum were normal, except for adhesions distorting the small intestines. There were no adhesions about the cecum or appendix. There was a hard mass in one side of the wall of the sigmoid about 5x4x2 cm. The peritoneum was glistening and thickened. The liver was bound down by many adhesions, especially to the diaphragm and its resistance to cutting was greater than normal. The kidneys showed the presence of chronic interstitial nephritis. The pelvic viscera were massed together by adhesions but were apparently normal. The bladder was congested and studded with tiny miliary white points. The spleen was normal.

The various glands of the lymphatic system, such as the cervical, the axillary, the bronchial, the mediastinal, the mesenteric, and the retroperitoneal glands, showed no demonstrable lesions, and were recorded as normal. The osseous and cartilaginous systems were normal. The adrenals were unaltered. The thymus and thyroid presented no lesions. The mammary glands were apparently healthy. The nose and throat were normal from the outside. There was marked exophthalmos with corneal opacity of the right eye. There was a scab over part of a scar in the right iliac region apparently from some remote operation together with numerous scars over the abdominal wall. There was also an apparent diastasis of the rectus abdominis muscles about 10 cm., below the umbilicus.

Examination of the brain showed the dura to be transparent, its inner surface being smooth and glistening. The arachnoid was transparent and moist. The cerebrum was normal except for a lesion noted below, as were also the cerebellum, pons, and medulla.

In commenting upon these findings the pathologists observe: "Palpating from within the abdomen there was a circular opening between the recti muscles below the umbilicus, with sharply defined edges all around and about 10 cm. in diameter. This was underlying an old surgical scar in the abdomen. The opening led into a cavity of some size, lined with peritoneum and contained a large loop of the transverse colon which was not adherent. The intestines were all matted together in the lower and left side of the abdomen. The transverse colon was ptosed and had drawn down with it the omentum. In the descending colon were some sharply punched out ulcerations with abrupt margins and blackened base. The largest of these was about one centimeter in diameter. In one side of the wall of the sigmoid flexure was a hard irregular mass with a whitish color on cross section, and quite firm. At the base of the right frontal lobe of the brain was a friable fungating mass of tissue about 5x4x3 cm., in size and of very irregular shape. It was rather resistant to the knife and seemed to contain some 'gristly' particles. It had eroded the cribriform plate of the ethmoid, entering the upper part of the nose. It had also destroyed the configuration of the sella turcica by erosion and appeared to have invaded the orbit. There was much blood about this growth. In color it was pinkish yellow. There was no distinct capsule."

In analyzing the several points in connection with this case, it seems in order to emphasize the intermittent character of the symptoms in carcinoma of the abdominal viscera, since this case illustrates this clinical feature very well. There were intervals of comparative comfort. As in this case the disease does not always progress to destruction of the organs involved, and dissolution often comes from some intercurrent disease. Without the history and the presence of the *x*-ray burns it is doubtful if there would have been any reference to abdominal symptoms at the time after the case came under our observation.

It is also well worth noting that the symptoms referable to the face were complained of prior to the operation on the Gasserian ganglion, and consisted of numbness and dull pain under the right eye, pain and paralysis of the face, eyelids, and mouth, and paresthesia of the right side of the face. These and the other head and face symptoms would indicate conditions directly referable to the fifth nerve, and afford a justification for the subsequent removal of the ganglion.

It should be borne in mind that the patient's principal complaint was continuous pain with paroxysmal attacks of still more acute pain in the right side of the face over the distribution of the fifth nerve, unrelieved by medication, and it was for the immediate relief of this that the surgical procedures were instituted, the other symptoms being too vague to definitely diagnose and localize the suspected intracranial neoplasm.

After the removal of the ganglion, symptoms of involvement of nerves other than the fifth became pronounced. These were regarded by some of the observers as incidental to the manipulation of the structures in the course of the operation. Going back to the symptoms complained of one year before admission, and on admission, and returning to the post-mortem notes regarding the location of the metastatic growth in the brain with its destruction of its bony resting place, we are inclined to regard the removal of the ganglion as connected only with the ultimate destruction of sensation and trophic influences of the fifth nerve and as having very little to do with the other nerve palsies. Movement upwards was retained for a long while after the operation, but when she came under our observation, several months later, it was entirely lost. If due to the operation it should have been lost immediately.

The occurrence of pain in the side of the face after all pathways of sensory impulses had been destroyed permits considerable discussion on the subject of referred pain, to take part in which is beyond the scope of this paper.

Death did not occur as the result of either the primary or secondary growth, directly. It was undoubtedly due to interstitial nephritis. The coma was uremic in character, the urinary findings indicated renal changes, the left eyeground showed intense congestion of the fundus, edema and swelling of the disk, not formerly present, and the post-mortem showed kidney disease and edema of the lungs. This is in accord with the universal observations among general practitioners that the subjects of carcinoma succumb to kidney changes.

This detailed history is given, not with the idea of commenting upon the treatment, which I consider not open to comment or criticism, but with the purpose of contributing something to the etiology and symptomatology of brain tumors in general and to metastatic growths in particular, especially when situated anteriorly.

1901 Mount Vernon Street.

TUBERCULIN AS AN AID IN SURGICAL TUBERCULOSIS.*

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In presenting a paper before this society upon the subject which I have chosen, I recognize full well that there is no specific remedy for tuberculosis; none which corresponds to antitoxin in diphtheria, 606 in syphilis, or quinine in malaria; yet there are certain remedies which, while they have enjoyed only limited trial by the profession, are found to have a specific action when used with certain surgical operations upon tuberculous tissues.

While Koch's old tuberculin failed to produce the beneficial results expected, and was in consequence discredited and the use of the remedy fell into disrepute, we believe that the failures of the first epoch were, without exception, the result of improper dosage and methods employed in the administration of the remedy. For that reason no one is justified, on the grounds of the experience of 1891, in passing adverse judgment upon the remedy. On the contrary, it is important that the remedy be extensively tried anew and especially as an aid in rebellious surgical tuberculosis, for which indications, we believe it occupies an important status.

That the value of this remedy has not been recognized is due to a misconception of what should be expected of such remedies. We well know that antitoxin is the anchor of hope in diphtheria; yet we also know that, to be efficacious, it must be used early; and all things being equal, the prognosis varies with the early or late administration. In surgery we know that the knife is a specific for many diseases; yet it has its limitations, and after a certain point in the disease has been reached this specific fails. While the field of these specifics is limited, yet their value is in no way impaired by the fact of this limitation. In the case of tuberculosis, however, the profession has not been satisfied with a remedy of limited value. The profession has been unreasonable, especially in surgical tuberculosis, for it has demanded that the remedy, to be of value, must be one that not only cures the disease, but also removes the results of disease, namely, the

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necrotic tissues. Such demands are unfair and unreasonable, and if the same test were applied to other remedies, how many would stand? In tuberculosis we must demand no more of a remedy, and no less, than in other diseases. As followers of the healing art, we should seize upon everything that will help, and apply it to the advantage of the patient, not discard even the smallest thing that will aid us to combat disease.

I have found tuberculin to be a splendid aid when used in conjunction with surgery. It has been especially useful in those tuberculous cases that seem to defy all other treatment; those undesirable cases, in connection with which we sit up nights praying that the patients may see fit to change doctors, for we are ashamed to see them continue to place their confidence in us after we have played our last card, and without results. In this class of patients, I have found that, while the results of tuberculin is very slow, they are gratifying.

We have until quite recently used the new tuberculin or T. R. exclusively, beginning with a 1/10,000 mg. and carefully increasing the dosage to 1/600 mg., watching the patient closely for even the slightest reaction. We agree, however, with Dr. Schorer when he says in regard to the various preparations, "no one of the more ordinary preparations of tuberculin possesses any material advantage over the others." Bandelier and Roepke have wisely said, "tuberculin can exert no curative action on the secondary purulent processes caused by the streptococcus, pneumococcus, influenza bacillus, and other bacteria, which, as a rule, occur only in advanced cases with cavity formation; there is rather the possibility that the unavoidably severe reactions may, in such cases, afford opportunity for extension of the secondary infection and lead to a worse condition. But these are the only cases in which direct harm may be caused by tuberculin. Hence, we strongly deprecate the attempt being made in this class of cases, which are already hopeless."

Tuberculin acts especially well in most cases of tuberculosis of the bones, glands, and skin. In all these cases, however, the treatment should be well regulated and supplemented by all of the treatment usually given to patients having tuberculosis. Dr. E. H. Schorer lays down the following contraindications to its use: marked fever, hemoptysis, heart lesions, and marked emaciation. It is well to examine the patient for other foci before using tuberculin in surgical cases, lest we light up a focus we are not looking for and thus cause ourselves a little embarrassment and the patient considerable pain and discomfort.

Tuberculin is a valuable addition to our surgical armamentarium in that it promotes healthy granulation and permanent healing; it relieves the patient from toxic symptoms, making him more buoyant especially in the advanced chronic cases, and the good results are decidedly more permanent. I think we can say, without fear of contradiction, that tuberculin can do no harm when given in the doses mentioned above, and when the patient is carefully watched for a reaction, and as soon as even a slight reaction occurs, the remedy is discontinued for at least ten days.

The so-called clinical method is the procedure of choice in the administration of tuberculin, and its aims are simply to avoid any reaction by commencing with a very small dose and gradually increasing it without producing any general reaction.

Drs. Hawes and Floyed classify the forms of tuberculosis in regard to the effects of tuberculin as follows:

1. *Forms of Tuberculous Disease which React Favorably to Tuberculin.*—(*a*) Incipient pulmonary tuberculosis, especially in the closed stage in children; (*b*) Chronic advanced pulmonary tuberculosis; (*c*) Tuberculous adenitis in children; (*d*) Tuberculosis of the eye; (e) Genitourinary tuberculosis.

2. *Forms of Tuberculosis which React Less Favorably to Tuberculin.*—(*a*) Febrile advancing pulmonary tuberculosis: (*b*) Tuberculous adenitis in the adult; (*c*) Bone tuberculosis; (*d*) Lupus; (*e*) Tuberculosis of the larynx.

Dr. A. P. Francine has aptly said, "While expert opinion generally favors the therapeutic use of tuberculin within certain limitations, the fact must be strongly emphasized that it is a powerfully acting remedy, a toxin of great potency, and it may do harm as well as good. It should be employed with the greatest watchfulness and skill, in properly selected cases." It should be remembered that tuberculin is not a serum, that it is the diametric opposite of an antitoxin, and should not be confused with serums which claim to be antitoxins for tuberculosis, but which have thus far failed to merit this name.

Some of the varied and numerous constitutional symptoms, which may occur during a positive reaction after the injection of tuberculin are: Indisposition, pain, aches in head, back, limbs, or other parts of the body, anorexia, nausea, vomiting, diarrhea, chills, sweats, dizziness, weakness, dyspnea, insomnia; local signs at and around the area of injection, such as redness, tenderness, swelling, impairment of function, increased muscular and tendinous spasm, deformity, an increased local temperature; while tuberculous skin lesions will exhibit signs of engorgement, pain, tenderness, swelling, and increased local temperature.

The above reactions may follow the injection of tuberculin, no matter how pure the product may be.

The surgical treatment does not necessitate the complete removal of all the tissues that may be infected with the tubercule bacillus, but only the portions that are indefinitely necrotic need be removed, since from the case reports that follow, as well as the observations of others, one may conclude that healing of extensive tuberculous processes may occur under tuberculin injections without the surgical removal of all the diseased tissues.

It should, of course, be emphasized that the removal of such necrotic tissues is of great importance, and that the tuberculin treatment is essentially an auxiliary measure to be used with such surgical treatment as is indicated in a given case. It has been shown by Dr. Carl G. Swenson that the new tuberculin or T. R. may be injected with safety and without Wright's opsonic index control, if we commence with a dose of a 1/10,000 mg. and gradually increase it up to 1/600 mg. and not repeat the dose until ten days have elapsed.

Dr. Porter says that since he has abandoned the opsonic method of Wright, he is using the Packard method which consists in beginning with small doses, small enough to produce no reaction, and slowly increasing in those cases which are neither doing well nor hopelessly badly, but those in which the patient has good resistance but needs a little assistance to tip the scale toward recovery. Even in such cases, the first sign of a reaction is an indication to discontinue the remedy for a while.

Tuberculin is a most valuable remedy in treating surgical tuberculosis where the lesion is limited, in which the disease is pursuing a quiet, slow course without pronounced feverish conditions and not much general disturbance, also in non-febrile cases with a fairly good appetite, in which the process is slow and chronic, and in cases that seem stationary; but, in all cases of advanced pulmonary tuberculosis with laryngeal, renal, or intestinal complications and high fever, showing general disturbance, the use of tuberculin is strictly contra-indicated; cachetic individuals and prostrated persons also are unsuited for tuberculin treatment.

It should be given cautiously to incipient active tuberculous patients, because even in the small doses it may react very vigorously, whereas large doses in old tuberculous cases may not cause any reaction at all.

This paper was prompted by the results in the following cases, which are here cited to illustrate some of the clinical results obtained by its use.

CASE I.—Mr. J. P. came to me for treatment June 5, 1915. He gave the following history: During the last two years he has had three operations upon his neck for what was called "an abscess of the neck." The operations failed to relieve him and the condition gradually became worse until all the cervical glands became involved, and some underwent caseous degeneration. Th cite of incision, when I first saw him, was a sinus exuding a seropurulent discharge, and the tissues over tumor were greatly indurated and imparted to the palpating fingers, a sensation of board-like rigidity. We made sections of some of the tissues removed at this time and also made smears of the discharge on blood serum. The sections showed the tubercle, but we were unable to find the bacillus from the cultures.

We took him to Mercy Hospital and did a radical operation for the removal of the cervical glands, but we were unable to remove all the infected tissues because we would not have enough flap to close our wound if we did. We did, however, remove all the old scars. After operation the wound apparently healed kindly, but after two weeks' time it began to break down, and he was put on tuberculin injections. After the third injection the wound began to clear up and healthy granulations appeared. The induration gradually disappeared and the wound has healed, as you may see, in a kindly and permanent way. He had in all, six injections.

CASE II.—Mr. O. W. received an injury to knee on one of the seats in the Opera House while passing out of the rows of seats. He paid no attention to his injury, which was apparently of a trivial nature. A few months later his knee began to swell and continued to remain stiff and swollen for months. He went to Rochester, where he received injections of Beck's bismuth paste, but for financial reasons he had to return home and his knee continued to swell and became painful and stiff. Later it was necessary to remove his leg above the knee because his entire knee-joint became honeycombed as a result of his disease. Following his operation the flaps healed kindly for a time, and then broke down and discharged a serous fluid. He was put on tuberculin and after two months' treatment he had perfect union of flaps, and they have remained healed to this day. His operation was performed in 1910.

CASE III.—Mr. J. S. was operated on for what was termed an empyema. The incision refused to heal. Two years after operation he came to me to see if I could heal his side. He was taken to Mercy Hospital, where his pleural cavity on one side was filled with Beck's bismuth paste, the scare tissue removed, and the wound brought in apposition. He also received tuberculin, and after two months on the tuberculin treatment the wound healed and has remained healed to this date. The diagnosis was verified by the Koch's old tuberculin cutaneous test, by both the Von Pirquet and Moro methods.

CASE IV.—Mr. N. G. had his right testicle removed for tuberculous epididymitis and orchitis. The testicle was almost completely destroyed by his disease. The incision healed by first intention but three weeks later broke down and began to discharge a serous fluid. He was put on tuberculin and it promptly healed and has remained healed. The diagnosis was verified by the Moro test.

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INDICANURIA AND THE SULPHATES.

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CHICAGO.

IT may be said the metabolism of the body could not be carried on in any way without the constant intake of food material, of a mixed variety, and water from time to time; these are necessary to supply activity, energy, and proper functioning of all the tissues, on account of the waste that goes on regularly from day to day, requiring repair.

It would thus seem that the chlorides, phosphates, and sulphates also are more or less under the control of the body metabolism as governed by diet.

As the chlorides then form almost an integral part of the body so the same may be said of the sulphates, both being under the control of the tissue metabolism, for it is known that either of them can be increased or decreased according to certain conditions, such as by the amount and kind of food, exercise, water drinking, and the free movements of the bowels.

In the urine, as is known, are preformed sulphates of sodium, potassium, calcium, and magnesium, while the fluid also contains sulphur in the form of sulphocyanides, hyposulphites, and sulphuretted hydrogen.

Sulphur is taken into the body in the protein as in meat and eggs, also as sulphates of sodium and potassium, while it is eliminated as sulphates of indol, phenol, and skatol, the odor of the feces being due to these. Along with cresol this group of four is termed the aromatic series.

They are the ethereal, conjugate, or organic sulphates and are supposed to be formed during putrefaction occurring in the intestinal canal, especially of protein food material.

More or less putrefaction must take place in the intestinal canal as a result of digestion and so much waste matter must always be thrown off for the health of the body. When this is delayed and if much putrefaction occurs, indican is more likely to form.

Indol is supposed to be the basis of indican, and it is said to occur especially from the putrefaction caused by the action of bacteria on protein. This is oxidized to indoxyl and is excreted, and combined with sulphuric acid and sodium or potassium, as indoxyl sodium sulphate or indoxyl potassium sulphate, which is called indican. Where there is much consumption of protein food along with suboxidation of the tissues the amount of sulphates is likely to be much increased and the amount of indican also on account of the delayed metabolism of the tissues. Where there is loss of nervous tonicity and the tissues are devitalized indican is more likely to form.

In most cases the sulphates would almost seem to be more stable than the chlorides, although they seldom if ever reach to as high a figure except it may be in some peculiar instances, the tendency being in most cases for the sulphates to be low.

In some cases where the chlorides are low from suboxidation of the tissues and delayed metabolism the sulphates may be found at a high figure; the amount of indican being also increased.

In order to find out the relation of the indican present to the total amount of sulphates twenty-five specimens of urine were examined quantitatively for sulphates and indican. From these examinations one would think the sulphates had a considerable part in the formation of indican, for it was found that with a small amount of sulphates the amount of indican was high in many cases. Out of twenty-five cases of urine examined in not one single instance was the amount of sulphates beyond the normal daily maximum figure, but mostly below it. In only one instance was the sulphate index beyond the normal daily minimum figure.

	Color	Sp. Gravity	Sulphates	Indican
1.	Light yellow	1002	½: 8	0
2.	Reddish yellow	1006	¼: 4	0
3.	Yellowish red	1010	¼: 4	10
4.	Reddish yellow	1012	½: 8	0
5.	Reddish yellow	1018	¼: 4	0
6.	Yellowish red	1020	¾:11	10
7.	Yellow	1020	1 :15.5	15
8.	Yellowish red	1020	½: 8	15
9.	Reddish yellow	1022	½: 8	Ft. trace
10.	Reddish yellow	1022	½: 8	0
11.	Yellowish red	1024	1 :15.5	6
12.	Yellowish red	1024	1 :15.5	5
13.	Yellowish red	1024	1 :15.5	10
14.	Yellowish red	1024	1 :15.5	20
15.	Yellowish red	1024	1 :15.5	5
16.	Yellowish red	1026	1 :15.5	10
17.	Yellowish red	1026	1 :15.5	20
18.	Yellowish red	1026	2 :31	10
19.	Yellowish red	1028	1 :15.5	3
20.	Yellowish red	1028	1 :15.5	10
21.	Yellowish red	1028	1 :15.5	20
22.	Yellowish red	1030	1 :15.5	15
23.	Yellowish red	1030	1 :15.5	5
24.	Yellowish red	1034	1 :15.5	5
25.	Yellowish red	1036	1 :15.5	11

In about 140 out of 320 cases where the urine was examined for the amount of sulphates the figure was at 1—15.5 below both the normal daily minimum and maximum amount, thus showing the tendency is for them to be low.

306 EAST FORTY-THIRD STREET.

Typhoid Vaccination During Convalescence.—Meyer advises the giving of intravenous injections of sensitized vaccine during the later stages of typhoid and in the period of convalescence, as he thinks they hasten the development of immunity, prevent sequelæ, and also prevent relapses.—*Berliner klinische Wochenschrift.*

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THE PHYSICAL VERSUS THE PSYCHICAL IN PSYCHIATRY.

LOOKING at them from a broad viewpoint the ranks of the alienists seem at present to be split into two main parties. On the one hand we have those who believe that mental disease, leaving out of the discussion of course such cases as primary defect and organic cerebral disease, is always due to physical causes and on the other hand those who hold that the so-called functional psychoses are due to psychical causes.

Let us take for example a disorder which is not only the most common, but about which there is the most difference of opinion, dementia precox. Those who favor the psychical etiology point out that dementia precox presents at first a clinical picture which suggests an acute physical disorder. They quote the onset which is often sudden, attended perhaps by a convulsion, headache, vertigo, and confusion. When fully established, especially in the catatonic variety, there are numerous physical signs. Especial stress is laid on these by the English school formerly led by Stoddard who now seems to have gone over to the psychoanalysts. These signs include pupillary anomalies, fine tremors of the hands and face, exaggerated reflexes, hyperactivity of some secretions and diminution of others, gastrointestinal disturbances, loss of weight, dermographia, etc.

The more progressive exponents of the physical theory are inclined toward an endocrinous etiology of the functional psychoses. They believe that the symptoms, both physical and mental, shown in these disorders, merely represent altered functional activities of the cerebral cells, due to a toxemia resulting from an anomaly of an internal secretion, possibly that of the thymus gland. The internal secretions of the sex glands are naturally looked upon with suspicion because of the facts that these diseases are most likely to begin at puberty and are often associated with disturbances of the sexual sense. Among the foremost representatives of the physical theory in this country must be mentioned Southard, Bayard Holmes, and Ernest.

The psychiatrists who believe that back of psychic events we must look for psychic causes hold that the disorders of metabolism which we often observe in the psychoses in question as well as the degenerative changes frequently seen in the cortical cells post mortem are due to derangements of the psychic apparatus. They quote in support of this view, aside from their ingenious psychology, that we often see cases which exhibit no physical or physiological signs whatever and frequently in the autopsy room brains fail to show any definite pathological changes whatever although the patient may have had precox for many years. They believe, to put it as succinctly as possible, that the vital energy, or libido, may be arrested at any point in its development and remain fixed there or turned backward upon itself and come to a standstill at an infantile level. The precox according to their psychology, suffers from a splitting of the field of consciousness, or schizophrenia, very similar to the hysteric. This school of psychiatry in this country numbers among its adherents White, Jelliffe, Brill, Emerson, Putnam, Kempf, and Lind.

When specialists disagree, to paraphrase the old saying, it is not for general practitioners to say which is right, and perhaps just now it does not make a great deal of difference. The encouraging feature of the whole situation is that we are abandoning our old attitude toward the mentally diseased, that is, that they are social pariahs whom we must shut up behind bars for the balance of their days, and are beginning to look upon them as human beings very like ourselves, but suffering from disorders just as real and predetermined in their way as any other disease. We are commencing to realize that it is our duty to search for the causes of mental trouble that we may find the remedy, and if the searching parties after truth diverge widely in their quest and each proclaims that it alone has the one true light it is probable that they are all right to some extent and that a fusion of all the stray illuminants picked up here and there will one day bring modern daylight into the medievalism of mental science.

IMMUNIZATION IN EXPERIMENTAL GLYCOSURIA.

THIS is a subject that deals with a field of investigation as yet largely unexplored. That metabolic disorders can be influenced by procedures similar to those employed in combating the invasion of the body by certain infections is a revelation that offers results of eminently practical value in clinical medicine. The conception of immunization against glycosuria first suggested itself to Andrea Ferrannini in 1907, and since that time he and his pupils have studied various aspects of the problem. The results of this work are reported by Ferrannini in *La Riforma Medica*, September 18, 1915.

It has been definitely established that there are certain substances that tend to combat or inhibit the glycosuria produced by the injection into the body of certain other substances. Thus pancreatic extract combats the glycosuria caused by suprarenal extract; methylene blue, that caused by phloridzin, and also glutaric or paratartaric acid, that caused by phloridzin. To the above group of antagonisms there are added by Ferrannini and his associates the following: Methylene blue inhibits the glycosuria evoked by morphine; santonin com-

bats the glycosuria produced by morphine or phloridzin, and an extract of the salivary glands counteracts the glycosuria produced by phloridzin or morphine and, to a lesser extent, that produced by suprarenal extract. Three different sets of facts have since been established: (1) The injection into an animal of suprarenal extract, phloridzin, or morphine in doses sufficient to produce glycosuria imparts to the blood serum of this animal the property, when injected into another animal of the same species, of preventing the development of glycosuria following the injection of suprarenal extract, phloridzin, or morphine. (2) This immunization against the development of glycosuria is also acquired by the blood serum if the animal is injected with the substances that tend to inhibit the corresponding glycosuria; these substances (pancreatic extract, methylene blue, etc.) being administered at such long intervals as to remove all doubt as to the possibility that the accumulation of these substances in the body is the real factor in the inhibition of the glycosuria rather than the immunizing power of the blood serum. (3) The development of glycosuria is also prevented if the animal is injected with the blood serum of another animal of the same species which has already received injections of a so-called "antiglycosuric system," namely, a glycosuria-producing substance in conjunction with its antagonist, *e.g.* suprarenal extract with pancreatic extract, morphine with methylene blue, or phloridzin with methylene blue.

As regards the specificity of the immunizing properties of the blood that are acquired under the conditions detailed above, the fact has been established that these properties are not absolutely specific. They are only relatively so. Thus a blood serum obtained from an animal injected with phloridzin will immunize another animal of the same species against the glycosuria produced by phloridzin, but also to a lesser extent against the glycosuria produced by suprarenal extract, etc. The biological mechanism concerned in the above immunizing properties consists in certain changes wrought in the metabolism of glucose rather than in an inhibition of the excretion of glucose by way of the kidneys.

Another set of facts of practical importance have been revealed. Just as there may be developed an immunity with respect to experimental glycosuria so also there may be evoked a true glycosuria anaphylaxis. Thus, if small doses of a glycosuria-producing substance are injected repeatedly at long intervals during a certain period of time, and if there is then injected a larger dose, this last will evoke glycosuria even though the amount injected is less than the amount usually required to produce glycosuria in the same animal. The identical anaphylactic phenomenon is observed if, following the preliminary stage of small doses, there is injected the corresponding mate in the so-called "antiglycosuric system."

The significance of the above investigations cannot be overestimated. From the viewpoint of the larger problem of metabolism in general, they show that the processes of bodily chemistry are governed by the same laws as those that control the defence against invading microorganisms; or, to express this fact in a more logical order, these investigations show that the chemical processes of defense are identical with the larger processes of metabolism. But there is a more immediate practical value in the results of the researches conducted by Ferrannini and his associates. There is opened up a new avenue of attack in the treatment of the various types of pathological glycosuria. The possibility of a serum treatment of diabetes would seem therefore to be a remote vision.

THE COMMUNICABILITY OF LEPROSY.

THERE has been a great deal of criticism of the health officers of certain States for their summary treatment of leper suspects, and while we think much of the criticism is deserved, it might be well to note that in spite of the conclusions of the Leper Congress that leprosy is not contagious, there are certain elements with regard to certain phases of this affection which make one feel that he is in the presence of a very mysterious disease. The true method of origin or communication of leprosy is not known. Until about the middle of the last century the disease was practically unknown in Hawaii, where it is now so extremely prevalent, it having been imported by the Chinese coolie settlers. In addition to the natives the number of foreigners who have lived a considerable time in Hawaii and who have contracted the disease is quite large. Leprophobia is not merely confined to places where the disease is only heard of with all the natural exaggerations of hearsay evidence, but is engendered even among those in whom familiarity would be expected to breed contempt. The belief that the disease is with difficulty transmitted is born of an ignorance of the circumstances necessary to be present for communication. Thus syphilis is a highly communicable disease, but it is nevertheless transmitted under certain conditions of contact. It is fairly well established that leprosy is not hereditary. Children of lepers who are immediately, within the first few weeks, removed from contact with their parents remain free from the disease, and the likelihood of children remaining free depends upon the promptness of their removal from the leprous environment.

As regards its etiology, there is still some uncertainty. While the bacillus of leprosy is universally considered to be the causative agent, we are yet dealing with the least identified or differentiated bacterial entity. It is merely known that this bacillus is an acid-fast bacillus found abundantly in the discharges and in the tissues of the leprous. As an acid-fast bacillus it is in the same class with the smegma and tubercle bacilli. But while this retention of the stain has some relation to its protoplasmic composition, it is not a sufficiently pertinent characteristic. The tubercle bacillus is rather easily cultivated, but its presence as a causative agent is especially demonstrated by the fact that it fulfils the Koch postulate—isolation, cultivation in pure culture, animal inoculation and reproduction of the disease, and recovery in pure culture. On the other hand, previous to Clegg's cultivation of

the bacillus in symbiosis with the ameba, the lepra bacillus was impossible of cultivation. Clegg succeeds, moreover, only in the cultivation of an acid-fast bacillus under these conditions, but he cannot reproduce the disease in animals or otherwise carry out Koch's postulate, which would stamp this acid-fast bacillus as the specific agent. The one authentic experiment in which a Hawaiian, a convict, was inoculated with a lepra culture, and who later contracted the disease, is not entirely convincing; first, because even one positive instance does not carry sufficient scientific certainty, and, second, because the experiment was carried on in a Hawaiian native already exposed to the disease from residence.

Likewise, the question of diagnosis adds to the already present difficulties. The best informed men have differed on the same case. In marked cases—in the later stages, when any damage from communication will already have been done—there is little trouble in the diagnosis. It is very often difficult to differentiate leprosy from syphilis, and there is, therefore, no discredit to the ancients if it is true that they confounded leprosy with syphilis and tuberculosis. Often, as between syphilis and leprosy, only the history of exposure gives a clue to the probable condition. It has even been frequently difficult to distinguish the leprous disturbances of sensation appearing in the early stages of the disease from the trophic disturbances of like character present in the later stages of syringomyelia.

Cases of leprosy have been found everywhere, and it becomes difficult to comment accurately on the general prevalence of this disease. Certain it is that there is a strong and growing impression that leprosy is more prevalent and more communicable than was previously supposed; yet this may be only the normal and to-be-expected swing of the pendulum, and the fact remains that the ready communicability of the disease is not proven. In any case the exaggerated leprophobia existing in the popular mind and fostered by some health officers is without basis in fact and may result in extreme cruelty in individual cases.

Conclusions Drawn from a Study of the Literature of Fractures.

In a recent editorial article we stated that the popularity of the Lane plate method of treating fractures of the long bones reached its zenith and began to wane about the time when the inlay bone-graft technique was being developed, and that this latter has now become the method of choice with perhaps the majority of American surgeons, particularly in the treatment of ununited fractures. Since this was written several articles on fractures which were read at the recent meeting of the American Surgical Association have been published. Among these is a paper by Thomas W. Huntington (*Annals of Surgery*, September, 1915) in which the relative merits of the metal plate and the autogenous bone-graft are discussed. The author's conclusions formed after a review of the literature of fractures for the last ten years are as follows: (1) The public demands, and is entitled to, better results from fracture treatment than have hitherto been obtained. (2) From 80 to 90 per cent. of long-bone fractures can be successfully treated by the closed method. (3) Conservative treatment exacts a high degree of skill and close attention to details. (4) Resort to the open method is of too frequent occurrence. (5) The least possible amount of foreign fixation material should be the rule. (6) Steel plates in the treatment of fractures are a menace from the standpoint of permanency. (7) The bone implant is the fixation material of choice. (8) Intramedullary splints are inferior to the autogenous bone implant. (9) Fixation material of whatever type is not to be relied upon for maintenance of alignment. (10) Cases of non-union and faulty union which come to secondary operation indicate indifferent methods of primary treatment. (11) Operative treatment of compound fractures should be withheld until the external wound healing is perfected. (12) Many joint fractures can be treated successfully only by the open method. (13) Normal contour and good function are closely related in the end results of all fractures.

False Broadbent Symptom.

In complete symphysis of the pericardium and in adhesion between the latter and the diaphragm there should be, according to Broadbent, a systolic retraction of the intercostal spaces between the tenth and twelfth ribs at a point about 6 cm. in front of the spine. In practice this behavior is seldom encountered, and it is also conceivable that other conditions than those already named can produce it. At a recent session of the Vienna Society for Internal Medicine and Pediatrics (*Berliner klinische Wochenschrift*, July 12) Ortner relates a case in which this symptom was present, but not in a high degree. There were, however, no evidences of pericardial adhesions, and the heart had normal mobility. There was a systolic apex impulse in the sixth interspace, the diaphragm was placed on a level with the twelfth dorsal vertebra and its respiratory excursion was very small. The patient had a pendulous abdomen and visceroptosis, and when these states were corrected the apex beat mounted to the fifth interspace, and the systolic retraction disappeared. The retraction is evidently connected with the low position of the diaphragm, as if the lung could not be inflated sufficiently to prevent the development of negative pressure in the thorax. This, however, does not explain why retraction occurs only at the area in question. This doubtless results because the expanding lung is insufficient to offset the slight systolic diminution in the size of the heart along with its forward movement. The patient's heart was hypertrophied as a result of mitral lesions of rheumatic origin, and he also had arteriosclerosis.

An Alleged Successful Treatment of Disease Carriers.

A successful treatment of disease carriers is possible in theory when the microorganisms are strictly localized in an accessible region, the criterion of success being the disappearance of the said organisms. In the case of diphtheria, simple sterilization of the upper air and food passages by local means has indeed been pronounced a failure in certain cases, and immunizing injections have been superadded; while as for cerebrospinal meningitis disinfection of the nasopharynx of suspects and convalescents cannot be regarded as necessarily con-

ferring protection to the community. This was the status of the subject before the outbreak of the present war, but in a communication before a military medical evening at Cologne last summer (*Deutsche medizinische Wochenschrift*, September 9), Küster claimed that an intensive local disinfection is alone able to jugulate an epidemic. Several cases of epidemic cerebrospinal meningitis having appeared in the fortress of Cologne, examination of the nasopharyngeal secretions showed that every other man was a carrier. A preparation which liberated chlorine was improvised and was inhaled in spray form, the exposure lasting a full hour, and the treatment being repeated on the two succeeding days. At the end of this period soldiers who had presented virulent microorganisms in the nasal and faucial secretions—meningococci, Klebs-Loeffler bacilli, and staphylococci—were pronounced sterile.

News of the Week.

Committee of American Physicians for the Aid of the Belgian Profession.—Dr. F. F. Simpson, M.D., treasurer, 7048 Jenkins Arcade Building, Pittsburgh, Pa., announces the receipt of the following contributions for the week ending December 11, 1915:

Buffalo Medical and Surgical League, Buffalo, N. Y.		$5.00
Washington County Medical Society, Calais, Me....		25.00
Previously reported receipts		7,873.84
Total receipts		$7,903.84
Previously reported disbursements:		
1,625 Standard boxes of food at $2.20...	$3,575.00	
1,274 Standard boxes of food at $2.30...	2,930.20	
353 Standard boxes of food at $2.28...	804.84	
Total disbursements		7,310.04
Balance		$593.80

Nurse Dies Abroad.—Miss Emma Duensing, head nurse of the first medical relief expedition to Germany of the American Physicians' Committee, who had been on duty at Oppeln, Silesia, Germany, for some months, died of septic poisoning on November 3. It is said that because of the great lack of rubber gloves the nurses in the military hospitals are improperly guarded from infection, and that through this lack Miss Duensing, who was considered one of the most efficient nurses of the German Hospital, New York, contracted the infection.

Drop in German Birth Rate.—The *Züricher Zeitung* recently published a dispatch from Berlin giving the official birth statistics in twenty-four of the principal towns in Germany from April to July, 1915, inclusive. The statistics show a decrease of 30 per cent. in the birth rate.

Hospital Ships Not Put to Improper Uses.—In view of the allegations made in Germany wireless press dispatches that British hospital ships were being put to improper use the hospital ship *Mauretania* was examined by American, Danish, and Swiss consuls, who absolved the British of the charge of bad faith. A declaration to the effect that there were neither combatants nor any war stores aboard was signed by the consuls.

Bequests to Charities.—By the will of the late Louise Cobb of Philadelphia, the sum of $700 is bequeathed to the Pennsylvania Hospital for the Insane.

By the will of the late Andrew Freedman of New York bequests of $5,000 each are made to Mount Sinai Hospital, the Montefiore Home, the Roosevelt Hospital, St. Vincent's Hospital, the Presbyterian Hospital, and St. Luke's Hospital. The residue of the estate, which will amount to several million dollars, is to be used for the erection and maintenance of a home, to be known as the Andrew Freedman Home, for aged persons, without regard to race, sex, or creed.

By the will of the late Henry A. Rogers of Philadelphia the sum of $4,000 is bequeathed to the Sanitarium Association for Children.

By the will of the late Emily M. Price of Philadelphia the sum of $10,000 is bequeathed to the Children's Hospital for the endowment of a free bed in memory of George M. R. Price.

By the will of the late Mary E. Harbeson of Philadelphia the sum of $5,000 is bequeathed to the Women's Homeopathic Hospital for the endowment of a free bed in memory of Estelle H. Biddle.

By the will of the late Maggie Greene of Philadelphia bequests are made as follows: $1,000 to the American Oncologic Hospital, $1,000 to the Kensington Dispensary for the Treatment of Tuberculosis, $700 to Temple University, $700 to the Samaritan Hospital, $700 to St. Christopher's Hospital.

Teaching Food Values.—The Bureau of Food Supply of the Association for Improving the Condition of the Poor has recently undertaken in New York a public campaign to popularize the results gained by studies of food values and economics. The first exhibit, called "From the Farm to the Cooker," was opened early in December at the Tompkins Square Branch of the Public Library. It includes an educational display designed to explain clearly the nutrition values of most of the staple food products and to demonstrate the proper selection of foods and the handling of them in a sanitary and economical manner. The lecturer in charge of the display will give advice as to the preparation of food, etc. Similar exhibits will be opened later in other places throughout the city.

Instruction for Food Inspectors.—In order to perfect the food inspectors of the New York City Department of Health in the details of their work, the director of the department's Bureau of Food and Drugs has organized a course of lectures, conferences, and demonstrations, dealing with the various aspects of pure food work. These lectures are in the nature of a post-graduate course and each detail of the work will be presented by experts.

Standard Diets in Health Department Hospitals.—In order to establish standard dietary methods in the hospital service of the Department of Health, the director of the Bureau of Hospitals some time ago appointed a "menu committee," composed of the resident physicians, the supervising nurses, and the dietitian of the department's hospitals, the committee being instructed that the quality of the food in the new menus must not be below that of the food in use at the time. The dietary methods recommended by this committee were introduced in January, 1915, with complete satisfaction. The quality of the food has been above criticism and a saving also has been effected, amounting in nine months to $10,000 in the hospitals for contagious diseases alone. This saving has been accomplished in three ways: 1, by diminishing the amount of high-priced food (meat) in the various dietaries and substituting other food stuffs equally nutritious and less expensive; 2, by eliminating waste in the preparation of the food, this being made possible by the use of standard menus; and, 3, by giving the employees the kind of food they wanted and thus reducing plate waste.

Salvarsan Promised.—It is again announced that the French and British Governments have agreed, at the request of the United States, to allow the shipment of a six months' supply of salvarsan and neosalvarsan from Rotterdam to this country. It is hoped that a sufficient supply to meet all demands will be here within the next three or four weeks or earlier. There will be no increase in price of the drug. An effort will be made, it is said, to induce the patentees to allow the product to be made in this country, Dr. Baketel having given assurances to the British Government to this effect. Physicians are, in the meanwhile, warned against spurious products, said to be made in Canada, which have been offered for sale in New York, Chicago, and other large cities.

To Censor Noise.—The Police Commissioner of New York has undertaken to reduce the unnecessary noises in the city, and has issued a general order to the force holding the members responsible for the strict enforcement of all the laws and ordinances designed to lessen the din.

New Wing to Woman's Hospital.—At the sixtieth annual meeting of the Woman's Hospital, New York, on December 9, the new Thompson Pathological Building, forming the west wing, was formally opened. The building has been erected through the generosity of Mrs. Frederick F. Thompson, chairman of the Ladies' Board of the hospital, at a cost of about $150,000, including the equipment. It is of buff brick, to conform with the main building, and is eight stories high. The street floor is devoted to the out-patient department, the second contains the electrotherapeutic ward, and the third rooms for private patients; the fourth and fifth are given over to pathological laboratories, and the upper floors contain operating rooms, etc. A solarium has been built on the roof. It was announced at the meeting that during the past year 2,500 patients had been treated in the hospital and 3,728 operations performed.

Guggenheim Memorial.—Work is soon to be begun on an addition to the Mount Sinai Hospital, New York, to be known as the Guggenheim Memorial. The entire cost of construction, estimated at $500,000, will be defrayed by the sons of the late Mr. and Mrs. Meyer Guggenheim. The new building will occupy about half of a city block and will be practically a complete hospital in itself, containing 100 private rooms, operating room, laboratories, kitchens, offices, reception rooms, etc. The roof will be fitted up as an outdoor ward. There will be also a children's corridor, shut off from the remainder of the building so that the noise made by convalescent children will not disturb the other patients; and guest rooms, for the use of those who wish to stay with patients in the hospital will be another innovation.

Civil Service Examinations in Philadelphia.—The Philadelphia Civil Service Commission announces that examinations will be held on the dates specified for the purpose of filling the following positions in the Department of Health and Charities:

January 12.—Druggist and First Assistant Apothecary, at a salary of $600.

January 13.—Assistant in pathological and bacteriological laboratory, at a salary of $720.

January 17.—City Nurse (woman), at a salary of $900.

January 18.—Resident Physician (open to residents of Pennsylvania), at a salary of $600-$900.

January 19.—Assistant Bacteriologist, at a salary of $1,400-$1,500; First Assistant Bacteriologist, at a salary of $2,000; Fourth Assistant Bacteriologist, at a salary of $1,000.

In order to obtain application blanks for the above examinations, candidates must call in person at the office of the Civil Service Commission, Room 875, City Hall, Philadelphia.

Personals.—Dr. JOHN S. BILLINGS has been advanced to the office of Deputy Commissioner of Health of New York City. He will continue the direction of the Bureau of Preventable Diseases, of which he has for some time had control, and will also take charge of the work of dividing the city into health districts.

Dr. CHARLES B. PENROSE has been appointed a member of the Fairmount Park Commission of Philadelphia.

Dr. EMIL MAYER of New New was elected an honorary member of the Philadelphia Laryngological Society at a meeting of the Society held on December 7.

Dr. ARTHUR DEAN BEVAN of Chicago was elected president of the Society of Clinical Surgery at the meeting in Washington on November 26 and 27.

Trudeau Sanatorium.—In honor of its founder, the late Dr. Edward Livingston Trudeau, the name of the Adirondack Cottage Sanatorium, Trudeau, Saranac Lake, N. Y., has been changed to Trudeau Sanatorium.

Harvey Society Lecture.—Prof. Florence R. Sabin of Johns Hopkins University will deliver the fourth in the present series of Harvey Lectures, at the Academy of Medicine, New York, on December 18, 1915. The subject of the lecture will be: "The Method of Growth of the Lymphatic System."

Medical Department of Columbia University.—On the recommendation of the Medical Faculty the trustees of Columbia University voted on December 6 to change the title of the medical department to "The College of Physicians and Surgeons of Columbia University."

The Society for the Advancement of Clinical Study announces a continuation of its bureau of information relative to surgical and medical clinics held in New York City. A bulletin board is maintained for this purpose at the Academy of Medicine, 17 West Forty-third street, in charge of a competent attendant who will be on duty from 9 to 12 in the morning and 2 to 6 o'clock in the afternoon to answer inquiries. The special telephone number is 3375 Bryant. The clinics held at the various hospitals are posted on a special circular of information, which will be mailed to outsiders at 50 cents per week to cover postage, etc. The bulletin board maintained at the academy also contains the daily clinics as well as those held at stated hours in various hospitals. The facilities thus offered afford to visiting physicians who are interested in observing special operations and operators or clinicians, an opportunity to obtain the desired end with the least trouble. The success of the enterprise is shown by the constantly increasing number of inquirers who make use of these facilities, and it is hoped by this means the large and unexcelled opportunities for medical research and observation afforded by New York City will be made more accessible to those who may desire to make use of them.

Hospital Examinations.—The Joint Examining Board of the New York Hospitals, including the Hudson Street Hospital, the Roosevelt Hospital, St. Luke's Hospital, and the Knickerbocker Hos-

pital, will hold a competitive examination of candidates for interneships in these hospitals. The date of the examination has not yet been selected, but notice of it will be mailed to the candidates not less than one week before the examination. Application blanks and full information concerning the character of the examination and the number and nature of the positions to be filled may be obtained from Dr. Charles L. Gibson, chairman of the Examining Board, care of the New York Hospital, 8 West Sixteenth street, New York. All applications must be in the hands of the committee by December 31, 1915.

Opticians' League of the State of New York.—The annual meeting of this society was held on November 17 at the Hotel Lorraine, New York. The meeting was called to order by the retiring president, Mr. E. B. Meyrowitz, and after the reading of the minutes and reports officers for the ensuing year were elected as follows: *President*, Charles L. Pilger; *Vice-President*, J. B. Hoecker; *Treasurer*, Henry C. Badgley; *Secretary*, Edward L. Seip; *Director for Three Years*, Theodore Obrig. With a view to obtaining a larger attendance at the meetings and of adding materially to the membership list it has been arranged to provide during the winter a series of lectures on optics in its fundamentals, upon ethics, and upon efficiency both for the employer and the employee. The annual banquet will be held in February.

Medical Association of the Greater City of New York.—The fifteenth annual special meeting was held at the Imperial in Brooklyn on December 6. An address was made by the president, Dr. Thomas S. Southworth, and the following scientific programme was presented: "The Surgical Treatment of Bronchiectasis," by Dr. Earl H. Mayne; "Percussion Technique and Theory," by Dr. Bernhard A. Fedde. Dr. Robert E. Coughlin, chairman for the Borough of Brooklyn, presided. This association was incorporated in 1899 as a society which should represent the best elements in the medical profession in all the five boroughs of the enlarged city. During each year, from October to June, eight meetings are held in Manhattan and one in each of the other four boroughs.

Obituary Notes.—Dr. Ap Morgan Vance of Louisville, Ky., a graduate of the University of Louisville, Medical Department, in 1878, a member of the American Medical Association, the Kentucky State Medical Association, the Jefferson County Medical Society, the American Association of Obstetricians and Gynecologists, and the Southern Surgical and Gynecological Association, and a fellow of the American College of Surgeons, died at his home on December 9, aged 61 years.

Dr. Asa P. Reed of Dorchester, Mass, a graduate of the Tufts College Medical School, Boston, in 1895, died suddenly at his home on December 2, aged 58 years.

Dr. Thomas Jefferson Upshaw of St. Louis, Mo., a graduate of the American Medical College, St. Louis, in 1890, died at the home of his son in St. Louis, after a short illness, on November 22, aged 71 years.

Dr. Henry McKee Tucker of Raleigh, N. C., a graduate of the University of Maryland, School of Medicine, Baltimore, in 1899, professor of gynecology in the Leonard School of Medicine, Raleigh, and a member of the Medical Society of the State of North Carolina, the Wake County Medical Society, and the Raleigh Academy of Medicine, died at the Rex Hospital, Raleigh, after a brief illness from meningitis, on November 24, aged 39 years.

Dr. George B. Bristol of Middlebury, Conn., a graduate of the Yale University Medical Department, New Haven, in 1892, died at his home after a long illness, on December 1, aged 79 years.

Dr. James Irving Cawley, Register of Wills of Bucks County, died at Springtown, Pa., on December 11, at the age of 62 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1877.

Obituary.

ABRAM ALEXANDER SMITH, M.D., LL.D.

New York.

Dr. A. Alexander Smith of this city died suddenly on December 13 of disease of the heart. He was born at Wantage, N. J., March 25, 1847. He received his collegiate education at Lafayette College, and was graduated in medicine from the Bellevue Hospital Medical College in 1871. After serving a term on the house staff of Bellevue Hospital he began practice in this city and continued in the same with but slight interruptions up to the day of his death, a period of over 43 years. He was successively attending physician to the Demilt Dispensary, attending physician and surgeon to the Woman's Hospital, and consulting physician to Columbus Hospital, the Hospital for Ruptured and Crippled, and the Minturn Hospital. In 1875 he was appointed adjunct lecturer on clinical medicine in the Bellevue Hospital Medical College and had ever since been a member of the faculty, being at the time of his death professor of the principles and practice of medicine and clinical medicine at the University and Bellevue Hospital Medical College.

Dr. Smith was a member of the American Medical Association, of the Association of American Physicians, the National Association for the Study and Prevention of Tuberculosis, the American Climatological Association, the Practitioners' Society of New York, and the New York Academy of Medicine, being a trustee of the latter at the time of his death.

KENNETH WILLIAM MILLICAN, M.R.C.S.

London, England.

Dr. Kenneth W. Millican, formerly editor of the *St. Louis Medical Review* and also at various times connected in an editorial capacity with the *Journal of the American Medical Association* and the *New York Medical Journal*, and for several years past assistant editor of the *Lancet*, died last week in London of heart disease. He was born in England in 1853 and received his medical education at the University of Cambridge and St. Mary's Hospital, London.

Dr. Millican was well known and beloved by numbers of the medical journalists of this country, where most of his professional life was passed. At the recent meeting of the American Medical Editors' Association in this city, announcement of his serious illness was made and resolutions of sympathy were passed. Besides being an editor of great ability and a writer of graceful prose, Dr. Millican had the mind and heart of a poet and had written much pleasing verse, two volumes of which had been published.

Special Article.

PATHOGENICITY OF STREET DUST.

REPORT BY THE PUBLIC HEALTH COMMITTEE OF THE NEW YORK ACADEMY OF MEDICINE.*

THE active interest of the Public Health Committee of the New York Academy of Medicine in the problems involved in efficient street cleaning led to the preparation of this study on the pathogenicity of street dust. In a report prepared by the Committee over a year ago and submitted to Mr. John T. Fetherston, Commissioner of the Department of Street Cleaning of New York City, the Committee maintained that a system of street cleaning can not be called satisfactory which does not eliminate gross street dust and which employs dry sweeping methods. At the joint conferences with the Commissioner the relation of dust to public health, as well as the relative importance of dust and spray or cough infections, were discussed and, at the request of the Commissioner, a study was undertaken by the Committee to bring together the existing evidence concerning the causative relation of street dust to the various forms of disease, in order that the Department of Street Cleaning might have a scientific basis for its efforts to promote street cleanliness, in a sufficiently simple form to appeal to the general public.

This report is limited to a consideration of the single phenomenon of dust infection and does not attempt to discuss the relative importance of this source of infection to that derived from other sources.

SUMMARY.

I. Numerous bacteriological examinations made in this city, as well as elsewhere, show that street dust contains a variety of living pathogenic organisms such as tubercle bacilli and various types of streptococci which are recognized as causative agents of many respiratory and other diseases.

II. Although there exist only a very few positive instances where the production of disease can be traced directly to pathogenic bacteria present in dust, yet the fact that these organisms are found in appreciable numbers in street dust and are inhaled or ingested, establishes a presumption that street dust may at times be a cause of disease.

III. Studies with reference to the incidence of certain respiratory diseases show that persons free from exposure to city dust are less liable to suffer from these diseases than those so exposed.

IV. Dust has, for a long time, been universally recognized as an injurious mechanical irritant and as a cause of lowered bodily resistance, and one of the first prerequisites of public health has been the elimination of dust as far as possible.

V. Dry sweeping should be entirely abandoned. An adequate system of street flushing should be introduced in street cleaning procedures of our cities and effort should be made to apply all available means to make the streets as free from dust as possible.

*The Report was prepared by Dr. Thomas W. Hastings and approved by the Committee: Dr. Charles L. Dana, chairman; Dr. James Alex. Miller, secretary; Drs. T. Passmore Berens, Nathan E. Brill, Robert J. Carlisle, Floyd M. Crandall, G. A. Friedman, Lewis F. Frissell, Arpad G. Gerster, S. S. Goldwater, Thomas W. Hastings, L. Emmett Holt, Abraham Jacobi, Howard Lilienthal, William G. MacCallum, Bernard Sachs, W. Gilman Thompson, Philip Van Ingen, Karl M. Vogel, George B. Wallace, E. H. Lewinski-Corwin, executive secretary.

PREVALENCE OF PATHOGENIC BACTERIA IN DUST.

The relation of dust to public health has been looked upon as settled since the early work of Pfluegge and his pupils, and as late as 1915 these statements have not been controverted or questioned, but have been embodied in manuals and text books on Public Hygiene (vide Czaplewski).

Among the early reports on dust in relation to public health are a few in English; of these some relate to conditions in New York City in the early '80's and '90's. Included in the latter are those of Griscom, 1850; Report by a Citizen's Committee of New York, 1878; T. M. Prudden (book), 1891; Hinsdale, 1896; Firth, 1899. The later reports referring to conditions about and near New York are those of Bergey, 1903; Hessler, 1904; Corbusier, 1905; LaFetra in the Archives of Pediatrics, 1906; Soper, 1907; Bryant, 1908; Chapin, 1914; Winslow, 1910.

Articles by Miquel in 1889 and by Prudden in 1891 are worth quoting in detail. In relation to pulmonary affections, the source of living germs which form such an important part of dust in cities, is discussed by Prudden, who states on page 89 that " * * * * * Moist air not charged with bacteria, or charged with bacteria singly or in masses, or attached to other gross particles of dust must be dried before bacteria can be suspended in the air as disseminable dust." The method of determining bacteria in dust by cultural tests (page 11), is given in detail, from which one would comprehend that later methods of investigation have been no more thorough than the earlier methods given by Prudden.*

Prudden reported that in dry weather the germs in the dust out of doors are supposed to be in great numbers, but this is not usually the case; but where streets are often filthy and improperly cleaned, as in New York City, where the dust whirls around the corners of buildings forming air eddies, microorganisms are often present in very large numbers, so that one is apt to encounter "germ-showers." When the ground is wet and the air currents are moderate the number of germs is diminished. Prudden stated (1890) that in the dust clouds which sweep along the ill-kept streets of the City of New York or are blown from the street-sweepers as they pass along the unwatered thoroughfares into the houses or over the unwary passerby, the number of germs to the liter is startling. After 5 minutes' exposure of the 3¾-inch culture plate, clean dust gave 10 to 35 colonies to the liter, blowing dust from 214 to 941, and, following the street-sweeper, 5810 colonies. These statements merely corroborate the work done on the continent two or three years previously by Miquel.

RELATION OF DUST TO BACTERIAL INVASION.

It must be considered that the invasion of the tissues or organs by living pathogenic bacteria implies the possibility and probability of disease. It is a matter of common experience that street dust acts as an irritant to the eyes and produces a lower resistance in the tissues under the lids. This locus of lowered resistance is more liable to infection than under normal conditions. Dust laden with bacteria,

*Methods in fluid media, cultured after filtration through cotton, sand, sugar; plating on hard plates exposed on the surface, corresponding to the filtration method and plate exposure method of to-day. (These methods have no relation to the determination of colonies per cubic foot or cubic liter of air, as determined by Miquel.)

moreover, will find the proper conditions of moisture under the lids for bacterial development. This statement is unquestionable, and the fact is also well established that bacteria-free dust particles lodging in the ball of the eye frequently produce a traumatic irritation with subsequent secondary infection, resulting in disability and often permanent impairment of vision. From the eye conditions produced by dust, or dust irritation, one is led to distinguish the two types of dust referred to by Prudden as causing or being capable of causing affections or disease of the eye. Interpretated in the same phraseology of Prudden, they are the "germ-free" and "germ-laden" dust.

In addition to the self-evident eye conditions there are the results of inhalation of dust. These may be briefly summarized by quoting Prudden (page 42). "In spite of the safeguards with which the lungs are furnished a considerable number of particles of one kind or another lodge permanently in the lung tissue in situations where they will least interfere with the action of the lungs; yet they do harm by producing a lowered resistance in the lung and making individuals more liable to bronchial affections." Following the inhalation of bacteria-laden dust many bacteria do not grow in the human body, but Prudden states in reference to the tubercle bacillus that they may find conditions favorable for growth.

It is well known to-day that streptococci of various types are viable in a dry state in dust for undetermined periods of time which are long, from the nature of the case. Recent reports upon the wounded in France, and bacteriological studies in this country by Fuller and Armstrong, Thro, Winslow and Palmer, show that the dust from the soil and the mixed dust from cities may contain streptococci in sufficiently large numbers to cause infection. In certain soils, as in northern France, bacteria, such as tetanus bacillus, "gas bacillus" and streptococci are present. Recently it has been the practice in the large base hospitals on the continent to give prophylactic doses of "gas bacillus" and streptococcus vaccines as well as anti-tetanic serum. This is done for the purpose of fortifying cases against streptococci obtained from the soil (not necessarily soil contaminated with fecel material) which soil, and therefore dust, may contain pathogenic streptococci.

The possible relation of certain forms of streptococci to respiratory tract infections particularly, was first shown by Andrewes and Horder in 1906, and by Gordon in 1905. It is not only likely, but practically proven, that their *Streptococcus equinus* is the same as the *Streptococcus viridans*, or green-producing streptococcus, which is found so commonly in cases of tonsillitis, associated with rheumatic conditions and in forms of infective heart disease, in common colds and persistent cases of bronchitis. Numbers of these last cases have been thought for years to be due to the influenza bacillus.

To summarize briefly, it is not only the tubercle bacillus that is to be feared from the dust, as insisted upon by Prudden, but also in cities such as New York, the pathogenic streptococci as well.

Prudden states specifically (page 51) that inorganic dust when inhaled in large quantities may cause well-defined disease by persistent irritation, but only among those confined in narrow quarters under conditions such as obtain among mine-workers. A great deal of misery, if not positive disease, is caused by inhalation of dust, by persistent cases of protean catarrhs and also by irritation of the eyes. To quote Prudden (page 53) "If it were not for the few species of disease-producing bacteria, most people could afford to be indifferent as they are to dust." And, "If we could completely isolate disease-germ-bearing men and animals, such diseases could be completely stricken from the list of diseases, unless lighted up afresh by discharged material on walls, garments, or in the soil, or aerial dust."

There is no necessity for discussion on the production of infectious dust in cities; it is well known that expectoration by man, fecal material of animals, refuse sweepings into the streets from houses will contaminate dust that was originally bacteria-free. Prudden (page 75) says, "In out-of-door air in the country and also in streets kept decently clean there is little danger from dust. If dust clouds are encountered; if streets are not properly sprinkled before sweeping, by machine or hand; if street-cleaners are allowed to scatter clouds of dust, the chances of inhalation are proportionately increased.

The first satisfactory investigation in regard to the relation of dust by inhalation to disease is reported by Merkel. He studied the relation of different kinds of dust to the prevalence of emphysema, chronic bronchitis, pneumonia, and pulmonary tuberculosis. For purposes of comparison he studied these in relation to exposure to (*a*) Metallic dust; (*b*) Mineral dust, (*c*) Vegetable dust, (*d*) Animal dust, (*e*) Mixed dust, (*f*) No exposure to dust. Street-cleaners, laborers, etc., came under the category of those exposed to mixed dust. Those living in the country or in well-cleaned streets came under the head of "No exposure to dust" and the incidence of the four diseases considered was considerably less than in those exposed to any of the dusts specified from (*a*) to (*e*). The same facts were determined by Miquel for Paris and other cities in France. For New York City no such investigation has been made and no figures are obtainable.

PATHOGENICITY OF ORGANISMS IN DUST.

The early reports show definitely that it is not so common as was formerly supposed that tuberculous infection of the lungs is disseminable through dust. Whether the invasion by dust is through the respiratory tract or through the digestive tract, that is, by inhalation or by ingestion of food contaminated with dust, is a matter to be decided. Invasion probably occurs through both channels after the tubercle bacillus has entered the body, but the fact that dust may contain the tubercle bacillus means that such dust may be a conveyor of infection, and all that is necessary to establish a relation of disease and dust is to prove that the dust is laden with pathogenic germs. A number of studies showing the prevalence of pathogenic organisms among the colonies obtained by cultural methods manifests the fact that probably one out of 300 or 400 colonies is a pathogenic germ, and the degree to which the air may be laden is shown by Prudden's figures. It can readily be seen that a large number of individuals may be affected by one dust cloud, the dissemination of disease depending not so much upon the number of germs in a given amount of dust as upon the number of individuals coming into contact with large masses of germ-laden dust as suggested by Prudden. There is no longer doubt that the various forms of streptococci found in the dust are pathogenic, and the prevalence of bronchial and

nasal disease is more frequently due to a streptococcus infection than to any other.

There are very few investigations which show the absolute production of disease from dust, but one notable instance is that of the production of epidemic poliomyelitis (infantile paralysis) in monkeys by the injection of dust-sweepings from a room in which a patient had died several days previously. It is not necessary to prove the absolute relation of any kind of dust to any one individual case of disease. The statement of Prudden that dust in the streets is found to contain pathogenic germs in numbers at all measurable, since the dust occurs in such large amounts, is evidence enough. If it can be proved that certain diseases, particularly infections under the eyelids (conjunctival) and the upper and lower respiratory passages are due to certain types of bacteria; if it can be proved that these types occur in germ-laden dust, it is proven that the germ-laden dust does fill a definite relation to the dissemination of diseases. Certain of these diseases, such as external eye infections, bear a definite relation to incapacitation for service, and on that ground alone it is desirable, as a matter of economy, that dust in the streets be eradicated as soon as possible.

In relation to illness and death, since it is well established that germ-free and germ-laden dust bear a definite relation to infections of the upper and lower respiratory tract, the former secondarily and the latter primarily, it follows that the relation of dirt and dust to both can be roughly estimated to conform to the death rate from certain bronchial and pulmonary diseases, which occur so frequently as the result of dust dissemination.

Whether the dust dissemination is so important a factor in the spread of disease as the exposure of individuals in confined spaces to the "spraying" from coughing of other infected individuals, is open to discussion. The weight of evidence from more recent reports suggests that the latter method of infection is commoner. This does not, however, mean that dissemination of germ-laden dust is unimportant as a factor in endangering public health.

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Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

GUNSHOT INJURIES OF THE NERVOUS SYSTEM—INTRADURAL, PERIPHERAL, CENTRAL—TREATMENT.

LONDON, Nov. 26, 1915.

GUNSHOT wounds have a special claim to attention at a time of war and they have been before the Medical Society of London during the last two months. Captain Trotter of University College, as mentioned in a previous letter, dealt with such wounds in nerves—not expecting to arrive at definite conclusions but rather proposing to show how we should try to apply our present knowledge to the material we have to deal with. He pointed out that interruption of a nerve cannot be compensated and restoration of its continuity does not insure its recovery, although it is a necessary preliminary. Bones, tendons, and in many cases blood-vessels when restored will resume function; these tissues are indigenous to the part, made on the spot, so to say; Nerve, on the contrary, is an alien tissue which at first invaded the part and must repeat the invasion under less favorable circumstances. An incomplete lesion or imperfect recovery may either of them be more disabling than a total loss of function. A divided nerve may be inert and the patient scarcely perceive his loss of sensibility; a partially divided or imperfectly recovered nerve may give rise to pain and extreme sensitiveness. These peculiarities interfere with the surgeon's work and may even expose him to the risk of increasing his patient's sufferings. Captain Trotter put forward as a basis for discussion the material with which he had had to deal (1) intradural nerve injuries—almost entirely lesions of the cauda equina, (2) peripheral nerve injuries. The latter are (*a*) typical and complete trunk lesions; (*b*) mixed lesions with division, complete or incomplete, of other adjacent trunks—chiefly observed in brachial and next to that in sacral plexus; (*c*) incomplete lesions without pain, usually due to combined bruising, laceration, scarring, and pressure; (*d*) incomplete lesions with pain; (*e*) pure pressure lesions, as from a prominence of bone or a foreign body. After some clinical remarks on these several types the question arises of what can be effected by surgery. Two alternatives are open, 1, implanting both ends into an adjacent trunk; 2, filling the gap with portions of a large cutaneous nerve, *e.g.* the internal saphenous. If the lesion is incomplete and resection thought unnecessary the nerve should be forced from other tissue and carefully wrapped in subcutaneous fat so as to secure exact coaptation, insulation, perfect asepsis, and muscular relaxation both before and after the operation.

Sir. F. Eve and Dr. R. S. Woods reported twenty-eight cases operated on for injuries of the peri-

pheral nerves—most of them in the war hospitals. It was always possible to get the two ends together by freeing the nerve above and below and flexing the nearest joint or adducting the upper arm. If a nerve seemed to be "hidebound," chiefly from thickening of the perineurium, they incised the thickened tissue. In one case the bullet smashed the center of the clavicle; so the bone was divided and fragments found pressing on the anterior divisions of the fifth, sixth, and seventh nerves. Dense scar tissue enveloped them and was removed and the clavicle wired. The axillary artery and vein, usually involved in the scar tissue, had to be ligatured in one case, above and below the lesion. All the cords of the brachial plexus were matted together and adherent to the subscapularis muscle. The point to determine in these lesions is whether to separate the injured nerve from surrounding tissues, or resect it. In doubt, the amount of drainage may sometimes be shown by blunt dissection of the nerve bundles from above into the cicatrix to see if they are continuous across it. The disappointing feature in the treatment of these nerve injuries is the long period required to complete the repair and restoration of function in the most favorable circumstances.

Dr. E. F. Buzzard followed, saying three points required consideration: (1) Cases which should be operated on; (2) what should be done; (3) relief of pain. As to the first, in case of doubt it was wise to explore, whether local conditions were favorable to return of function. A peripheral lesion of nerve should be carefully examined with both finger and eye. Partially divided nerves would recover incompletely, whether excised or only sutured. But severe pain and hyperesthasia might continue for months, even rendering excision needful. Injection of nerve end with alcohol would relieve pain.

Mr. Jocelyn Swan had had 63 cases; 38 operated on, 41 explored, 6 declined operation, in 3 it was not thought advisable, 4 had been deferred, in 12 recovery of function took place in two to four weeks after the injury. These last had been called "nerve concussion," and it was not easy to say whether actual damage had been done to the nerve; a strong faradic current produced a reaction. No operation should be done until the surface wound had firmly healed. We could not distinguish between complete division and binding by scar tissue. In the latter case excision of both scar and tissue had been successful.

Another discussion on gunshot wounds was held on the 15th inst. This was devoted to head wounds of this kind and opened by Mr. Sargent, who said operation was not so urgent for these cases as for abdominal wounds. They did not seem to suffer much from a journey before being subjected to operation, but they were not in a fit state to be transported immediately afterward. Early, thorough cleansing was not in the same category as removal of foreign bodies without the aid of *x*-ray examination. The cerebral disturbance greatly varied, and there was no relationship between the cranial and cerebral injury. Nothing would influence the brain symptoms unless the dura were injured, but if this was so lacerated as to open an avenue for infection, whatever was done to the wound might, by diminishing the risk of infection, prevent or minimize further destruction. Exploratory operations for possible hemorrhage had no place in the treatment, for such wounds are almost always septic and opening the dura endangered meningeal infection. Operations had been undertaken to minimize the danger of intracranial suppuration—the chief cause of death or disablement. Many patients arrived at field ambulance or clearing station with great defect of scalp, bone, and dura with protrusion of brain, blood, and cerebrospinal fluid issuing, mostly unconscious or noisy. Such were fatal in a few hours, though in some less brain substance was lost than was at first supposed, and recovery eventually took place. No search for fragments should be made. In minor cases in which there was fracture but no laceration of dura, traumatic epilepsy might result from the damage at the time of injury, so that operation for such was of no avail, and in depressed fractures only when they were extensive and broken bone is a septic wound threatened to necrose. Bullets and fragments of shell were best left alone unless their position made removal quite easy or they caused distinct symptoms. When the dura was not lacerated it was very dangerous to incise it; when it was and intracranial pressure increased dangerously, lumbar puncture or contralateral decomposition was safer. Dr. Gordon Holmes had worked with Mr. Holmes and one of their chief aims had been to insure safe transfer to England for more deliberate treatment. Major Rowling urged more ultimate cooperation between surgeons at foreign camps and at home, and a probe should be used to explore a wound—the finger was objectionable. The seriousness of the injury could not be known without exploration. Fractures of external table were usually accompanied by the same of the internal and should be operated on earlier than it often is, before sending to England. Mr. Walter Trotter dwelt on the way serious symptoms sometimes remain latent, and advised operation as soon as such supervened. Captain Sidney Smith had had 400 cases in a special ward for head injuries. Only 96 were trephined; the mortality was high, as the worst cases were sent to the ward to avoid a further journey. Professor Wilson and Sir V. Horsley sent a written communication saying the point was to prevent the spread of microbic invasion of the brain from the surface and tract of the wound, our means of doing which depended on (*a*) the species of the microbe found; (*b*) the nature of the lesion it may produce. From their observations and experiments they consider that in all cases a bacteriological diagnosis should be made, that all these injuries should be disinfected from the earliest moment possible, by excision of the wound or no closure of it, and repeated dressings and the appropriate antiseptic lotions. In streptococcal infections the free use of antistreptococcal serum is especially absolutely essential. Mr. W. Pearson had had experience of these head cases both in France and England, the result being a great modification of his previous views, according to the type of case and the time that had passed.

Pituitary Secretion.—Cow from his researches is of the opinion that the products of activity of the pituitary body are secreted into the cerebrospinal fluid, whence their gradual diffusion into the blood stream may follow—*Journal of Physiology.*

Iodine in Erysipelas.—Magi records the brilliant results following the painting of the affected area with tincture of iodine. In the severest cases an antistreptococcus serum is used as a supplementary measure.—*Il Policlinico.*

Progress of Medical Science.

Boston Medical and Surgical Journal.

December 2, 1915.

1. Address. The Danger of Ether as an Anesthetic. W. W. Keen.
2. Pregnancy and Diabetes Mellitus. Elliott P. Joslin.
3. Surgical Specialties in Hospitals. Paul Thorndike.
4. Observations on the Etiology and Treatment of Heart Disease. Paul Dudley White.

1. The Dangers of Ether as an Anesthetic.—W. W. Keen delivered this address at the Massachusetts General Hospital on the sixty-ninth anniversary of Ether Day, October 16, 1915. A questionnaire as to immediate and delayed ether deaths, sent to the members of the American Surgical Association, resulted in the receipt of 67 replies, in 20 of which the figures were exact. These 20 returns showed that among 262,002 etherizations there had been 34 deaths, or one death in 7,706 cases. The 47 other returns in which the estimates were only approximate gave the number of etherizations as 356,500 and the estimated number of deaths 73, or one death in 4,884 cases. Both the estimate and the exact numbers show that we have three times as many deaths from ether as occur in Great Britain. This calls loudly for reform. Among the dangers of ether discussed are its inflammability, the danger to the patient of an "inundation of mucus," respiratory dangers, post-operative pneumonia, anuria, glycosuria, and acidosis. In concluding Dr. Keen says: "In my opinion 'straight ether' by the open drop method on an Allis inhaler or a simple mask is by far the best and safest routine anesthetic." Since it is evident that we should obtain better results we need: 1. Many professional anesthetists. 2. The use of an anesthesia chart in all cases. 3. The collection of statistics, best by the American Surgical Association at intervals of five years. 4. Instruction of all medical students in the theory and practice of anesthesia. 5. Straight ether by the open drop method as a routine method instead of mixtures and sequences. I believe all of the latter to be more dangerous than ether. 6. More accurate dosage of the ether by the anesthetometer as a gas on the basis of its anesthetic tension, *i.e.* the partial pressure of the ether vapor in the respired air. Every case of anesthesia requires unremitting watchfulness from first to last.

2. Pregnancy and Diabetes Mellitus.—Elliott P. Joslin reports seven cases of moderate or severe diabetes and seven cases of mild diabetes in pregnant patients, and from a study of these cases concludes that the secret of success in the treatment of pregnant women with sugar in the urine is: 1. To have the patients under constant supervision throughout the course of the pregnancy and for some months after confinement. The cause of the death of Case No. 604 may well be attributed to the neglect of this precaution. 2. Treatment should follow exactly the same methods which are employed in the treatment of the usual case of diabetes. 3. Even when sugar appears to a slight extent in pregnant women, it should be carefully watched and controlled by diet. 4. The advantages of a cesarean section should be borne in mind. 5. Whereas ether anesthesia may work well, it is probably not so safe as gas and oxygen. If ether should be used, as brief an anesthesia and as little ether as possible should be employed. 6. Finally, many statements occurring in the literature of pregnancy and diabetes must be revised. Pregnancy in diabetes does not demand immediate abortion, even if acidosis is present. It cannot yet be accepted as proven that pregnancy aggravates diabetes. Nursing is not contraindicated following confinement, for the diversion it affords the patient may offset the extra demands thrown on the metabolism.

3. Surgical Specialties in Hospitals—Paul Thorndike considers the functions of the hospital in three fields, the efficient cure of the sick; the proper use of its material for advancing the cause of science; and the teaching of doctors, students, and nurses. Theoretically it would seem at once for the best interest of patient, hospital, and medical school that special services shall exist. But the question arises as to where this theory is leading us. How far are we to go with it? Is the general surgeon to disappear? Are we to have specialists in all branches of surgery? Are hospital house officers and nurses to be brought up as specialists from the start? Are the members of visiting staffs to be confined to a small field of work, or at all events to a smaller field than meets their inclinations and desires? Are the orthopedic men, the aurists, and the urologists to be followed by many other special men? Obviously not, though it may seem so at the present moment. The problem is one which will gradually develop and settle itself without much guiding from the profession. It would seem that the general surgical service must exist for many years to come and that various special departments in surgery must be a problem for the individual hospital. The writer describes a plan by which a genitourinary service was developed at the Boston City Hospital without depriving the other surgical services of their genitourinary cases.

4. Observations on the Etiology and Treatment of Heart Disease.—Paul Dudley White presents a study of the relationship of the more important abnormalities of the heart beat to etiology and treatment as seen at the Massachusetts General Hospital during the year August 1, 1914, to August 1, 1915. During this time 100 cases of auricular fibrillation were found in the wards and outpatient department of the hospital. From his observations on these patients the writer summarizes as follows: 1. The male sex has been found to be more subject to auricular fibrillation, auricular flutter, heart block, and alternation of the pulse than has the female sex. 2. The older the patient with heart disease the more subject he has been found to be to serious abnormalities of the heart beat. 3. Auricular fibrillation and alternation of the pulse occurred at the same ages, most frequently in the fifth and sixth decades. 4. Rheumatic hearts usually showed normal mechanism or auricular fibrillation, much less commonly *pulsus alternans*. 5. A considerable percentage (36 per cent.) of syphilitic hearts showed alternation of the pulse; few were fibrillating. 6. A patient with cardiac insufficiency in the course of cardiorenal disease was very apt to show *pulsus alternans*, either constant or more frequently only after ventricular premature beats. 7. Cardiosclerosis often resulted in the production of fibrillation and alternation. 8. Hyperthyroidism of long standing was sometimes attended by auricular fibrillation. 9. Alcohol, tobacco, tea, and coffee appeared to play no direct part in the production of serious disorders of the heart beat. 10. Two-thirds of the patients with auricular fibrillation, one-half of those with alternation of the pulse, and one-third of those with normal mechanism in the present series showed physical signs of cardiac insufficiency. 11. Digitalis was used in 88 per cent. of these decompensated cases, almost always in the form of pills of standardized leaves. Intravenous medication was used in urgent cases only. 12. Morphine was given beneficially in nearly one-half of the patients with physical signs of insufficiency, often one dose sufficing to give the patient the first comfortable night in weeks. 13. Venesection was found useful in a few urgent cases. 14. The change in diet to five small meals daily was often much appreciated by the patient.

New York Medical Journal.

December 4, 1915.

1. Arteriosclerosis as a Cellular Disease. Louis Faugeres Bishop.
2. Prostatisme Sans Prostate. (To be continued.) Alexander Randall.
3. The Bollinger Case: Its Clinical, Ethical and Moral Aspects. H. J. Haiselden.
4. The Puerperium; Some Common Mistakes in Conduct. J. O. Arnold.
5. Duodenal Ulcer. Samuel F. Mullens.
6. Syphilis of the Cardiovascular and Renal Systems. Joseph Barach.
7. Persistent Gonococcus Infection. M. Zigler.
8. Gastroenterostomy. John B. Haeberlin.

1. **Arteriosclerosis as a Cellular Disease.**—Louis Faugeres Bishop states that the disease called arteriosclerosis, which is really cardiovascular renal disease, is primarily due to a disturbance of metabolism extending over a long period of time. This disturbance of metabolism consists in sensitization of the cells of the body to particular proteins ordinarily found in food. Meat proteins are most often to blame. Fish and egg proteins are sometimes to blame. This process is subsymptomal for five, ten, or fifteen years, until such a time as a sufficient number of cells have been destroyed to impair the functions of the organs. This gives rise to symptoms and the disease is discovered. The remedy for the disease is to be found in the discovery and removal from the diet of the offending proteins, and in the correction of metabolism by physical methods, particularly exercise; attention should also be directed to the intestinal tract. We cannot throw overboard all that has been said of late years as to autointoxication, intestinal stasis, and so on, but there is a remedy which is the best for dealing with the intestinal condition and that is serial doses of castor oil. In addition to this we have to treat the individual. The psychical side of these persons is very important; they need assurance.

4. **The Puerperium.**—J. O. Arnold makes a plea for the individualization of the puerperal woman and for a more rational conduct of the puerperium. He discusses seven points with reference to which mistakes are commonly made. 1. He believes it a mistake to suppose that the process of involution is favored by boxing up the uterus in abdominal pads and a tight binder. 2. It is a mistake to attempt to keep every puerperal woman flat on her back for a great length of time. 3. There is seldom any reason for starving the puerperal woman for three or four days. On the contrary, judicious liberality in food gives better lactation and an earlier and more satisfactory convalescence. 4. It is usually, if not always, a mistake to suppose that an elevation of one or more degrees of temperature without other apparent cause is of gastrointestinal origin. 5. A rather frequent mistake is that of thinking a postpartum high temperature which does not readily clear up with a purgative, or that is accompanied by a foul discharge and some tenderness and subinvolution, is an indication for intrauterine douches, curettage, or other questionable interference. Instead, facilitate drainage by elevating the head of the bed and give one or more doses of pituitary extract or of ergot. 6. Another traditional custom for which no reason exists is the old idea that some more or less complicated specific treatment must be employed to dry up the milk if such a step should be necessary, whereas all the treatments generally employed are useless, and the one simple and invariably successful method is to let the breasts absolutely and severely alone. 7. Finally, with reference as to when the patient may leave her bed, it is a mistake to fix upon any day, early or late, as a routine time for getting puerperal patients up. They are certainly not all alike and should not be made to conform to a common rule.

7. **Persistent Gonorrhea.**—M. Zigler reports a case of persistent gonococcus infection which lasted eleven years in spite of almost continuous treatment and which emphasizes the facts that there are certain cases of gonorrhea in which the gonococcus lives for years in the genitourinary tract; that ordinary smears for gonococci, after the infection is chronic are practically worthless; that cultures should be taken in every case before it is discharged, and that in order to obtain a satisfactory specimen of the fluid for cultural examination for the gonococcus, one should be familiar with the technique of prostatic massage and stripping of the seminal vesicles. Attention is called to the fact that, while a good many patients have vague subjective and objective symptoms after gonorrhea, in the large majority the disease is not contagious, the case reported being simply one of the exceptions.

8. **Gastroenterostomy.**—John B. Haeberlin gives a survey of the three operations which compete with one another in gastric surgery, namely, gastroenterostomy, Finney's operation or gastroduodenostomy, and Rodman's operation or resection of the ulcer bearing area, and concludes that in all cases in which there is suspicion of cancer reseetion should be done, the condition of the patient permitting. However, in other cases the excess percentage of mortality of the resection operation over gastroenterostomy, is so much greater than the percentage which develop into cancer after gastroenterostomy, that there are but few who would take this added risk. The mortality from gastric resection is 20 per cent. greater than the mortality of gastroenterostomy. The proportion of cancer developing from ulcer following operations for gastroenterostomy is probably as low as 1 per cent. Modern posterior gastroenterostomy, performed in accordance with proper indications, considered from all angles with competing operations, as to ease of performance, complications, early and late, low mortality, and its after results, remains the operation of choice of the vast majority of surgeons.

Journal of the American Medical Association.

December 4, 1915.

1. Magic and Medicine. Francis Carter Wood.
2. Hospital Efficiency as Produced and Measured by a Follow-Up System. Arthur A. Howard.
3. The Experimental Transplantation of the Epiphysis, with Observations on the Longitudinal Growth of Bone. S. L. Haas.
4. The Relation of the Roentgenologist to the Hospital. H. W. Van Allen.
5. Manufacture and Administration of Nitrous Oxide for Anesthesia: the Experience of Lakeside Hospital. A. R. Warner.
6. Pelvic Infections and the Application of Drainage. L. G. Bowers.
7. The Wassermann Test in the Medical Dispensary. Josiah J. Moore.
8. Efficient Dispensary Clinics a Requisite for Adequate Coping with Venereal Disease. Michael M. Davis, Jr.
9. A Statistical Study of Syphillis as Seen in the Outpatient Department of the University of California Hospital. James L. Whitney.
10. Syphilis of the Spine: Its Frequency and the Value of Its Characteristic Lesions as a Diagnostic Sign of Syphilis. James L. Whitney and Walter I. Baldwin.
11. Subperiosteal Resection in Osteomyelitis: A Clinical and Experimental Study. D. B. Phemister.
12. Notes from a German Milltary Hospital, with Observations on Gas Phlegmons. L. Eloesser.
13. Total Removal of the Orbit Under Local Anesthesia. Herbert P. Cole.
14. Removal of Half-Dollar and Quarter-Dollar from Esophagus of Child. H. B. Decherd and W. D. Jones.

1. **Magic and Medicine.**—Francis Carter Wood delivered this address at the opening of the College of Physicians and Surgeons, Columbia University, New York, September 19, 1915, in which he showed that human nature, even in this scientific age, searches for something to satisfy its desire for magic, a something which the scientific physician no longer supplies. The popular mind has found in radium such that appeals to its love of the mysterious. The newspapers herald the wonderful cures which radium produces but we

know to-day that it will certainly cure only a very small number of cancers and will do nothing which cannot be done by surgery. The result of the furore and publicity on this subject is that it is not always possible to get patients to submit to surgery for the removal of a tumor; they are so anxious to be treated with radium. Analyzing this love for the mysterious the lecturer finds in it a part and parcel of that yearning for a power and perfection beyond the mere limitations of the flesh which has led men on for all time, but which is capable of diversion to evil ends when exploited by the unscrupulous. The remedy against the wiles of the quack and the sensationalism of the press is education. With a deepening of real knowledge comes intellectual charity while a diminution in the sensationalism of the press and a corresponding increase in the charity and honesty of such medical information as is suitable for the public, the really excellent educational campaigns now being conducted by physicians through the publications of medical societies and reports of public health officers and of certain publicists who have raised their voices against the widespread sale of quack medicines, all of these will abate somewhat the density of popular ignorance. It is our duty as physicians to lead this intellectual reform by refusing to be limited by a narrow professionalism, both in education and in practice and to regain that position of intellectual leadership which some of our great predecessors held in virtue of the fact that they were first of all great men, and only secondly, accomplished practitioners.

2. **Hospital Efficiency.**—Arthur A. Howard gives the results of the follow-up system in connection with the Boston Dispensary Hospital for Children. The data seem to indicate that home environment has a definite bearing on the progress made by the patients after leaving the hospital, and that the control of the patients through the follow-up system and the social service department was a factor in producing this progress. To be of real value this system must apply to all cases, not to occasional or selected cases; it must be a continuous part of the hospital routine; and it must not be merely a negative factor, finding out the patient's condition at periodical intervals, but a positive factor, exercising control over conditions. The cost of follow-up work should be turned into actual saving to the hospital by decreasing the number of readmissions.

3. **Epiphysis Transplantations.**—S. L. Haas describes the method used in making these transplantations, the ten sets of experiments which were made and concludes as follows: 1. From the practically uniform failure of increase in length of the bones after transplantation of the epiphyseal cartilage, either alone or with an accompanying piece of the epiphysis and diaphysis, both in reimplantation and autotransplantation, it must be concluded that epiphyseal cartilage loses its power to functionate after such transplantations. 2. As the degenerative processes were more advanced in autotransplantation than in reimplantation, it can be almost certainly predicted that there would be a more marked degeneration in homotransplantation. 3. Whether a small or large sized transplant was taken was of no consequence, as there was the same failure of growth in every instance. Incisions into the periosteum or boring holes into the cortex hastened the degenerative processes. 4. There was marked disturbance of growth following the two-stage autotransplantation, in spite of the fact that osseous union was secured before severing the epiphyseal transplant from its surrounding and nourishing tissues. 5. The epiphyseal cartilage must be considered as a very vulnerable tissue, its viability being directly dependent upon its blood supply.

5. **Nitrous Oxide at Lakeside.**—A. R. Warner describes their experience with nitrous oxide gas used for anesthesia during the past eight years, and the method which he has devised for its manufacture in a sufficiently pure state to be without poisonous effects. The advantages of this anesthetic when the gases are used are that it is not disagreeable or irritating, consciousness is lost promptly, vomiting is extremely rare, pneumonia and post-operative shock are much less frequent and the patients are able to leave the ward sooner than with other anesthetics. The lesser degree of muscular relaxation with nitrous oxide anesthesia which is sometimes annoying to the surgeon may be overcome by mixing a little ether vapor when the relaxation is needed.

7. **Wassermann Test.**—Josiah J. Moore gives the results of the routine use of the Wassermann reaction as a routine measure on practically every person attending the medical dispensary clinics of the University of Illinois College of Medicine. Genitourinary, gynecological, pediatric, nervous, dermatological and surgical cases were not included. Fifty-six positive Wassermann reactions were obtained in the routine examination of 418 patients. Only 50 per cent. of those with a positive test gave a history of having syphilis. Twelve weakly positive reactions were obtained, four patients being tested only once; without history or symptoms the diagnosis of syphilis could not be made in these. Repeated negative tests were of assistance in diagnosing non-syphilitic conditions in which false histories of previous infections were obtained. The positive Wassermann test is of inestimable value in the diagnosis of syphilis in the medical dispensary. The unreliability of histories and the protean nature of the disease make it extremely difficult of diagnosis in all cases.

8. **Venereal Disease Clinics.**—Michael M. Davis states that the problem of venereal disease is in some ways a parallel public problem to that of tuberculosis, but it has received much less attention. If we recognize the enormous amount of syphilis and gonorrhea in the community, if we believe it to be a fact that the mass of these cases do not now receive adequate treatment, that most patients cannot afford adequate treatment, then we must turn to organized medical service in clinics as a resource to provide this treatment. The establishment of out-patient clinics on a large scale, administered as public health measures, for the diagnosis and treatment of syphilis and gonorrhea, is a practicable, necessary, and immediately desirable step in the campaign against these diseases.

10. **Syphilis of the Spine.**—James L. Whitney and Walter I. Baldwin state that for some years in the University Hospital they have recognized as extremely common and very characteristic, certain lesions of the spine found in syphilitics. To put these strong impressions in the form of figures a study of 100 cases of syphilis was undertaken, with special reference to conditions of the spine. The results were rather more striking than was anticipated. Out of the 100 cases there were only twenty-six with normal spines, while six more were classified as doubtful. The remaining sixty-eight cases had spinal abnormalities of some kind and of these all but four were of a type which the authors have learned to consider more or less characteristic of syphilis. This is a localized stiffness of the spine in conjunction with hypertonicity of the uninvolved spine and the pelvic and hip joints which is almost pathognomonic of syphilis. It is found in obsolete as well as in active cases. It is a sign easy to

demonstrate. A negative Wassermann reaction should not be interpreted as excluding syphilis in the presence of other signs which suggest joint syphilis.

11. **Subperiosteal Resection.**—D. B. Phemister states that there is no uniformity of results after subperiosteal resection either in healthy bones of animals or in diseased and healthy bones in man. The full explanation of this has not yet been determined, but there are a number of known factors of importance, such as the presence or absence of infection and the technique of freeing from the bone the periosteum or involucrum which is left behind. In view of the clinical and experimental data now at hand, showing the frequent failure of regeneration, subperiosteal resection should be reserved for selected cases of osteomyelitis in which there is extensive necrosis of the bone, and especially when it is located in areas inaccessible to operation, as the posterior part of the tibia. Its use should be limited to parts of the body in which there is some other bony support, and should almost never be used where there is only one bone in the extremity, as later sequestrectomy gives better results in such cases. The operation should not be performed too early while the infection is severe, and before a soft involucrum has formed, nor too late after the involucrum is so ossified that an insufficient amount of osteogenetic tissue is removed. In case of failure of regeneration, the defect can best be repaired by free transplantation of bone, although a missing shaft of the tibia can be remedied by division of the fibula above and below and shifting it to the tibial defect, a method first used by Huntington.

The Lancet.

November 20, 1915.

1. Hunterian Lecture on Bright's Disease in Some of Its Clinical Aspects. Samuel West.
2. Some Aspects of the Cerebrospinal Fever Problems. H. Warren Crowe.
3. Intermittent Fever of Obscure Origin, Occurring Among British Soldiers in France. The So-Called "Trench Fever." G. H. Hunt and A. C. Rankin.
4. Bacterial Antagonism, with Particular Reference to Meningococcus. Leonard Colebrook.
5. Blackwater Fever. R. W. Burkitt.
6. A Note on Four Post-Mortem Examinations in Which Rupture of the Intestine Was Found Although the Course of the Projectile Was Extraperitoneal. W. C. B. Meyer, J. W. Dew and A. Stokes.
7. 1,000 Doses of Phenolphthalein. J. C. McWalter.

1. **Bright's Disease.**—Samuel West delivered this lecture before the Hunterian Society on October 13, 1915. In it he adheres strictly to Bright's original classification, acute Bright's disease and chronic Bright's disease, and maintains that there is no established relation between these two forms. In discussing acute Bright's disease several cases are cited in which granular kidney could be excluded and which could not be explained by acute nephritis since they were ushered in by uremia which is not an early, least of all the first sign in acute nephritis, and in which the symptoms quickly subsided and the patients regained apparently normal health. The condition was obviously renal in origin, but it was not one that is met with in any of the recognized forms of kidney disease. The author is inclined to wonder whether this was the type of case designated by the old-fashioned expression "acute congestion of the kidney" which had been dropped out of our nomenclature. In the consideration of chronic Bright's disease the point is dwelt upon that such a classification as contracted white kidney and contracted red kidney is very indefinite and unsatisfactory, and a protest is made against the theory implied that the difference in color designates a difference in origin. In speaking of the relation of arterial thickening, the raised blood pressure, and the kidney lesion in granular kidney the author expresses the belief that so far as granular kidney is concerned, the primary change is renal, that the raised arterial tension is the result of the renal lesion, and the arterial changes are the consequence of that, the heart changes being secondary and consequent on the arterial. The cause of the primary renal disease is still unknown. The one fact that seems abundantly clear is that these problems can only be solved by clinical observation. After discussing the retinal arterial and venous changes and albuminuric retinitis says that the generally accepted statement that albuminuric retinitis is a late symptom in granular kidney is true of the exudative form, but that the degenerative form has a much longer duration of life, he, himself, having known of cases of seven years' duration and longer. If eyes were examined earlier in a routine way in every case in which granular kidney was suspected, the white spots would be detected much earlier, and the subsequent duration of life therefore would be much longer than is usually stated.

2. **The Cerebrospinal Fever Problem.**—H. Warren Crowe confines himself to such aspects of this disease, its treatment, and economic control as came within his experience during the recent epidemic among the troops, refers more particularly to new methods of technique which proved of great value in saving labor and time, and describes certain researches which may lead to a more rapid method of identifying the meningococcus in the future. The practical results were as follows: In diagnosis the examination of the spinal fluid seems most satisfactory. This was done by enriching the spinal fluid by 1 per cent. glucose, incubating 24 hours, and then examining. In the treatment, serum was used which had been tested and found to agglutinate the organism isolated, and was followed by small doses of an autogenous vaccine. In the diagnosis of carriers a medium should be used containing hemoglobin or a near derivative. The ultimate recognition of the organism is to be gained by a simple agglutination test. In the treatment of carriers the mildest method, for example, permanganate of potash 1 in 10,000 was more successful than antiseptic mixtures. The writer adds a note on a method of isolating streptococci and other delicate organisms from wounds, in face of gross contamination.

3. **So-Called Trench Fever.**—G. H. Hunt and A. C. Rankin give a description of a condition based on the observation of 30 patients, though other cases have been noticed in which the symptoms were identical, but in which the fever ran a different course. Various bacteriological examinations have been made with the object of finding a specific organism but thus far none has been discovered. After the patient has been under observation for a few days the diagnosis is readily made. It is more difficult when the patient is first admitted to the hospital, at which time it rests on the following features: 1. A history of headache and pain in the legs and back, without catarrh or gastrointestinal symptoms. 2. Slight constitutional disturbance even with high fever. 3. A fairly clean tongue. 4. Absence of rash, splenic enlargement, and bronchitis. It seems that this "fever" was not contagious in any high degree. Quinine in five to ten grain doses and salicylates in 30 grain doses given three times a day did not appear to influence the temperature to any appreciable extent.

4. **Bacterial Antagonism.**—Leonard Colebrook states that in the course of his investigation of meningococcus carriers he has noticed on several occasions that when the meningococcus began to disappear from the nasopharynx it was at once replaced by great numbers of pneumococci or streptococci. Moreover on at least two occasions the disappearance of the meningococcus seemed to be determined by the onset of an aute cold in the head. The question arose had these pneumococci

and streptococci simply entered on the field vacated by the meningococci or had they also played an active rôle in supplanting the invader? The experiments described were made with the view of showing if there was any antagonism between these organisms on artificial media. The experiments on meningococcus carriers show that the pneumococci were apparently unable to establish themselves in the nasopharynx of these carriers, for although implanted in very large numbers they could not be recovered in any quantity from swabs taken after a few hours or on the following day. In one case the pneumococci probably gained a slight foothold at first for the meningococci almost disappeared from the swabs for nearly two days, but after that time regained their early predominance. This partial success suggests to the author the possibility that with more knowledge of the conditions which enable the inhibitory organism to establish themselves, the method might prove of some value.

6. Blackwater Fever.—R. W. Burkitt of the East African Medical Staff presents a report on a method by which he has been successful in treating some serious cases of blackwater fever by the administration of potassium and sodium bicarbonate and chloride of calcium. He regards these remedies as blood alkalinizers and his view appears to be that the symptoms in blackwater fever are in all probability due to a lessened alkalinity of the blood, this being a by-product of the condition preceding hemoglobinuria, and that this by-product when it reaches a certain point causes a breaking down of the blood elements.

7. 1,000 Doses of Phenolphthalein.—J. C. McWalter states that he has prescribed something more than 1,000 doses of this drug and finds it particularly useful in cases of intestinal toxemia. It offers ideal advantages because what is required is a mild antiseptic, capable of being taken for a considerable period without toxic or cumulative effects, and yet free from those irritating effects of the mucous membrane of the intestine which renders most purgatives harmful in these cases. In mucomembranous colitis phenolphthalein will be found in doses of half a grain daily eminently satisfactory in preventing enterospasm, easing pain, checking the excessive secretion of mucus, improving the neurasthenia, and generally improving the patient's condition.

British Medical Journal.

November 20, 1915.

1. Clinical Aspects of Typhus Fever: Observations on Some 2,000 Cases in a Prison Camp in Germany. P. C. T. Davy and A. J. Brown.
2. On the Recrudescence of Local Sepsis in Completely Healed Wounds as the Result of Some Surgical Interference or Passive Movement. R. H. Jocelyn Swan and Kenneth Goadby.
3. Observations on the Treatment of Wounds in War. J. Tissot.
4. Auscultation of the Heart of the Recruit. James Kingston Fowler.
5. Tartar Emetic in Kala-azar. Percival Mackie.
6. Bilharziosis in Natal. F. G. Cawston.

1. Clinical Aspects of Typhus Fever.—P. C. T. Davy and A. J. Brown describe the conditions at the German prison camp at Gardelegen, where the total number of prisoners is from 11,000 to 12,000 men, and where during their stay they observed some 2,000 cases of typhus fever. The evidence seems to point to the body louse as the carrier of the disease. There is no evidence that the infective agent was carried by any of the dejecta. Their description of the symptoms and onset of the disease agrees with that of others. They call particular attention to epistaxis at some time in the course of the disease as extremely characteristic. During the epidemic they were accustomed to regard it as pathognomonic. In speaking of the treatment the authors state that the secret of successful treatment of typhus lies as with enteric fever in the nursing of the patient. Force of circumstances condemned their patients to starvation diet, and they did well on it. Absolute rest in the recumbent position is essential from the onset. Plenty of liquid should be given throughout the disease. Solid diet of the most easily assimilated character should be given as soon as the tongue begins to clear. The patient should be kept in bed until the pulse has been normal for at least a week. In those cases in which special attention could be paid to the mouth, the ear, and the parotid, complications did not occur. Generally speaking two lines of treatment were attempted: 1. Early and continuous stimulation, mainly by hypodermic and intramuscular injection of camphorated oil, and to a lesser extent of strychnine and ether. The immense crop of abscesses which resulted from the use of the camphorated oil condemned it and especially so in the absence of any perceptible beneficial result. 2. Purely expectant and symptomatic treatment combined with the free use of morphine in every case in which it was not obviously contraindicated. The writers regard morphine as a sheet anchor in most cases and state that they have never had cause to regret its use.

2. Recrudescence of Local Sepsis in Wounds.—R. H. Jocelyn Swan and Kenneth Goadby, in an attempt to gain information on the questions raised involving the power of organisms to remain dormant in the tissues, and to become suddenly active after some slight surgical interference, have in a long series of cases made routine bacteriological examination of the tissues surrounding fragments of shell, shrapnel bullets, etc., which have remained buried in the body for varying times, but in which the wound of entrance has healed. They have found that organisms may lie dormant without causing any clinical symptoms, and this explains the lighting up of local inflammation long after the external wound is healed. They have also found a type of case which owes its peculiar features to a process analogous to anaphylaxis; the tissues, having originally been subjected to constant doses of bacterial poison, are, after an interval, subjected to an anaphylactic dose of the original poison.

4. Auscultation of the Heart of the Recruit.—James Kingston Fowler says that the memoranda issued by the War Office on the significance of abnormal signs in the heart of the recruit suggest that it may be well to call attention to the following precautions which should be observed in the examination of all cases presenting murmurs. 1. The exact period in the cardiac cycle occupied by the murmur. False murmurs are often not exactly synchronous with the commencement of systole or diastole; they may precede or follow the one or the other. 2. The site of maximum intensity and the line of conduction of the murmur. These do not usually coincide with what is found with similar murmurs of organic origin. 3. The condition of the lungs. With doubtful apex murmurs evidence of pulmonary engorgement is strongly in favor of organic valve disease, as that condition is almost invariably absent in the reflux of anemia. 4. The effect of change of position upon the sound. *It is essential to examine every case of suspected valve disease both in the standing and recumbent position.* It may be stated with confidence that an opinion given in a doubtful case without observing this precaution is of no value. Functional and false murmurs often disappear when the patient lies down, while an organic murmur, especially that of mitral stenosis, may be only audible in that position. A murmur which suddenly and completely disappears when the patient lies down, provided there is not at the same time any marked alteration in the pulse-rate, is

almost certainly not due to organic disease of a valve. 5. It is important in all cases to auscultate the trachea. A murmur audible in the trachea may be due (1) to the conduction of the murmur of aortic stenosis; or (2) to the impulse of an aneurysm; or (3) to the impulse of the heart causing an air wave in the bronchi and trachea, this latter being by far the most common cause of tracheal murmurs. Mitral murmurs are not audible in the trachea. 6. False murmurs often disappear completely when the breath is held. 7. The state of the pulse may at once negative a suspicion of organic disease founded on the presence of a murmur.

5. Tartar Emetic in Kala-azar.—Percival Mackie reports two cases of leishmanial infection successfully treated by antimony. The first case is interesting in that the disease began in a fissure of the lip and apart from any exposure to insect infection; because of the presence of a subcutaneous nodule due to Leishmania which had no discernible connection with the outside surface, and because of the good effect of the antimony in rapidly sterilizing the cutaneous lesion and its slower action on the mucous ulceration.

Berliner klinische Wochenschrift.

October 25, 1915.

War Experiences with Infectious Diseases.—Grundmann continues his article with a very thorough account of his thirteen cases of cerebrospinal meningitis. There was but slight evidence of transmissibility and the cases occurred in April and May, the months of preference. The disease began suddenly with headache and fever, relatively slow pulse, vomiting, vertigo, stiff neck, herpes labialis, Kernig's sign, increased reflexes, meningococci in the lumbal punctate. Headache yielded only to morphine or lumbal puncture. The history of a severe, fatally ending case is as follows: Patient admitted with severe headache after a record of perfect health. He had been seized in the night with a chill, fever, headache, vertigo and delirium. Next day he was quite unconscious, and over the trunk and extremities was a marked bluish red small macular exanthem. There was suspicion of typhus. Upon contact the patient screamed and trembled, and there was some fibrillary twitching and rigidity of the limbs suggesting tetanus. Examination of lumbal punctate revealed the presence of meningococci agglutinated by patients' blood serum. No meningococci in nose and throat smears. Patient lived five days and autopsy confirmed diagnosis.

Mixed Infection—Dysentery and Typhoid.—Soldin states that proof in these cases is hard to furnish. A case given in detail is summed up as follows: the patient was suddenly stricken with acute, gastroenteric symptoms upon which followed quickly typhoid symptoms, as mental confusion and enlarged spleen. The stools had from the first suggested dysentery, containing shreds of mucus. Bacteriological examination revealed the presence of both the typhoid bacillus and that of pseudo dysentery. The temperature curve was lytic which of course did not exclude typhus. The mental confusion and enlarged spleen have never been seen by the author in dysentery. Persistent occurrence of blood in the stools after a certain period pointed to dysentery but did not exclude paratyphoid. Late hemorrhage from typhoid ulcers is of course a different type of symptom. The agglutination test was positive both for typhoid and paratyphoid. It is very rare, as already asserted, to see a strict coincidence of dysentery and typhoid, although we see either disease appear during convalescence from the other.

Treatment of Pneumonia by Chemotherapy.—Loeb treated twenty-four cases with a ethylhydrocuprein and a quininesalicylic acid ester. At the end of forty-eight hours most of the patients showed some form of improvement—either a fall of temperature, improvement in headache, clearing of the sensorium, etc. In one patient only was fever aborted outright. In all the others it rose again, once more to fall when the drugs were repeated. The temperature finally fell before the critical time. In all respects the drugs seemed to attack the underlying sepsis as shown by the action on the heart. While the ethylhydrocuprein caused no unpleasant by-effects the other drug caused mild cinchonism in several cases. There was no mortality in the author's series, nor any sequelæ.

Deutsche medizinische Wochenschrift.

October 28, 1915.

The Hunger Sensation.—Müller regards this sensation as having a multifold origin. It may in part depend upon the primary emptiness of the stomach but this the author disbelieves. His view is that a certain degree of absence in the blood of nutriment is responsible for that condition of the stomach accompanied by rumbling noises and sense of pressure. The latter he attributes to the muscle tonus of the empty organ. Emptiness in the colon may also cause spasms (sense of tenesmus), contractions of the stomach artificially produced give rise to the sense of emptiness and hunger. As it is difficult to differentiate between the two last mentioned so is it likewise to differentiate between hunger and appetite. The latter is associated with a particular kind of food. It is a proverb that "appetite comes with eating" while hunger should diminish with eating. After prolonged abstinence appetite becomes less selective. The author finds a close parallel between hunger and sexual sensations and connects both with the encephalon since the mind is able to stimulate or inhibit either.

Appearance of Immature Leucocytes in the Blood in Infectious Diseases.—Photakis sums up in saying that the entrance into the blood of young forms of leucocytes gives us an important datum for the severity of the irritation of the bone marrow as determined by the virulence of the infectious microorganism. This means to a certain degree the severity of the disease itself. Naturally, we cannot determine the entire status from the blood count alone, and other clinical evidences must be invoked.

Chronic Pancreatitis.—Einhorn of New York considers this condition from the standpoint of the internist. As a general proposition this affection agrees well with the old conception of lientery. Exact diagnosis is naturally very difficult. In one form the most conspicuous symptom is diarrhea. In another, the disease picture is chiefly diabetes, indigestion, and general weakness. Finally in a third group gastralgia, and attacks of constipation with periods of weakness stand forth as frequent symptoms. The author cites cases of each type. In one case a patient, hitherto sound unless damaged by alcohol, began to complain and for two years past has had abdominal pain, loss of weight and occasional diarrhea. A diagnosis of cancer of the stomach was finally made. Laparotomy discovered only a few gastric adhesions. The appendix was removed. For a time the patient gained but soon the old train of symptoms appeared, much aggravated, and in spite of treatment, the case went from bad to worse until death took place, from malnutrition. In this case the diagnosis must have lain between gastric cancer and chronic pancreatitis from the start, and the former had been rigidly excluded. No autopsy is mentioned. The diagnosis of chronic pancreatitis rests largely on the clinical picture of lientery.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

Anniversary Meeting, Held November 18, 1915.

THE PRESIDENT, DR. WALTER B. JAMES, IN THE CHAIR.

Disease and Crime: An Analogy.—THE PRESIDENT said that the question proposed for discussion at this anniversary meeting, was: "Has not the time come when ethics, the law, and medicine should join hands to form a constructive program, aiming to do for crime what has been done for disease through systematic study and classification leading up to effective measures of prevention and intelligent individual treatment?"

The Concern of the Public in the Problem of Crime.—GEORGE W. WICKERSHAM, Esq., president of the Bar Association of New York, said that it seemed to him that the problem of crime should first be presented by considering a few statistics showing the extent of crime in our country and our State. The United States Census for 1910 showed that in that year 493,934 persons were committed to prisons, county jails and municipal prisons in the United States, and 187,791 to hospitals for the insane. The total number of persons reported as actually confined in prisons, penitentiaries, county jails and institutions for the care of juvenile delinquents on January 1, 1910, was 136,472. The statistics for the State of New York showed that her total prison population was on September 30, 1908, 18,454 and on September 30, 1914, 20,185. In addition there were persons convicted of crime but released on probation, children, on September 30, 1908, 730, adults, 1648; on September 30, 1914, children, 2784, adults, 8141; These figures were taken from the Eighth Annual Report of the State Probation Commission. The total number of persons convicted of crime in the State of New York and either in prison or conditionally released on probation or parole on September 30, 1914, was 32,493. The total cost of maintenance of the State prisons, adult and juvenile reformatories and penitentiaries (not including county jails) was in 1914, $2,951,940.42. The average daily population was 13,440. The average *per capita* cost of maintenance was $219.63. The average number on probation, 1914, was 9,434. The entire estimated cost of probation in 1914 was $206,978.63. The average *per capita* cost was $21.94. In considering the problem suggested by these figures Mr. Wickersham said that they were confronted with the question, "What is crime and who are criminals?" Dr. F. H. Wines in his book on "Punishment and Retribution," said, "Crimes are wrongful actions, violations of the rights of other men, injuries done to individuals or to society, against which there is a legal prohibition enforced by some appropriate legal penalty." The New York Penal Law defined "crime" as "an act of omission forbidden by law, and punishable upon conviction by: (1) death; or, (2) imprisonment; or, (3) fine; or, (4) removal from office; or, (5) disqualification to hold any office of trust, honor or profit under the State; or, (6) other penal discipline." The criminal was a "man who put himself in an attitude of antagonism to the law." He was the man who did something the law said he must not do, or failed to do something the law commanded him to do. One of Judge Olson's associates in the Municipal Court of Chicago, Judge Gemmill, had pertinently suggested that "In discussing the question: 'Who is the criminal?' we must not lose sight of the fact that the majority of the persons brought into our criminal courts to-day are not criminals primarily because of what they have done, but because we changed our ideas of the relation of the individual to society and the State." For instance, the enforcement of the Pure Food Law had created criminals in that many who had carried on certain practices for years suddenly, when the new law went into effect, found themselves in antagonism to it.

The condition of the State prison at Sing Sing had been a disgrace to the State for years. Mr. Osborne's wonderful work in Sing Sing had introduced a new hope, a new atmosphere, among the prisoners, but so long as those vile, unsanitary, archaic buildings were maintained by the State, his work would be sorely handicapped. The prison at Sing Sing should be abandoned and pulled down. The State Commission on Prison Reform had recommended that it be abolished and that a new prison be provided without delay, within a convenient distance from New York City. Every day that was delayed was a disgrace to the State. The State prison at Auburn was not much better. The system of building prisons with small cells, and maintaining old prisons of that type, without sanitary conditions, was in effect the creation and maintenance by the State of breeding places for crime and disease. They were merely places maintained by the State to manufacture crime and insure the perdition of all who were confined within them. The condition of many of the county jails was even worse than that of the State prisons. The prisoners in the penitentiaries were maintained in idleness, there were no schools for the illiterate; there was no class instruction and comparatively little industrial employment. The significance of the problem of crime to society lay in the fact that unless the criminal was led to forsake the evil of his ways, society was charged with a continuous responsibility for him and his. The primary concern of society in its relation to crime was to prevent the commission of crime, just as the primary purpose of medical science was to prevent disease. Mr. Wickersham said that the old theory of retribution or vengeance in the punishment of crime had given way to the theory of reformation and prevention. In this, society had made great progress; but uneven progress. So long as their State prisons and their county penitentiaries and jails remained what they were, they could hardly claim to have done more than to become awakened to the uneasy sense of civic injustice in dealing with the problem. But the time had certainly come when, to use the language of the invitation of this meeting, the law and medicine should join hands to form a constructive program, aiming to do for crime, what had been done for disease through systematic study and classification, leading up to effective measures of prevention and intelligent individual treatment.

The Progress That Has Been Made and What the Future Promises, as Shown by the Psychopathic Laboratory.—Judge HARRY OLSON, Chief Justice of the Municipal Court of Chicago, read this paper. He said that insanity, feeble-mindedness, and mental deficiency were on the increase in this country. Many factors contributed to this result, among which first came to mind the speed of their civilization, the inadequate immigration exclusion laws, the disregard of the law of eugenics, the relation of specific disease to heredity and mental health, and to these might be added the conservation of the defective classes brought about by higher standards of civilization. Had the increase of mental defectives any relation to the commission of crime, He thought it had. During ten years' experience as a public prosecutor in the Criminal Courts of Cook County the fact was constantly impressed upon him that large numbers of the criminal classes were defective to the extent that their defect was the cause of their criminality, and especially was this so of many offenders of adolescent age. The first fact that attracted his attention was the uniformity in the number, character, and conditions of crime. For instance, in Chicago, the aggregate number of arrests for felony for the year 1914 was 8673, for the preceding year, 8102, for the year before that, 7362, and if they ran back for a number of years they would find that the number of arests was as uniform, proportionate to population, as the number of marriages and births. This same uniformity existed in all countries and all degrees of civilization. If they were to look into the character of crime for which convictions were had, they would find a like uniformity. The static character of criminal statistics in relation to population the world over, the fact that the criminal age, when first commitments occurred, appeared early when responsibility came, ranging from 16 to 24 years, and that only 2 per cent. of the population were ever charged with crime, always impressed him as significant facts pointing to something inherently defective in the race. The investigation and research of the alienist and the psychologist tended to confirm this belief. Thus far little or no impression had been made on the static existence of crime by their efforts, through punishment and prevention, and one would have supposed that this fact alone would have directed those vitally interested in this subject, such as jurists, sociologists, etc., to check themselves up and cast a critical glance over the past and into other directions for the future. They must adopt new methods, the modern methods of the medical profession, diagnosis and treatment, if cure was impossible. Medical science had advanced, but the law had lagged behind. Until a few years ago

very little instruction was imparted in the medical schools in psychology and psychiatry. The financial rewards were not inviting in this field, nor were the prospects of successful achievement on a par with the opportunities in internal medicine or surgery. If the ordinary physician had lacked interest in the subject, what must be said of the lawyers and the judges? Unless a large fee were involved the lawyer gave no attention to the subject. Their judges had little knowledge of psychiatry, sociology, anthropology, or the significance of criminal statistics, and, if they were to judge solely by the legal test for insanity prevalent in most of their States, the medical profession was about 73 years in advance of the legal profession. The courts were beginning to rely more upon the opinions of medical men than formerly. The institution of phychopathic laboratories in connection with courts was an indication that the legal profession was beginning to appreciate that a large number of chronic offenders were not always benefited by the legal punishment which was inflicted with the three classic objects in view: First, retribution; second, intimidation, and third, reformation. The idea of punishment for a deed presupposed responsibility. They were learning that many of the criminal insane and feeble-minded on whom legal punishment had been inflicted in their courts were not fully responsible and their punishment did not work their reformation. The first psychopathic laboratory in connection with courts in this country was that instituted through the beneficence of Mrs. William F. Dummer of Chicago in the Juvenile Court of that city in 1908. The tests in the Psychopathic Laboratory for feeble-mindedness and insanity were the Rossolino, Binet-Simon, graduated association, analysis synthesis tests, and the standard tests used in practically all the psychiatrical clinics of Europe, as well as physical, pychological, and other examinations. As a result of the work of the laboratory of this court in demonstrating the preponderant rôle which feeble-mindedness was playing in the causation of crime, especially of fundamental crime, they had been able to have a bill passed in Illinois which did for the feeble-minded delinquent what the insanity laws had been trying to do for the insane. This was a very big step forward in the solution of the crime problem. They were finding that many of the common crimes were due to feeble-mindedness, moral defect, the insanities, especially dementia precox in its various forms, the cretinoids, spileptics and psychopathic constitutions. These cases, of course, were not cured by imprisonment in jails or penitentiaries. What was the promise for the future? The feeble-minded situation as a whole was a hopeless one. The only present methods of handling the situation were isolation and sterilization, since they realized more and more, daily, that the vast majority of these cases were of a hereditary nature. The farm colony offered the one solution for the treatment of the defective delinquents who got into the courts. The psycopath, the precox case, when taken in the early years and given proper training, could undoubtedly be helped. The feeble-minded should be sorted out and new methods of training evolved. The courts of their large cities must meet the responsibilities thrown upon them by the discoveries in science by instituting psychopathic laboratories, so that the criminal defective might be identified. If followed by legislation permitting the segregation of the defective classes who needed such care, they would make a substantial advance in controlling crime. In order to win the war against crime and mental deficiency they must educate medical men who could lead. Judge Olson presented a résume showing the average chronological, basal, and mental ages of the different groups, with their average per cent. of arrest in the Boys', Juvenile, and other courts; also the number of cases having complications such as dementia precox, alcoholism, etc.

The Part Which Penal Institutions Might Be Made to Play in the Solution of the Problem.—Mr. THOMAS MOTT OSBORNE, Warden of Sing Sing prison, delivered this address. He said that in answer to the question on the program, as they might have anticipated, his reply was in the affirmative "yes," the time had come when ethics, the law, and medicine should join hands to form a constructive program leading to effective measures for the intelligent treatment of the criminal. It had been pointed out that the prison should be very much like the hospital in its study of the individual and the application of remedial measures, but it should also have been pointed out that when the time came to make that reform, it would be found that it would not be highly regarded in political circles, where any plumber or saloon keeper was thought to be suitable for such distasteful work. When someone attempted such a reform he would find that he had committed an unpardonable sin only to be wiped out by a possible indictment. When he went into prison work two years ago, he went into Auburn prison on the same footing as a prisoner with the idea of getting as near as possible the criminal's point of view. From his experience he said he felt convinced that the court was not the place to hold a clinic for criminals; in fact it was the very last place to study the criminal for he was under a peculiar strain, believed the court was his enemy, and it was impossible under those circumstances to get him to tell the truth. He suggested that all reforms belonged to the prison rather than to the court. At Auburn he tried to get at the bottom of the trouble, looking at the problem without prejudice and with the hope of gaining a grain of truth. He had learned something of the attitude of the criminal. He had heard many men speak on prison work, and everyone had shown absolute ignorance of the standpoint of the prisoner. Unless one had seen the inside as well as the outside of the prison cell, he was in no position to talk on this subject. In fact every warden and district attorney should be sent to prison as a prisoner for a while before he was permitted to occupy his position. Along with the question as to how they were to deal with the criminal came the question, "What is criminal?" They should demolish the idea that the criminal was a different creature from other men. Mr. Osborne said he had known dozens of men in State's prison and been with them in the closest association day after day and month after month, and to make the association even nearer he went to the road building camp where he worked and played and lived with the men for three months. Those men had been guilty of all sorts of crimes and were from all classes of society. The result of his experience could be briefly put in this way: The first cause of crime was human nature and the way in which human nature worked under the conditions in which these men had been placed. Just how much importance could be given to heredity and how much to environment he could not say. His former belief in heredity, however, had been much modified since he had worked in the prison and in the Junior Republic. The conditions at Sing Sing had been frequently described and redescribed, yet there were certain phases of the matter that his friends of the daily press had insisted on forcing on their attention and which they had not always viewed from the proper angle. The prison was a dumping ground for convicted men, no matter what kind of a man he was or what kind of a disease he might be afflicted with. They had never segregated those men who had venereal diseases until within the last few months. They all used the same dining room and no attempt was made to prevent the communication of infection. As for the cells, it was difficult to describe these horrible, damp cells, eight feet high, seven feet long, and three feet three inches wide. He asked if they could imagine what must be the physical and the mental condition of anyone staying in such a hole all day every Sunday and every holiday. The close confinement in such a place for such a length of time furnished the explanation of the fact that assaults were very common on Monday and also attempts at suicide, and helped to explain why masturbation was very common. The conditions of labor were bad, the shops were dark, crowded, and unsanitary. Then the system of silence with the method of surveillance imposed a horrible mental strain. In spite of all the watching vice was rampant no matter how closely the men were watched, and acts of vice took place right under the eyes of the keepers. The same thing was formerly true of the drug traffic. There was no drug traffic in Sing Sing to-day. For five years the prison records showed only two punishments for sodomy, but did they suppose there was no sodomy during that time? The truth was that this vice was very common, but no attention was paid to it. It was never punished and the consequence was that the prison became a sink of vice of which most people had absolutely no conception. Another rule was that a man in solitary confinement was allowed only one gill of water with one slice of bread, and when a keeper had a grudge against him he would take a nail and put a hole in the tin cup and thus deprive the man even of his gill of water. Men had been

known to be driven to such desperation by lack of water that they would drink from their pails. They had made some reforms such as the change in the management of the guards who had been working in unequal shifts, giving them a steady eight hour shift; they had succeeded in having prisoners afflicted with venereal diseases placed in a company by themselves. In keeping the men out of the cells they were protecting them from tuberculosis and the community to that extent. The idea of making prison a place so attractive that men would want to break into it was not a new one. The men were now allowed to talk in the mess hall and in the work shops. It was through sin and suffering that some of them found redemption, but did anyone think that sending a sinning man to White Plains would do him any good? One might just as well take a patient and hit him with an ax to cure his disease as to take many of these men to White Plains. They had done some splendid work at Sing Sing and when he saw the very foundations of it destroyed, did they think he was going to keep quiet? Far from it. He said he was going to raise his voice so that it would be heard over the whole State. What did the Grand Jury at White Plains know about the delicate adjustment of discipline and that it was founded on truth, on telling the truth, and there was the stumbling block. He did not object to having Sing Sing investigated, but until every man and woman in the State knew what was there and what the problems were, it would be of little use. He would be very glad to have an investigation, but not a dishonest or an incomplete investigation. Conditions at Sing Sing were infinitely better than they were a short time ago under the old system. He had not made any rules about "dope." He only made a few suggestions and then waited. The drugs had disappeared by the action of the men themselves. One package was thrown into the river, and others were disposed of and the drugs just stopped coming in. In closing Mr. Osborne said that no man wanted to get sick purposely so that he could go to a hospital, and no one broke his leg to get into a hospital, but if such an accident did happen to him he was glad of the opportunity to go to a hospital. So if a man found that he needed prison treatment he would prefer to go to a good one, and that prison ought to be the best where the man got the particular training he needed, precisely as he got suitable treatment in a hospital. He thought that the State's prison would be a tremendous help in the study of crime and for turning the destructive forces in society into constructive forces, but he did not know what the end would be.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

State Board of Medical Examiners of South Carolina.

June, 1915.

JUNIOR ANATOMY.

1. Describe the liver and give its blood supply.
2. Describe the urinary bladder.
3. Describe the left lung and give its blood supply.
4. Describe the inferior maxillary bone.
5. Describe the formation of the brachial plexus.

SENIOR ANATOMY.

1. Name the blood vessels and nerves encountered in ligation of the brachial artery in the middle of the arm, giving their positions in relation to the artery.
2. For what anatomical reason should wounds of the scalp be closed loosely?
3. Where is the pain located when the maxillary division of the fifth nerve is affected?
4. When sarcomata wander from the seat of primary growth, where do they appear and why?
5. Describe the space that should be selected for doing a paracentesis of the pericardium and give your reason for this selection.
6. With pus beneath the thick middle portion of the palmar fascia, name the points at which the abscess is liable to point.
7. How is collateral circulation established after ligation of the common carotid artery.
8. With a hemorrhage into the pons below the point of decussation of the seventh nerve, what portions of body will be paralyzed?
9. Where, in the stomach, is carcinoma most apt to occur and why?

PHYSIOLOGY.

1. What is an enzyme? Mention one and describe its action.
2. What important centers are situated in the medulla oblongata?
3. Discuss the lymphatic system.
4. What changes occur in the course of the circulation at birth?
5. Mention the glands of internal secretion. What are the theories in regard to their respective functions?

CHEMISTRY.

1. What is the amount of CO_2 in the atmosphere and why does it not increase?
2. How does ferric hydrate act as an antidote for the poisonous properties of arsenic?
3. What are the chemical properties of HNO_3 and into the composition of what explosive does it enter?
4. What is calcium sulphate? What peculiar property renders it useful in surgery?
5. What are the diagnostic uses of electricity?

MATERIA MEDICA.

1. What preparation of iodine and mercury would you combine for internal use? what is the dose of each?
2. Name two or more preparations of digitalis and give dose of each.
3. Give dose and therapeutic effect of atropine, tr. nux vomica, Fowler's sol., arsenic, fl. ext. ergot, tr. opium.
4. Name a vasodilator, a vasoconstrictor, a hydrogogue cathartic, a cholagogue cathartic, a diuretic, and give dose of each.
5. Write a prescription in compliance with "The Harrison Anti-Narcotic Act" for a cough mixture containing codeine.

THERAPEUTICS.

What drugs would you use in treating the following diseases: Give dose, frequency, and therapeutic effect. If therapeutic agents employed other than drugs tell how they should be used.

(1) Gastroenteritis in child two years old. (2) Measles. (3) Acute catarrhal dysentery in adult. (4) Diabetic coma. (5) General anasarca accompanying cardiac insufficiency. (6) Spasmodic croup. (7) Renal colic. (8) Cholera morbus. (9) Chlorosis. (10) Scarlet fever.

PRACTICE OF MEDICINE.

1. Describe a case of Landry's paralysis: acute ascending paralysis.
2. Give etiology, symptoms, physical signs and possible terminations of pulmonary infarction.
3. Mention the causes of cardiac hypertrophy.
4. Describe a case of acute hemorrhagic pancreatitis, stating the diseases with which it might be confounded. Give their diagnostic differences. What treatment would you recommend for a case of acute hemorrhagic pancreatitis?
5. Mention the characteristic blood findings in (a) pernicious anemia; (b) myeloid leucemia; (c) lymphatic leucemia.
6. Define diphtheria. State its most frequent sequelæ.
7. A man fifty years old complains that he has a cough, dyspnea on exertion, has noticed for the past three months that his feet were swollen at night. What diseases might cause such symptoms? Briefly differentiate the diseases mentioned.
8. How would you recognize dilatation of the stomach? What are the causes and how would you differentiate them?
9. Enumerate the conditions of the kidney which may give rise to an abdominal tumor, and state how you would make your diagnosis as to its nature and origin
10. What are the most reliable physical signs of fluid in the pleural cavity?

OBSTETRICS.

1. Name the fetal envelopes from without inward.
2. Describe the vitellus, the allantois, the amnion and its contents.
3. Describe the development of the placenta.
4. As pregnancy progresses state the important

changes, physical and mental, that occur, or may occur, in the disposition and organism of the pregnant woman.

5. Describe the gross anatomy of the mammary glands, give the changes which occur in them during pregnancy, and give the management of the glands in case the infant is stillborn or if for any reason nursing is considered inadvisable.

6. Name the varieties of glycosuria that may occur in pregnancy; give their significance and management.

7. Give the etiology, symptoms and treatment of the albuminuria of pregnancy without anatomical kidney lesion.

8. Describe the conditions, mandatory and elective, under which cesarean section is done and give in general terms the method of doing the operation.

9. Diagnose a face presentation, L. M. A. position, and give mechanism and management of the same.

10. Give management of a brow presentation, R. M. P. position.

11. Name and describe the common varieties of obstetric forceps, give general indication for their use, and describe their use in any given condition that you may choose.

12. Summoned to a patient about seventy-two hours into her puerperium, and given a history of a recent chill, and present rise of temperature, with diminution of lochia, name the conditions, one of which is probably present, and differentiate between them.

N. B.—Answer any two of questions 1, 2, 3, and 4. Each of the remaining questions demands an answer.

ANSWERS TO STATE BOARD EXAMINATION QUESTIONS.

STATE BOARD OF MEDICAL EXAMINERS OF SOUTH CAROLINA.

June, 1915.

JUNIOR ANATOMY.

1. "The *liver* is the largest gland in the body, measuring in its transverse diameter from ten to twelve inches, and its antero-posterior six to seven, and its thickest part about three inches, and weighing about from three to four pounds. It occupies the upper part of the abdominal cavity, and the right hypochondriac, epigastric, and a portion of the left hypochondriac regions. Its upper surface is convex and rests against the diaphragm and a small portion of the abdominal parietes in front. Its lower surface is in contact with the duodenum and stomach, the right kidney and suprarenal capsules, and the hepatic flexure of the colon. It is divided by the longitudinal fissure into the right and left lobes. The liver has five fissures, five lobes, five ligaments, five sets of vessels, and is inclosed in a fibrous coat, continuous at the transverse fissure with the capsule of Glisson. It is also invested by the peritoneum, except at the attachment of the coronary ligament." (Young's *Anatomy.*)

The *fissures* are: umbilical, of ductus venosus, of gall bladder, transverse, and for inferior vena cava.

The *lobes* are: right, left, caudate, quadrate, and spigelian.

The *ligaments* are: Falciform, 2 lateral, coronary, round and of ductus venosus.

The *vessels* are: Hepatic artery and veins, portal vein, and hepatic duct.

2. The *male bladder* is a musculo-membranous pouch, situated in the pelvis, behind the pubes and in front of the rectum. It has a superior surface, antero-inferior surface, two lateral surfaces, a base or fundus, and a summit or apex. It is retained in its place by the two anterior ligaments, two lateral ligaments, and the urachus; there are also five false ligaments formed by folds of the peritoneum. Internally, on the floor, is the trigone, between the openings of the two ureters and the urethra. The anterior part of the bladder is uncovered by peritoneum, and is in relation with the triangular ligament, the symphysis pubis, and the puboprostatic ligament. Above it is covered with peritoneum and is in relation with the rectum and small intestines. The base is in relation with the rectovesical pouch, vasa deferentia, and seminal vesicles, all of which separate it from the rectum. It is supplied by the superior, middle, and inferior vesical arteries; and the pelvic plexus of the sympathetic, and the third and fourth sacral nerves.

3. "The lung is cone shaped, with the base downwards. The anex projects upwards into the root of the neck behind the clavicle and anterior scalene muscle. Above the first rib, the first part of the subclavian artery lies in front, being separated from it by the pleura. The base is concave, resting upon the diaphragm, and following the attachment of the midriff is placed lower externally and posteriorly than anteriorly. The outer surface is convex, and corresponds to the chest wall. The inner surface is concave, corresponding in part to the convex outer surface of the pericardium. It presents about its middle, and towards the posterior part, a slit, the hilum pulmonis, where the bronchi and vessels pass in to form the root. The anterior margin is thin, and overlaps the pericardium, and presents on the left side a notch for the apex of the heart. The posterior margin is rounded, and occupies the groove by the side of the vertebræ. The left lung is smaller and narrower than the right, and is divided into an upper and lower lobe by a fissure, which passes upwards and backwards from the anterior border nearly to the root. The root consists of the bronchus, a branch of the pulmonary artery, two pulmonary veins, nutritive bronchial vessels, anterior and posterior pulmonary plexuses, lymphatic vessels and glands, all held together by areolar tissue, and covered by the pleura." (Aids to *Anatomy.*)

Blood-Supply: Left bronchial artery for nutrition.

4. *Inferior maxilla* consists of a body and two rami. The body is horse-shoe shaped and contains the lower teeth; externally it presents the symphysis, mental process, mental foramen, incisive fossa, and external oblique line; internally it presents the four genial tubercles, sublingual fossa, internal oblique line, submaxillary fossa. The alveolar border has sixteen cavities for teeth. The ramus is quadrilateral, and presents the inferior dental foramen and a spine. Above it has the coronoid and condyloid processes, separated by the sigmoid notch. The *muscles attached* are: Levator menti, depressor labii inferioris, depressor anguli oris, platysma myoides, buccinator, masseter, orbicularis oris, geniohyoid, geniohyoglossus, mylohyoid, digastric, superior constrictor of pharynx, temporal, internal and external pterygoids.

5. The *brachial plexus* is formed by the union and subsequent division of the anterior divisions of the fifth, sixth, seventh, and eighth cervical and the first dorsal nerves. The union of the fifth and sixth makes the upper trunk; the seventh forms the middle trunk, and the eighth cervical and first dorsal make the lower trunk. Each of these trunks is divided into an anterior and a posterior branch. The anterior branches, from the upper and middle trunks, make the upper or outer cord of the plexus; the anterior branch of the lower trunk becomes the lower or inner cord; the three posterior branches unite to form the posterior or middle cord. The plexus lies between the Scalenus anticus and medius. The *branches* are: (1) Above the clavicle; communicating, muscular, posterior thoracic, and suprascapular. (2) *From outer cord:* External anterior thoracic, musculocutaneous, and outer head of median. (3) *From inner cord:* Internal anterior thoracic, lesser internal cutaneous, ulnar, and inner head of median. (4) *From posterior cord:* Subscapular, circumflex, and musculospiral.

SENIOR ANATOMY.

1. In ligating the brachial artery in the middle of the arm, the following blood-vessels and nerves are encountered: The basilic vein and internal cutaneous nerve, to the inner side of the artery; the median nerve, crossing the artery from without inwards; the venæ comites, one on each side of the artery.

2. To allow for drainage and to prevent infection from spreading along the emissary veins to the meninges or intracranial sinuses.

3. *Second, or superior maxiliary branch*, supplies sensation to skin and conjunctiva of lower lid, nose, cheek, upper lip, upper teeth and alveolar processes, and palate. *Third, or inferior maxillary branch*, supplies sensation to external auditory meatus, side of head, mucous membrane of mouth, anterior two-thirds of tongue, lower teeth, lower lip and skin of the lower part of the face.

4. Metastasis is allied to embolism; small particles may be carried by the blood vessels or lymphatic channels to neighboring or distant parts of the body where they may lodge in the capillaries. Hence secondary sarcomata may appear wherever the blood vessels or lymph channels are able to carry particles of the original tumor.

5. Paracentesis of the pericardium should be done "in either the fifth or sixth interspace, and either in-

ternal to or external to the internal mammary artery. In the fifth interspace, the width is greater near the sternal border, and is the space usually chosen. In the sixth interspace, the internal mammary artery and the pleura are both further from the left sternal border, and puncture may be made more directly inward. Where sufficient width of space exists, the sixth interspace may be chosen. Puncture should, by preference, be made internal to the internal mammary artery, as the pleura is in less danger of injury, especially in the fifth space—and even in the sixth space, the puncture would have to be about one inch outside of the border of the sternum to be sure of avoiding the internal mammary artery, and then it is apt to strike the pleura." (Bickham's *Operative Surgery.*)

6. With pus beneath the thick middle portion of the palmar fascia, the abscess is liable to point above the clefts of the fingers, on the dorsum of the hand, or in the forearm.

7. After ligation of the common carotid artery, the collateral circulation is carried on as follows: "(1) Branches of the external carotid on the side tied, anastomosing with the corresponding branches of the opposite side, viz., (*a*) Facial with facial; (*b*) temporal with temporal; (*c*) occipital with occipital; and (*d*) superior thyroid with superior thyroid. (2) Anastomoses between the internal carotids of opposite sides through the anterior segment of the circle of Willis—anterior cerebral of one side with the anterior cerebral of the other, through the anterior communicating. (3) Anastomoses between the subclavian and the external carotid of the side tied, viz., (*a*) The deep cervical with the princeps cervicis of occipital; (*b*) the vertebral with the occipital; (*c*) inferior thyroid with superior thyroid. (4) Anastomoses between the subclavian and the internal carotid of the side tied, the vertebral through the basilar and posterior cerebral with posterior communicating from internal carotid. (5) Anastomoses of the ophthalmic, from the internal carotid with branches of the external carotid on the side tied, viz., (*a*) Nasal of ophthalmic with angular of facial; (*b*) infraorbital, from internal maxillary, with twigs of facial; (*c*) supraorbital and frontal, from ophthalmic, with terminations of the anterior temporal." (McLachlan's *Applied Anatomy.*)

8. Hemorrhage into the pons below the point of decussation of the seventh nerve will result in a crossed hemiplegia, there will be facial paralysis on the same side as the lesion, and paralysis of the extremities on the opposite side.

9. Carcinoma of the stomach is most apt to occur at or near the pylorus, because that is the most common site of gastric ulcer, and gastric carcinoma is most frequently found to develop in an old gastric ulcer.

PHYSIOLOGY.

1. An *enzyme* is a body produced by a living organism or cell and is capable of effecting certain chemical changes in certain bodies without itself undergoing alteration in the process. An amylolytic enzyme, such as the amylopsin of the pancreatic juice, by a hydrolytic cleavage of the starch molecule, converts polysaccharides into dextrose and maltose.

2. The *medulla oblongata* contains collections of gray matter which serve as special nerve centers for the following functions or actions: respiration, salivary secretion, mastication, sucking, deglutition, vomiting, voice, facial expression; it also contains the cardiac and vasomotor centers.

3. The lymphatic system consists of: lymphatic glands, lymph vessels, perivascular lymph spaces, the lymph canalicular system, the pericardial, pleural, peritoneal, and synovial cavities, and the lacteals.

The lymphatic circulation is, strictly speaking, not a circulation at all, since the lymph flows only in one direction, namely, toward the heart. The lymph capillaries take up any excess of the blood plasma which is not required for the nutrition of the tissues. These capillaries consist of a single layer of epithelium, and empty themselves into vessels very like the veins. The lymph vessels are well provided with valves, which are so closely approximated as to give the vessels a beaded appearance. All the lymphatic vessels, except those of the right upper half of the body, empty into the thoracic duct, which terminates in the left subclavian vein, where the left internal jugular vein also enters. Those from the right upper half of the body discharge into the right lymphatic duct, which, in turn, empties into the right subclavian vein at its junction with the right internal jugular vein.

The forces concerned in the circulation of the lymph are: (1) The pressure of the blood in the blood-vessels; (2) thoracic aspiration; (3) muscular contractions of the voluntary muscles; (4) contractions of the intestine; (5) the action of the valves in the lacteals and lymphatics.

The *function of the lymphatic system* is to provide the tissues with material necessary to their functional activity, growth, and repair; to receive from the tissues their waste products; and to convey the products of digestion and absorption to the blood-current.

The lymph capillaries differ from the blood-capillaries, chiefly, in their larger and very variable caliber and also in their numerous communications with the lymph spaces. The lymph vessels in general have thinner coats than the blood-vessels; and the valves in the lymph vessels are much more abundant than in the veins.

4. *Changes that occur in the fetal circulation at birth:* The hypogastric arteries dwindle and close, the foramen ovale becomes obliterated, the ductus arteriosus and ductus venosus become obliterated, the umbilical vein becomes impervious, and the Eustachian valve atrophies.

5. *Internal secretions:* It is generally held now that the glandular organs, chiefly the pancreas, liver, and the ductless glands, produce a secretion, peculiar in each case to the particular gland producing it, and which is supposed to be given off to the blood or lymph, and to have some peculiar value in the general metabolism of the body. Such secretions are called internal secretions, in contradistinction to the previously known secretions, which are carried off by a duct, and are known as external secretions. Very little is definitely known of these internal secretions, but much work is being done on the subject.

The function of the spleen: The following theories have been held: (1) It is a source of production of the white blood corpuscles; (2) it is a source of production of the red blood corpuscles during fetal life; (3) it is a place where the red blood corpuscles are destroyed; (4) uric acid is produced in the spleen; (5) an enzyme is produced in the spleen and is carried by the blood to the pancreas, where it converts the trypsinogen into trypsin.

The function of the thyroid is not definitely settled: (1) it has some trophic function, regulating oxidation in the body, and it is supposed to have also a special influence on the vasomotor nerves, the skin, the bones, and on the sexual functions; (2) it is supposed to antagonize toxic substances and (3) it produces an internal secretion.

The function of the thymus is not settled; it is said: (1) To be a blood-forming organ; (2) to have influence on growth and nutrition; (3) in hibernating animals it is supposed to store up materials which can be utilized during the period of inactivity.

The function of the suprarenals is not definitely settled; they produce an internal secretion which is probably necessary to life; it is supposed that they are able to destroy or remove some toxic substance produced elsewhere in the body.

Function of the pituitary gland: "The *anterior* lobe is concerned with the process of growth, hypertrophy leading to overgrowth of the skeleton, and partial removal to failure of development of the body as a whole and of the sexual glands. Extracts of the *posterior* lobe, when injected into an animal, have a direct action on plain muscle all over the body; they cause constriction of the arterioles and a rise of blood pressure, contraction of the muscular coats of the digestive tract and of the bronchioles, and contraction of the uterus. The extracts also produce an increased flow of urine, which was at first attributed to the presence of a substance having a specific effect upon the renal cells; it is probable, however, that the diuretic effect is merely an indirect result of the more rapid flow of blood through the kidney which follows the injection of the extract. Extracts of the posterior lobe increase the secretion of milk, and after the injection a larger amount of milk is formed by the animal in the course of twenty-four hours." (Bainbridge and Menzies' *Essentials of Physiology.*)

CHEMISTRY.

1. There are about four parts of carbon dioxide in 10,000 parts of air. The carbon dioxide in the air does not increase because it is being constantly removed by the plants, the chlorophyll of which (under the influence of sunlight) decomposes the CO_2, and returns the oxygen to the air.

2. The ferric hydrate changes the arsenic into ferrous arsenate, which is non-poisonous.

3. *Chemical properties of nitric acid:* When exposed to air and light, it is decomposed into N_2O_4, H_2O, and oxygen; a similar result is obtained when it is exposed to heat; it is an oxidizing agent; it destroys many organic substances; in combination with metals, it produces nitrates.

It enters into the composition of nitroglycerin.

4. Calcium sulphate is gypsum, or plaster of Paris. When mixed with water it "sets," making a hard casing; it is used in the fixing of fractures, etc.

5. *Electricity is used in diagnosis* as a means of illumination to be employed with the various "scopes" for examining the cavities of the body. It is also used in determining the reactions of degeneration. "A normal nerve or muscle will respond to any form of electric stimulation. If it is diseased, it will not respond to a faradic current, but will give an increased response to a galvanic current, but the reaction obtained will be slow and sinuous, in opposition to the quick and prompt response obtained when a nerve is normal. The usual method of testing is to first apply a slowly interrupted current to the corresponding normal nerve, and then try the same current on the diseased nerve. If the nerve is completely diseased or sclerosed, no reaction will be obtained to either current. The galvanic current is then tried and a minimum current applied to the diseased nerve first, and the response will be slow and sinuous. The same current applied to the healthy nerve will not cause any reaction, and to obtain a response it will be necessary to increase the current to such an extent that it will be painful. Reactions of degeneration are not obtained until about one or two weeks after the severance of the nerve, and should never be sought for as long as a nerve is inflamed or there is pain on pressure. Its presence makes the prognosis doubtful; its absence, good." (Anders and Boston's *Medical Diagnosis.*)

MATERIA MEDICA.

1. Hydrargyri iodidum flavum. Dose, gr. 1/5; and hydrargyri iodidum rubrum. Dose, gr. 1/20.

2. Fluidextract of digitalis, dose ♏j; extract of digitalis, dose, gr. 1/5; infusion of digitalis, dose, ℥ij; tincture of digitalis, dose, ♏xv.

3. ATROPINE: Dose, gr. 1/160.

Action: Anodyne, mydriatic, inhibits secretions, depressant of terminations of nerves, accelerates the heart beat, causes rise in blood pressure, but toxic doses cause the blood pressure to fall; it stimulates the respiratory center, but large doses depress the same; it may cause vertigo, restlessness, excitement, delirium, or mania.

TINCTURE OF NUX VOMICA: *Dose,* ♏v-x.

Physiological action: Strychnine is a bitter tonic, stimulates appetite, secretion, and digestion, increases peristalsis, stimulates the vasomotor centers, and so raises arterial tension, and stimulates both accelerator and inhibitory nerves of the heart. All the functions of the spinal cord are exalted by strychnine, reflex, motor, vasomotor, and sensory. Large doses cause dilated pupils, irregular and jerky respiration, increased reflexes.

FOWLER'S SOLUTION OF ARSENIC: *Dose,* ♏j-v.

Action: It is a tonic; increases cardiac action, respiratory power, intestinal secretions, and peristalsis; produces edema, itching, diarrhea, epigastric pain, irritable and feeble heart.

FLUIDEXTRACT OF ERGOT: *Dose,* ♏xxx.

Physiological action: Ergot stimulates and causes contraction of involuntary muscle fibers, hence it is a vasoconstrictor, hemostatic, and oxytocic. It is also a cardiac sedative, it raises the blood pressure, it increases peristalsis, and is an emmenagogue.

TINCTURE OF OPIUM: *Dose,* ♏viij.

Physiological action: It is analgesic, hypnotic, diaphoretic, narcotic, a respiratory and cardiac stimulant (later a depressant), it checks most secretions (not perspiration), it stimulates the brain, and contracts the pupil.

4. A *vasodilator:* Amyl nitrite, ♏ij-v (by inhalation).

A *vasoconstrictor:* Strychnine sulphate, gr. 1 64.

A *hydragogue cathartic:* Elaterin, gr. 1 10.

A *cholagogue cathartic:* Podophyllum, gr. viij.

A *diuretic:* Potassium acetate, gr. xxx.

5. ℞

Codeinæ sulphatis, gr. iij.
Ammonii chloridi, ʒj.
Fluidextracti glycyrrhizæ, ʒj.
Aquæ destillatæ, q. s. ad ℥ij. M.
Sig.: One teaspoonful every two hours in water.

MARK TAPLEY, M.D.,
911 West Forty-Fourth Street,
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Registered Number, 23.

For John Jones (aged 30 years), 846 West 156th Street, New York.

October 26, 1915.

THERAPEUTICS.

1. *Gastroenteritis in child two years old:* Two drams of castor oil as a purgative; cool sponging or bath for fever (if present); give no food, but only boiled water or barley water for twenty-four hours. Subsequently, the diet must be properly regulated.

2. *Measles:* Isolation in a well-ventilated and darkened room; cool sponging or bath for fever; cool water to drink; if a sedative is required one grain of phenacetin may be given every three hours for four doses; if the cough is troublesome, three grains of sodium bromide may be given every three hours; inunction with 5 per cent. ichthyol in lanolin will relieve the itching; as a laxative, a quarter of a grain of calomel may be given every hour for two or three doses.

3. *Acute catarrhal dysentery in adult:* "The treatment consists of rest in bed and liquid diet. Rochelle salt (ʒ 4) or Epsom salt (ʒ 4) should be given to cleanse the bowels thoroughly. Castor oil (ʒ 1) with laudanum (gtt. 20) may be used. Pain is relieved by opium, alone or combined with bismuth subnitrate, cocaine or belladonna. Hope's camphor mixture (ʒ 2) may be administered every 3 hours. The colon may be irrigated every 2 hours with lukewarm water or starch-water containing laudanum (ʒ ½)." (*Pocket Cyclopedia.*)

4. *Diabetic coma:* "The coma is usually fatal, and little can be done to delay the result. Inhalation of oxygen has been thought of benefit, and large doses of sodium bicarbonate and other alkalies have rescued from coma by reducing the acid intoxication. Normal salt solution used by rectal irrigation, subcutaneous or intravenous injection, has proved beneficial, to the extent of delaying coma or temporarily restoring consciousness in a few instances. Sodium bicarbonate in strong solution by intravenous injection, hypodermoclysis or rectal irrigation, is worthy of more extended trial. A quart (liter) of a 1 to 2 per cent. solution may be injected slowly into a vein every six hours in a bad attack; when administered by other methods the bicarbonate should be given in increasing doses up to 100 grams (3.5 ounces) a day, or until the reaction of the urine has become alkaline." (French's *Practice of Medicine.*)

5. *General anasarca accompanying cardiac insufficiency:* "The heart balance is best restored by the administration of some preparation of digitalis such as the infusion, ʒi to ʒiv, the tincture, ♏v to xxx, or the powder, gr. i three times daily. The possibility of nausea following the use of digitalis, especially the tincture, should be remembered. The dose of the drug is best guided by the results it produces. When for any reason digitalis is not applicable, strophanthus, strychnine, caffeine, and sparteine may be given. The venous engorgement and dropsy may be relieved by the administration of small doses of mercury and saline purgatives. The combination of calomel, digitalis, and squill, of each gr. i is especially valuable in this connection. When the dropsy is extreme, tapping or multiple incisions may be required. The extreme and distressing shortness of breath is best relieved by morphine, gr. ¼, and inhalations of oxygen." (Hughes' *Practice of Medicine.*)

6. *Spasmodic croup:* "Place the child in a warm, moist room. In mild cases an emetic dose of the wine of ipecac, half a dram every half hour until vomiting ensues, may be sufficient to give relief. A warm mustard bath aids the result. An enema should be ordered if the bowels have not recently moved. In severer cases a croup tent should be made over the crib and a croup kettle started in which has been placed a dram or two of the compound tincture of benzoin. Emesis should be brought about as rapidly as possible. Antipyrin gr. 3 for a three-year-old child acts as an antispasmodic. If there is cyanosis and serious obstruction intubation may be necessary; however, a smear and culture should be made in these cases to exclude diphtheria. The succeeding day should be spent quietly, a light diet given and the bowels kept open.

If there are adenoids present, these should be removed at a later date." (Chapin and Pisek's *Diseases of Children.*)

7. *Renal colic:* "Pain is relieved by the subcutaneous injection of morphine (gr. ⅛-¼) or of morphine (gr. ⅛) and atropine (gr. 1/60); by inhalation of amyl nitrite, chloroform or ether; or by drop doses of amyl nitrite, etc. Calomel should be administered in gr. ½ dose every half-hour until 4 or 5 grains are taken, followed by citrate of magnesia. Opium may be given with the calomel, or combined with belladonna in suppository. A large warm-water enema should be administered. The warm bath, mustard or turpentine stupes, hot fomentations sprinkled with laudanum, large, light linseed poultices, and friction are grateful." (Pocket *Cyclopedia.*)

8. *Cholera morbus:* Hot turpentine stupes to the abdomen or morphine (gr. ¼) hypodermically may be given for the pain. Salines should be administered to remove the offending particles. Should the salts move the bowels too frequently, give paregoric (5 1) and compound tincture of lavender (5 1) every 3 hours until 2 or 3 doses have been taken. Should the pain and diarrhea still continue, give the "Sun Cholera Mixture" in teaspoonful doses after each evacuation of the bowels.

9. *Chlorosis:* The bowels must be kept open with a saline laxative; fresh air, sunshine, suitable food and exercise are necessary; iron must be administered in some form, such as the tincture of the chloride, ♏x-xv after meals, or 3 or 4 grains of Blaud's mass three times a day.

10. *Scarlet fever:* The treatment is that of infectious fevers in general, and in addition: "1. *Serum treatment.*—Serum from convalescents, injected in doses up to 20 c.c., has sometimes proved successful. Good results have also been obtained with polyvalent antistreptococcic sera (*i.e.* sera prepared from several different strains of cocci). 2. The danger of spreading the disease is greatest during the desquamative period. Isolation must therefore be kept up for at least six weeks from the onset, or till all desquamation and discharges (nasal, aural, etc.) have ceased. 3. A minimum amount of nitrogenous food, to avoid irritation of the kidneys. This caution does not affect milk, which may be freely used. 4. Daily toilet, tepid sponging, or tepid baths. 5. Inunction of oily antiseptic preparations into the skin, to prevent dissemination of the desquamating scales. 6. Examine the urine daily for signs of nephritis. 7. The condition of the ears must be carefully watched." (Wheeler and Jack's *Handbook of Treatment.*)

PRACTICE OF MEDICINE.

1. *Landry's paralysis* (acute ascending paralysis) "is an acute disease characterized by palsy, beginning in the feet and ascending to other muscles of the body, finally involving the medulla. Pain and trophic disturbances are absent. The reflexes are diminished or absent, but the muscles do not waste, and the sphincters are not involved. The affection is rare and occurs most often in young male adults. The etiology and pathology are obscure. The onset is sudden and the course acute, terminating usually in death within a week, occasionally being prolonged three or four weeks. The treatment is unsatisfactory." (Hughes' *Practice of Medicine.*)

2. PULMONARY INFARCTION. *Etiology:* It is generally due to embolism or thrombosis of a branch of the pulmonary artery. *Symptoms:* Dyspnea, dilated pupils, livid face, pleuritic pain, hemoptysis, rapid and irregular pulse; embolism of the main artery causes sudden death. *Physical signs:* None characteristic; there may be dullness on percussion, breath sounds may be feeble or harsh, and there may be crepitant or crackling rales. *Possible terminations:* The circulation may be reestablished and the blood removed; gangrene; fibroid patch, or sloughing may result; death.

3. *Causes of cardiac hypertrophy:* Obstruction to the outflow of blood such as results from valvular disease of the heart, emphysema, Bright's disease, and arteriosclerosis; excessive functional activity, such as is produced by prolonged muscular exertion, exophthalmic goiter; excessive use of tea, coffee, and tobacco.

4. *Acute hemorrhagic pancreatitis* is a disease which generally attacks adult males; it is of sudden onset, and the patient suffers intense abdominal pain; vomiting, and epigastric tenderness are also present. Collapse follows, and the patient usually dies in a few days. Medical treatment is of no avail, and surgical treatment offers but slight hope. With regard to *diagnosis,* Anders and Boston state as follows: *Summary of Diagnosis.* In all cases the diagnosis is made with difficulty, the symptoms of hemorrhagic pancreatitis closely resembling those found in other pathological abdominal conditions. The age of the patient (after middle life), the history of previous dyspepsia or of diabetes, and a possible history of traumatism to the abdomen are of considerable importance. Most characteristic, however, is the sudden onset, the deep seated epigastric pain followed by nausea, vomiting, and circulatory collapse. Cammidge's reaction and the presence of fat in the feces are also to be considered.

Differential Diagnosis. Obstruction of the Bowel: When the obstruction occurs in an aged person, the distinction is made with difficulty. (*a*) Acute intestinal obstruction is more common in the young than in the aged, and the pain is less definitely localized than that of pancreatitis. (*b*) Abdominal distention is more marked in intestinal obstruction. (*c*) Fecal vomiting, a characteristic feature of obstruction, is absent in acute hemorrhagic pancreatitis. (*d*) The temperature is normal at the onset, but soon becomes subnormal in obstruction; (*e*) indicanuria is a somewhat constant symptom in obstruction.

Acute Gastroduodenal Catarrh: (1) In this condition there is a distinct rise in the temperature at the onset. (2) The symptoms are not sudden and the pain is of a different character, not deep seated or localized, as is the case in acute inflammation of the pancreas. Cammidge's reaction is negative, as is also an examination for fat in the feces. There is not the same degree of prostration and as marked a tendency toward circulatory collapse as are characteristic of acute pancreatitis.

5. In *pernicious anemia* there is a great diminution in the number of red corpuscles; they may fall to half a million per cubic millimeter; the hemoglobin is also diminished, but not in proportion to the corpuscles, so that the color index is above unity. Poikilocytes, microcytes, macrocytes, normoblasts and megaloblasts may be found. There is no leucocytosis.

In *myeloid leucemia,* there is an enormous leucocytosis, with an increase of eosinophiles; mast cells are present, and myelocytes are present in large numbers. There is some diminution of hemoglobin and of number of red corpuscles.

In *lymphatic leucemia* there is an enormous leucocytosis involving the lymphocytes only, which may be even 90 per cent. of the total leucocytes; there are no myelocytes, but there may be a few nucleated red corpuscles.

6. *Diphtheria* is an acute, infectious, and contagious disease caused by the *Bacillus diphtheriæ,* and characterized by the formation of a fibrinous exudate on a mucous membrane and by constitutional manifestations of toxemia. The *most frequent sequelæ* are: Paralysis (of palate, muscles of eye, face, and larynx); also cardiac and vasomotor paralysis; nephritis may also follow the disease.

7. The symptoms might be caused by cardiac weakness or disease or by renal disease. In the former case the edema begins at the feet and extends upward, and physical examination will show enlargement of the heart or murmurs. In the case of renal disease the edema begins in the face and extends downward, and an examination of the urine may throw light on the exact nature of the disorder.

8. *Dilatation of the stomach* is recognized by the characteristic vomiting occurring at intervals of several days, when large quantities of stagnant fluid and scraps of partially digested or undigested food are ejected. The vomitus is acid, and contains the *Sarcina ventriculi;* on standing, it separates into layers. The outline of the stomach (when distended) may be observed, and splashing sounds may be obtained.

The condition is due to stenosis of the pylorus, pressure on the pylorus from tumors or gallstones, kinking of the pylorus, atony.

If a tumor is found at the pylorus, atony may be ruled out. Cancer will give cachexia, and the presence of the tumor may be detected by palpation; gallstones will give colic and jaundice.

9. The abdominal tumor may be due to floating kidney, hydronephrosis, pyonephrosis, cancer or other tumor of the kidney.

Floating kidney is accompanied by severe attacks of pain, chills, Dietl's crises.

Hydronephrosis may give few symptoms beyond dragging pain, and pressure symptoms.

Pyronephrosis shows pus in the urine, and fever.

Tumor of the kidney may give pain, emaciation, hematuria.

10. *Fluid in the pleural cavity:* There is imperfect expansion on the affected side, the intercostal spaces may bulge, the apex beat may be displaced; percussion shows dulness or flatness, which is movable (according to the position assumed by the patient). The best sign is the presence of the fluid on inserting an aspirating needle.

OBSTETRICS.

1. *The fetal envelopes from without inward:* Decidua, chorion, and amnion.

2. The *vitellus* is the yolk or germinal part of the ovum together with the substance intended for the nutrition of the embryo. The *allantois* is a fetal membrane developing from the lower part of the alimentary canal very early in fetal life; it enters into the formation of the urinary bladder and also of the umbilical cord and placenta.

The *amnion* is the innermost of the fetal membranes; it surrounds the fetus and is continuous with it at the umbilicus; it secretes the liquor amnii, and forms the sheath of the umbilical cord.

The *liquor amnii* consists chiefly of water, but contains small amounts of albumin, epithelial cells, urea, phosphates, chlorides, etc. Its specific gravity is about 1.001 to 1.008. Its source is unknown; it is probably derived from the amnion, by transudation from the maternal vessels of the placenta.

3. *Development of the placenta:* "The placenta, as a separate organ, dates from the third month of pregnancy. At this time the chorion villi atrophy over the whole periphery of the ovum, except at the point where it comes in direct relation with the true mucous membrane of the uterus—the decidua serotina. Here the villi take on an extraordinary growth, forming buds of epithelial cells (syncytium) upon their surface, which rapidly take on the shape of new villi, thus sending out branches in every direction, into each of which a loop of blood vessels is projected. Separating the villi from one another, and dipping down to the base of the chorion between the parent stems of the villous projections, are processes of the decidua, carrying capillary loops of maternal blood vessels. Very early in the history of the ovum the arterioles of this system open directly into the intervillous spaces of the placenta, so that the placental villi are bathed directly in maternal blood. . . . It is now well established, that the placental villi imbed themselves in the soft interglandular substance of the decidua serotina, often projecting into the mouth of the small veins, and that the connective tissue cells multiply and hypertrophy around them (decidual cells). The epithelium of the uterine mucous membrane disappears, except in the glands. The chorion villi are at first covered with two distinct layers of cells; an inner layer composed of single large nucleated cells arranged side by side with distinct cell walls (Langhans' layer), and an outer layer or band of protoplasm in which are imbedded nuclei at irregular intervals (the syncytium). Both of these layers are derived from the chorion and not from the uterine epithelium or the endothelium of the uterine blood vessels. Early in embryonal life (the third month) the Langhans layer disappears and the syncytium remains as the sole epithelial covering of the villi. In the youngest ova yet observed the trophoblast contains lacunæ to which blood is conveyed from the maternal circulation by little curling arteries that wind their way up through the decidual cells to empty directly into the placental sinuses. These arteries are provided with only a delicate endothelial wall. . . . The syncytial cells of the latter have the power to penetrate the endothelium of the decidual arterioles and thus open a direct communication between the placental villi and the maternal blood. By this anatomical arrangement the fetal and maternal blood is, of course, kept separate. The former circulates within the capillary system of the villi; the latter bathes the exterior of the villi." (Hirst's *Obstetrics.*)

4. As pregnancy progresses the *uterus* becomes larger in every way, is more vascular, first sinks and then rises; the cervix becomes more vascular, softer and edematous; later the cervix becomes shorter; *vagina* and *vulva* become hypertrophied, more vascular, discolored and secrete more freely; the vulva becomes more patulous. The *blood* is increased in quantity, chiefly the fluid part and the fibrin making elements; the red cells and hemoglobin are relatively decreased, though absolutely increased; the white cells are increased. The changes in the *breasts* are described in the next answer. The *heart* is more rapid, and the rhythm and rate more easily disturbed. The *lungs* are compressed, their capacity decreased, and the breathing becomes more thoracic. There is increased secretion of saliva, indigestion, vomiting in the morning, and tendency to constipation. The *urine* varies in quantity, and may contain albumin; micturition is more frequent. The woman's *weight* increases; the *skin* becomes pigmented, chiefly on breasts, abdomen and genitals; the *teeth* may decay; the nervous system becomes more irritable and unstable, and neuralgia is apt to occur. There is apt to be change in the woman's disposition.

5. "The mammary glands are compound racemose glands, and consist of gland-tissue which is made up of lobes, and these again of lobules. The lobes are connected by fibrous tissue, and between them is fat. Each lobule is composed of sacculated alveoli and a duct, the lobular duct. The lobular ducts discharge into larger ducts, which in turn discharge into a lactiferous duct, which may be regarded as the excretory duct of a lobe. Of these ducts, there are from fifteen to twenty; and they open at the surface of the nipple. Under the areola the tubuli lactiferi are dilated, forming ampullæ, in which, during the period of lactation, the milk accumulates in the intervals of nursing. The walls of the alveoli consist of a basement membrane, covered, during the period when the gland is not active, by a single layer of flat or cuboidal cells with one nucleus and presenting a granular appearance." (Raymond's *Physiology.*)

During pregnancy the mammary glands increase in size, fulness and firmness; Montgomery's follicles become pronounced; the primary areola becomes larger and darker; the secondary areola appears; the nipple becomes larger, more prominent and more erectile; and colostrum may be expressed.

If the infant is stillborn, or nursing is inadvisable, the mammary glands should be anointed with a solution of atropine sulphate in glycerin (about 1:500); a snug binder should then be applied; the patient should be restricted to as little fluid as possible, and should receive salines to produce watery stools.

6. *Glycosuria in pregnancy:* "Sugar may be found in the urine of pregnant women in from 5 to 25 per cent. of cases after the fifth month or so. It is important to realize that there are other conditions besides diabetes which may account for this. The following four conditions may be distinguished: (1) Diabetes mellitus; (2) Lactosuria; (3) Alimentary; (4) "Idiopathic" Pregnancy Glycosuria. *True Diabetes* must be diagnosed where the condition existed prior to pregnancy, or where the glycosuria is accompanied by symptoms such as polyuria, emaciation, etc. It is a very grave complication of pregnancy, leading in many cases to premature labor, and in about a quarter of the cases to the death of the mother from diabetic coma either during pregnancy or very soon after delivery. The fetus in many cases is born dead. *Lactosuria.* If the urine gives a reaction to Fehling's or some other simple test for sugar, steps should at once be taken to find out whether the sugar is glucose or lactose. This can be done by the polariscope or the fermentation test. In the majority of cases it is lactose, reabsorbed from the milk in the breasts. In the same way lactose is found in the urine of puerperal women who do not nurse. Lactosuria is of no significance. *Alimentary Glycosuria.* This is apparently more easily induced in pregnant than in non-pregnant women. A diminution in the carbohydrates in the diet will probably lead to its disappearance. *Idiopathic Pregnancy Glycosuria.* Under this head are included unexplained cases of glycosuria in pregnancy, unaccompanied by any symptoms, and unaffected by diet. The sugar is rarely present in any quantity, and disappears shortly after labor. It is probably due in some way, not yet understood, to the altered balance in the secretions of the ductless glands." (Johnstone's *Textbook of Midwifery.*)

7. "*Albuminuria* in small amounts, at irregular intervals, has been regarded as physiological on account of its frequent presence without apparent unfavorable symptoms. The anatomical basis for this has been supposed to be the so-called pregnancy kidney, which has been described as a congestion from the pressure of the altered circulation. The safer position is to assume that any amount of albumin is pathological, provided we have the assurance that it is not due to the admixture of discharges from the external genitals. Its clinical significance may be unimportant in some

cases. The amount is generally small, not even appearing in some of the severest types until late in the disease. This may be true even in the later months in the form that terminates in *eclampsia*, in which it may suddenly appear as the attack begins. In such cases daily and even hourly examinations may be necessary."—(Jewett's *Obstetrics.*)

Eclampsia is an acute morbid condition, occurring during pregnancy, labor, or the puerperal state, and is characterized by tonic and clonic convulsions, which affect first the voluntary and then the involuntary muscles; there is total loss of consciousness, which tends either to coma or to sleep, and the condition may terminate in recovery or death. About 75 per cent. of the cases occur in primiparæ. "*The treatment of the attack* consists of the administration of chloroform by inhalation, chloral hydrate (gr. 60) by enema, and the fluidextract of veratrum viride hypodermically (gtt. 15 followed by gtt. 5 repeated frequently enough to keep the pulse at about 60 beats a minute), to control the convulsions, and free purgation by croton oil (gtt. 2, or 3, in sweet oil or glycerin), free sweating by the hot pack, and sometimes depletion by venesection to eliminate the poison. The after treatment consists of free purgation by the salines, restriction of diet, and later the administration of tonics and stimulants. The obstetric treatment is usually noninterference."—(*Pocket Cyclopedia.*) Sometimes *accouchement forcé* is indicated.

8. *Cesarean section.*—"*Indications:* The cases in which it is performed are: (1) Extreme deformity of the pelvis, in which delivery by forceps and version is excluded, and in which craniotomy is either impossible or would be more dangerous to the mother than cutting into the abdomen and uterus; and in which there is not room for a successful symphyseotomy. Such cases present the '*positive*' indication for cesarean section; there is nothing else to be done. Flat pelves having a conjugata vera of 2¼ inches or less, and justo-minor pelves with a conjugata vera of 2½ inches or less, present this positive indication; (2) cases of more moderate pelvic contraction in which craniotomy is possible, but cesarean section is agreed upon to *save the life of the child;* (3) mechanical obstruction in the pelvis from fibroid, cancerous, bony, or other tumors which cannot be pushed up out of the way or be safely removed; (4) irreducible impaction of a *living* child in transverse presentations; (5) in women dying near the end of pregnancy the child, if alive, is rapidly delivered by *post-mortem* cesarean section; (6) various other obstructions from inflammatory adhesions, atresia, constrictions, etc., of the vagina, and uterine displacements, may rarely require the operation; (7) recently the operation has been done in eclampsia cases, where more conservative methods of rapid delivery were impracticable; and (8) in placenta prævia, chiefly with a view to lessen the infant mortality attending the usual treatment of this complication."—(King's *Obstetrics.*)

Cesarean section.—"Fuidextract of ergot, ℥xx, is injected into the thigh muscles just as the anesthesia is begun. The operator assures himself that there is no loop of intestine between the uterus and abdominal wall, beneath the field of incision. Should a coil of intestine be found there, it is pushed above the fundus. An assistant holds the uterus in central position. The skin incision extends one-third above and two-thirds below the level of the umbilicus. It is best made through the right rectus muscle. The external layer of the rectus sheath is divided, the muscular bundles separated with handle of scalpel and the fingers, and the deep layer of the sheath and the peritoneum divided after lifting them with tissue forceps. Bleeding vessels are controlled by gauze sponge pressure or held by catch-forceps before opening the peritoneum. A short longitudinal median incision is made in the uterine wall beginning at the fundus, avoiding the membranes if still unbroken. This is extended downward with fingers, scissors, or scalpel to a total length of about six inches. The hand is thrust through the membranes and the child is extracted by the head or the feet, whichever is most accessible. In case of anterior implanation of the placenta, usually the hand may best be passed directly through it. The cord is clamped at two points with catch-forceps, cut between them, and the child is passed to an assistant. The uterus slips out of the abdomen as the child is extracted, and the intestines are kept back with hot sterilized towels placed over the upper part of the incision. The coverings help also to protect the peritoneum from soiling. The uterus is wrapped in hot moist cloths. As a rule, it is better not to wholly eventrate the uterus. The placenta, if not spontaneously separated, may be peeled off by grasping it with one hand like a sponge. If the cervix is not sufficiently open for drainage, a large rubber tube or gauze strip is passed down through it and withdrawn from below. Irrigating or mopping the uterine cavity is unnecessary. Asepsis is promoted by leaving it as nearly as possible untouched. The peritoneum is sponged dry with the least possible friction or handling. The uterine wound is closed with deep No. 2 chromated catgut sutures at intervals of about 1/3 inch. They are given a wide sweep laterally through the muscular wall, falling short of the decidua. The peritoneal coat of the uterus is closed with a No. 1 continuous plain catgut suture, forming a welt over the deep suture line. The hemorrhage is inconsiderable and usually ceases with the introduction of the first sutures—a hypodermic of ergotole should be given before beginning the operation, and one of ergotole and pituitrin on the delivery of the child. Retraction of the uterus is ensured by manipulating it, if necessary, through a hot towel, or by faradism. When there has been much blood lost, a quart or two of warm sterilized 0.9 per cent. salt solution may be left in the peritoneum. The parietal peritoneum is closed with a plain running No. 0 catgut suture. Interrupted silkworm-gut sutures are then passed at intervals of about ¾ inch: through all but the peritoneum, from within outward. The fascia is brought together with interrupted No. 2 plain catgut sutures, or with a continuous suture. The silkworm-gut sutures are now tied. The abdomen is cleansed, and the wound covered with a dressing of several thicknesses of dry sterile cheesecloth; over this is placed a thick compress of sterile absorbent cotton. The dressings are secured with strips of zinc oxide adhesive plaster, and held in place by a Scultetus binder."—(Polak's *Obstetrics.*)

9. Face presentation.—*Diagnosis:* Vaginal examination will show a high position of the presenting part, and also a mouth or nose, which should not be mistaken for a breech. In L. M. A. case the chin is directed anteriorly and to the left acetabulum; no fontanelles can be detected. Abdominal palpation may reveal the deep groove between the child's occiput and back. *Mechanism:* The successive steps are: "Extension—The head presents at the superior strait imperfectly extended, so that every case of face persentation may be said to begin as a brow presentation. There is also at first imperfect engagement of the presenting part, on account of the large diameters presented at the superior strait. Under the influence of the expulsive action of the uterus and the resistance of the pelvic walls, the brow, caught upon the pelvic brim, is held stationary, while the chin descends lower and lower by an extreme extension of the head. Molding, or an accommodation of the shape of the presenting part to the shape of pelvis, occurs to a moderate degree or not at all, because the face is a loose fit in the normal pelvis. The molding is confined to the back of the skull. Lateral inclination is a constant feature, so that one cheek is a little deeper in the pelvic canal than the other one. Descent of the presenting part follows the dilatation of the cervical canal, the descent of the chin being accomplished almost solely by the extension of the head, and not by a descent of the head as a whole. Anterior rotation of the chin occurs as soon as it encounters the resistance of the pelvic floor. Anterior rotation is followed by the engagement of the chin under the symphysis pubis. Then follows the delivery of the head by flexion and propulsion, the mouth, nose, eyes, and forehead sweeping over the perineum and appearing successively at the posterior commissure. Restitution and external rotation follow the escape of the head from the same causes that impose those movements upon the head in a vertex presentation. The delivery of the body takes place as in a vertex presentation."—(Hirst's *Obstetrics.*)

Management: If the chin is presenting anteriorly, expectant treatment may suffice; but care must be taken to observe that the chin does not rotate backward. Spontaneous version may occur, and the presentation become a vertex one. Failing this, or as a means of favoring this, the postural treatment, such as Walcher's position, has been recommended. If, in spite of this, engagement has not occurred, cephalic version is indicated, care being taken not to rupture the membranes. If this is not successful podalic version should be tried. If, after all these manipulations, the child is still alive and the head is engaged, sym-

physeotomy is indicated; if the child is dead, craniotomy should be performed.

10. "*In mentoposterior positions* endeavor to secure anterior rotation of the chin when it fails to take place spontaneously. The several methods of attempting this are: 1. Press the forehead backward and upward during a pain, so as to make extension more complete, and thus cause the chin to dip lower down and touch the anterior inclined plane upon which it may glide forward. 2. Put a finger in the mouth or on the outside of the lower jaw, and draw the chin forward during a pain. 3. Apply the straight forceps and twist the chin to the pubes. 4. Apply the vectis, or one blade of the forceps, under the most posterior cheek, and over the anterior inclined plane, thus, as it were, thickening the latter, so as to make it reach the malar bone and constitute a *point d'appui* which the chin can touch and so glide forward. Should these attempts to secure anterior rotation fail, an effort may be made with the hand, vectis, or fillet, to bring down the occiput and convert the face into a head presentation. In order to succeed in this maneuver the membranes should be unbroken, the os uteri dilated, the face not so deeply engaged that it cannot be lifted to or above the pelvic brim, and an anesthetic administered. Again, failing in this way to produce anterior rotation, the head, if it be not too deeply engaged in the pelvis, and have not passed through the os uteri, may be pushed back, and the child be delivered by podalic version. Should none of these methods be practicable and the head become impacted in the pelvis with the chin toward the sacrum, the only resort is craniotomy. Attempts have been made in these cases to deliver by forceps after lateral incision of the perineum, but they can only succeed when either the child is small or the pelvis over-large. Usually the child's life has been so far imperiled by delay and its consequences that craniotomy may be done without compunction. Possibly symphyseotomy may prove useful in these cases in future. In all cases of face presentation special care is necessary to avoid rupture of the perineum."—(King's *Manual of Obstetrics.*)

11. "*The obstetric forceps* is an instrument devised for grasping the fetal head in difficult labor and by traction aiding its exit. There are two varieties—namely, the simple, including the short and the long, and the axis-traction forceps. A *short* forceps is one in which the blades of the instrument are attached directly to the handles without the intervention of a shank; it possesses the cranial or cephalic curve only—that is, the outward bulging of the blades by which its accurate adaptation to the fetal head may be accomplished; this curve should be the arc of a circle, the radius of which is about 4½ inches. The *long* forceps is one in which a shank is placed between the handles and the blades for the purpose of adding length to the instrument. It has, in addition to the cephalic the pelvic curve, or upward turning of the blade, corresponding to the curve of the parturient canal. By an *axis-traction* forceps is meant a variety of long obstetric forceps in which, by an appliance or supplementary handle attached to the under surface of the blades, the traction-force is exerted in the line of the axis of the parturient canal, and, therefore, rendered more effective, while at the same time it is reduced to a minimum. Traction is effected entirely by the supplementary and not by the primary handles."—(Dorland's *Obstetrics.*)

Indications for the use of forceps are: "1. *Forces at fault:* Inertia uteri in the presence of conditions likely to jeopardize the interests of mother or child. (*a*) Impending exhaustion; (*b*) arrest of head, from feeble pains. 2. *Passages at fault:* Moderate narrowing 3¼ to 3¾ inches, true conjugate; moderate obstruction in the soft parts. 2. *Passenger at fault:* A. Dystocia due to (*a*) occipitoposterior, (*b*) mentoanterior face, (*c*) breech arrested in cavity. B. Evidence of fetal exhaustion (pulse above 160 or below 100 per minute).

Accidental complications: Hemorrhage; prolapsus funis; eclampsia. All acute or chronic diseases or complications in which immediate delivery is required in the interest of mother and child, or both." (From Jewett's *Practice of Obstetrics.*)

Manner of using forceps: "They should not be used when the os is undilated, when the head is not engaged, except in placenta prævia, when the membranes are unruptured, when the disproportion between the child's head and the parturient canal is too great, or in impossible positions and presentations. Before applying the instruments they should be sterilized, preferably by boiling; and the patient anesthetized and placed in the lithotomy position. Two fingers of the right hand are introduced into the vagina; the left blade of the forceps is then held almost perpendicularly by the left hand, with the tip of the blade opposite the vulva; the tip is introduced into the vagina, and passed along the floor toward the sacrum. The blade is rotated outward in its long axis in order to escape the promontory of the sacrum. The right blade is introduced in a similar manner. To facilitate locking, one of the blades must be rotated forward. If the head occupies the right oblique diameter, as in L. O. A. and R. O. P. positions, the right blade must be rotated; if it occupies the left oblique diameter, the left blade must be rotated. Traction is made in the direction of the pelvic axis until the perineum is well distended. The perineum is then protected by one hand, while the face is swept over it by an upward movement of the forceps. In posterior positions it is necessary to remove the instruments after the head is drawn down to the pelvic floor; after anterior rotation is secured they may be reapplied. If the occiput rotates into the hollow of the sacrum the hands should be depressed as the face is swept out under the symphysis pubis."—(*Pocket Cyclopedia.*)

12. The case is one of Sepsis.

(*To be continued.*)

Books Received.

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TRANSACTIONS OF THE TRI-STATE MEDICAL ASSOCIATION of the Carolinas and Virginia. Seventeenth Annual Session, held at Charleston, S. C., February 17 and 18, 1915; 436 pages. Published by Observer Printing House, Inc., Charlotte, N. C.

INDIVIDUALITY IN ORGANISM. By CHARLES MANNING CHILD. Published by The University of Chicago Press, Chicago, Ill.; 213 pages. Price, $1.25 net.

PHYSICIAN'S VISITING LIST. With Special Memoranda; twenty-five patients per week; interleaved; 1916. Published by P. Blakiston's Son & Company, Philadelphia. Price, $1.25.

TRANSACTIONS OF THE AMERICAN OTOLOGICAL SOCIETY. Forty-eighth Annual Meeting, Niagara Falls, Ontario, Canada. Volume XIII, Part III. Published by the Society. Mercury Publishing Company, printers, New Bedford, Mass. Illustrated, 643 pages.

PROGRESSIVE MEDICINE. Edited by HOBART ARMORY HARE, M.D., assisted by LEIGHTON F. APPLEMAN, M.D. December 1, 1915. Published by Lea & Febiger, New York and Philadelphia; 421 pages. Price, $6.00 per annum.

RADIUM IN THE LIGHT OF RECENT DISCOVERY. By PAUL BÖRNSEN. Published by the author, 301 Tennessee Avenue, N. E., Washington, D. C. Price, 25 cents.

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Original Articles.

THE RÔLE OF THE *X*-RAYS IN THE DIAGNOSIS OF URETERAL CALCULUS.*

BY WILLY MEYER, M.D.,

NEW YORK,

ATTENDING SURGEON TO THE GERMAN AND POST-GRADUATE HOSPITALS.

To discuss the rôle of the *x*-ray in the diagnosis of ureteral calculus before an audience like this may seem strange at first glance. We all know its great value and rejoice in the light it has thrown on a subject which up to twenty years ago could often be recognized with difficulty only. We all are happy and proud to know that almost every hospital of standing in our States has a skilled and thoroughly trained radiographist on its staff, a man equal to the tasks before him, capable and reliable in the interpretation of the usually so interesting negatives.

Clinicians, therefore, have been quick to give radiography its proper place in the series of examinations necessary to enable them to arrive at a distinct and refined diagnosis; for if anywhere, then in the chapter of ureteral (and renal) calculus, is it necessary to "refine" the diagnosis as much as possible, before we have a right to resort to surgical interference. Only thus shall we be able to do full justice to our patients and avoid grave mistakes and sore disappointments.

Many surgeons have, therefore, gradually come to

Fig. 1.—Case I. Stone in left ureter (high).

advise the taking of a radiograph as *the first* step in the series of special examinations required, following the usual preliminaries of clinical and laboratory tests, in all cases with symptoms pointing to stone in the ureter (or kidney). I say advisedly, "or kidney," because the subjective symptoms of ureteral and renal stone are usually almost identical.

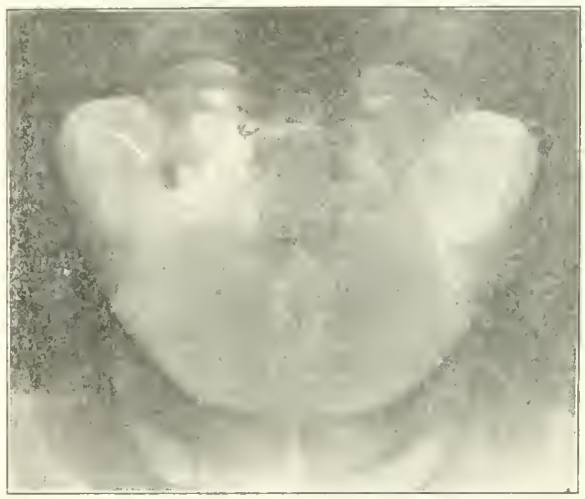

Fig. 2.—Case I. Recurrent stone in left ureter.

That this radiograph should be a stereoscopic one whenever conditions permit, cannot be too strongly emphasized.

Of course, the reverse arrangement of sequence, *i.e.* the *x*-ray following the special examinations, also has its advocates. However, I for my part, believe it wiser in this class of cases to have the clinician corroborate the findings of the *x*-rays than to have the *x*-rays corroborate the findings of the clinician. Generally speaking I believe that the only correct way, in every case, be it fracture or dislocation, cranial, thoracic, abdominal, or urinary disease, still is, to make *first* a clinical examination and diagnosis, same as we did twenty-five years ago, when we were not in possession of the wonderful aids furnished to-day by the laboratory, direct visual examination and radiography. I have long since come to the conclusion that also at the present time it is best in the given case to have the modern methods of more refined investigations bring out their respective proofs in corroboration or refutation of the clinical diagnosis previously reached. But in the chapter of suspected ureteral or renal calculus—and here *only* for the sake of greater convenience and comfort to the patient—I am willing to reverse matters with regard to the *x*-rays. I think we can thereby often save the patient the repetition of cystoscopy and ureteral catheterization.

To rely on the result of the *x*-ray examination alone is certainly wrong, and, I am sure, there are few surgeons to-day who would operate for ureteral (or renal) calculus, simply on basis of the history of the case, the result of the urinary analysis (blood

*Read before the Section on Genito-Urinary Surgery of the New York Academy of Medicine, October 20, 1915.

or red blood corpuscles in particular, right after a renal colic) and a careful study of the *x*-ray plates. Most surgeons would hesitate to do this, and rightly so, for we know that radiography has its limitations and fallacies, same as every other branch of

Fig. 3.—Case II. Two stones in right ureter.

medical science. We know, too, how much depends on the experience, ability and knowledge of the *x*-ray specialist in obtaining the correct interpretation of the shadows thrown on the plate.

Of course, there may be cases in which the indication for immediate operation is dictated by the urgency of the clinical symptoms in which the taking of a radiograph with prompt development of the plate is all that can be done for the patient. However, they are the exception.

Of limitations I know only one, namely, the inability of the rays, up to the present time at least, to demonstrate a pure uric acid stone, or one made up of phosphatic salts only. But these concretions are rare. Most ureteral calculi are composed of several salts and mixed with calcium, so that they throw a shadow.

As regards the fallacies to which a number of causes may lead, no one recognizes and appreciates them more readily and willingly than the radiographist himself. In general we rarely meet a class of colleagues who are, as a rule, more careful and reticent in rendering a definite conclusion on basis of their examinations. The few who boast that they know it all, who are ever ready for an immediate "definite" diagnosis on basis of their interpretation of the radiograph, without even having examined the patient or studied the laboratory—and other reports, these men will come to grief sooner or later and be forced to step down from the high horse they are riding.

Braasch enumerates these principal causes for the occurrence of fallacies: (1) Insufficient preparation of the patient, poor condition of tube or plate, and bad development of the plate; (2) the shadow of the pelvic bones obscures that of the overlying stone; (3) a very small stone, if arrested, may cause stricture and periodic urinary obstruction, and its shadow is overlooked.

To show the necessity of corroborating the diagnosis (either way) by *all* the means at our disposal before operating, in cases of impacted ureteral (or renal) calculus, and to briefly mention the efforts that have been made and the methods that have been devised to gradually improve the *x*-ray diagnosis in this chapter of surgery, is the object of these remarks. They will show at the same time how much we *owe* to the *x*-ray in demonstrating a

Fig. 4.—Case II. Two stones in right ureter.

suspected trouble clearly and graphically on the plate.

I am, of course, well aware that a great deal has been written on this subject. I did not have the time to study the voluminous literature. I will only mention the excellent articles that have just come out within the last few days, namely, "Errors in Diagnosis of Urinary and Ureteral Calculus," by Hugh Cabot of Boston, in *Surgery, Gynecology and Obstetrics*, October issue, and "Stones in the Ureter," by W. F. Braasch and A. R. Moore, in the *Journal of the American Medical Association*, Oct. 9, 1915. My remarks, therefore, cover only personal impressions, and while they may not contain

Fig. 5.—Case II. Both kidneys after nephrotomy. No stones over left twelfth rib visible.

anything particularly new, they may perhaps furnish a number of points worthy of discussion.

In order to bring out a few of the points I desire to make, permit me to give you, as briefly as possible, the history of three cases, selected from a series

of twenty or more of ureteral calculus that have come under my care within the last thirteen years. I say "or more," because I am not certain that every ward case has been included in the above number. In almost every instance the *x*-rays had shown the

Fig. 6.—Case II. Stone in left ureter, found March 5, 1914.

presence of the stone. In the majority ureteral catheterization with a wax-tipped stilette, either before or after the radiograph, made sure of the presence of the concretion within the ureteral canal. In some an additional radiograph was taken, with the *x*-ray stilette's tip being in contact with the stone. The cystoscopic and ureteral work was usually carried out by myself. Originally Kelly's method of catheterization was used, in order to obtain the scratch on the wax, in the female, at least. Later the ureter cystoscope of the Nitze type was employed in both sexes, with Burton Harris's clever way of introducing the wax-tipped catheter.* All the cases were operated upon by me personally, and all recovered from the operation. There has been no mortality.

I trust that I may mention at this juncture that I prefer the oblique transmuscular hockey-stick in-

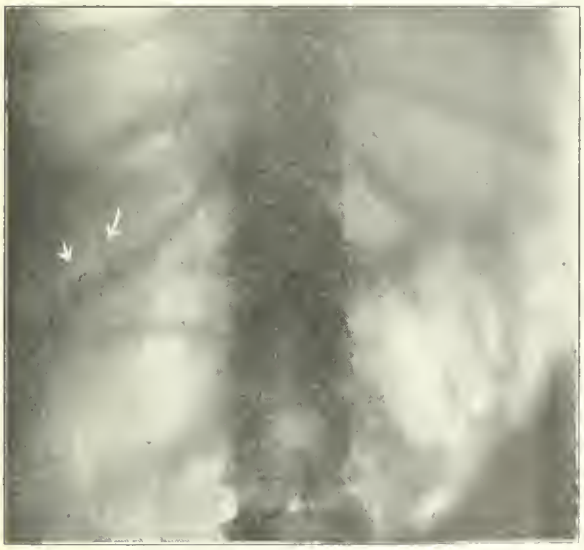

Fig. 7.—Case II. Two stones in left kidney

cision for uretero-lithotomy; that I always open the ureter right over the stone, doubly ligating and dividing, if necessary, in the female the uterine artery, which crosses the ureter transversely low down in the pelvis, and that I close the wound by interrupted chromicized gut sutures, trying not to include the mucosa. Layer suture of the abdominal wound with the insertion of a short cigarette drain, the lower end of which runs nearly, but not quite, down to the sutured ureteral cut, completes the operation. During the first twenty-four to thirty-six hours after the operation Sym's posture is maintained.

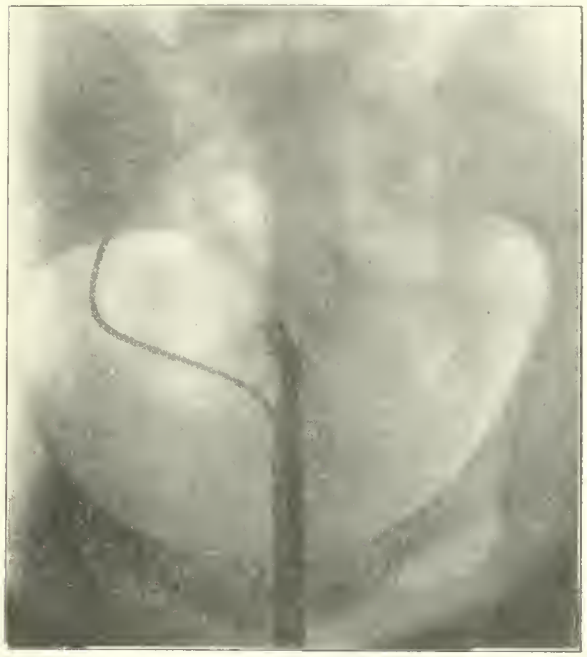

Fig. 8.—Case II. Wax-tipped *x*-ray stilette verifies presence of stone.

Case I.—Man, 30 years of age; stone in pelvic portion of left ureter, located by the *x*-rays and ureteral catheterization. No shadow in kidneys. Operation at German Hospital in June, 1910. Stone removed. Rapid convalescence. Three years later onset of identical symptoms on same side, with hematuria. Recurrent stone trouble suspected. Immediate roentgenogram shows an irregular concretion in the upper portion of the left ureter (Fig. 1); nothing in the pelvis. Prompt operation urged, but advice not heeded. Four weeks later the radiograph locates the calculus near the bladder, where it had been arrested in its descent (Fig. 2). Cystoscopy, with indigo-carmine injection, establishes the fact that the canal is only partially blocked. Now trial of non-operative methods proposed. Glycerin injections into the ureter at three different times fail to dislodge the stone. Then dilatation of the ureter up to the obstruction and application of the d'Arsonval current with Buerger's operating cystoscope at two sittings. Spontaneous passage of the concrement four months later. So far, complete cure.

To what extent the direct intraureteral treatment was responsible for the happy termination in this case I do not venture to say.

Comment.—This case has been reported in order to emphasize the invaluable assistance of the *x*-rays in promptly establishing the diagnosis: descent of a second renal calculus, the kidney having been found free from further concretions at the time of the first attack—on the whole a rather rare occurrence.

*The diagnosis of ureteral calculus by means of the wax-tipped whalebone filiform bougie used with the Nitze cystoscope. Surg. Gyn. & Obst., Vol. 15, 1912, p. 727.

The case represents an exception, clinically, because I refrained from the usual routine. But it would have been folly here to insist on further corroboration of the presence of the stone. In fact, I urged *immediate* operation, since a further quick descent

Fig. 9.—Case II. Shadows over twelfth rib: *x*-ray taken on day before operation.

of the stone was to be expected, most likely with another arrest in the region of the former operative field. From a surgical point of view, a transperitoneal operation would then have been preferable to the usual retroperitoneal advance, with its greater risk for the patient.

Case II.—Female, 45 years of age, herself a physician, wife of a colleague. First attack of severe renal colic on September 23, 1913; lighter attacks in the course of the following days. A radiograph taken on the seventh day of the disease shows the presence of two stones, one the size of a cherry pit, in the middle of the ureter (Fig. 3), the other, somewhat smaller, about two inches above the bladder. Ten days later a second *x*-ray picture was taken by the same roentgenologist at his office with the same apparatus. Report: "No stone present in the ureter; has evidently been passed." Pains in the renal and ureteral region, however, continue, and on October 26, somewhat more than a month after the onset of the trouble, fever sets in. On the following day rise of temperature to 106°. Then first seen by me. All symptoms could, of course, have been nicely explained on basis of a ureteral calculus. However, in view of the negative second radiograph—taken by a reliable and thoroughly trained man—the diagnosis was difficult. Temporizing under closest observation and subsequent cystoscopy with ureteral catheterization were advised, inasmuch as improvement of the clinical symptoms in such cases with the ureter not blocked by a concretion is not infrequently observed. Brief improvement *did* follow. However, on October 29, or forty-eight hours after I had first seen the patient, chills set in and continued to recur at short intervals. I did not learn of this condition until two days later, and then advised immediate transfer of the patient to the German Hospital. There the ureter catheter obtained clear urine from the left kidney, while on the right side the catheter was arrested 5 cm. above the bladder (Dr. Rehling). There was some tenderness over the right kidney posteriorly. Otherwise palpation negative. High leucocytosis. Of course, operation was urgently indicated, despite the negative *x*-ray findings. It certainly did not seem wise to await the result of

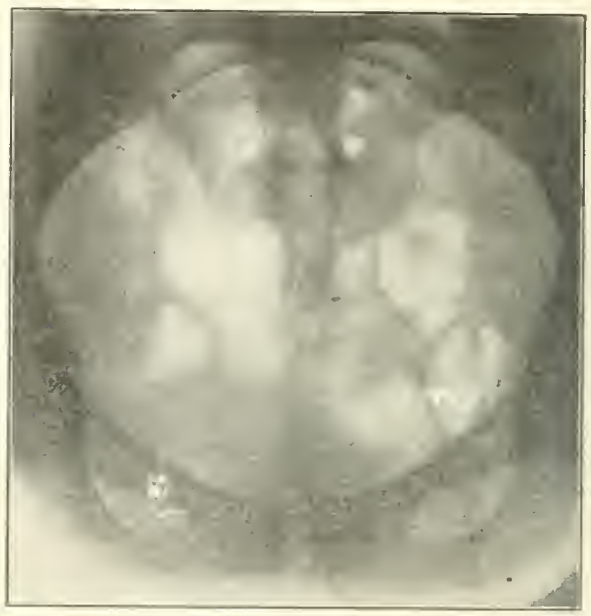

Fig. 10.—Case III. Stone in right ureter.

another radiograph. So nephrotomy was done by means of the longitudinal incision, with resection of the twelfth rib. Kidney large, brought forward: no edema of perirenal fat; no change of parenchyma macroscopically, but pelvis edematous, distended. Turbid urine obtained by aspiration. Bacteriological examination later on shows the presence of the *Bacillus coli communis*. The pelvis is incised and about two ounces of purulent urine evacuated. Sounds introduced into ureter downward give exit to pure pus, and find an obstruction and distinct grating 7 to 8 inches (18 cm.) downward. Drainage

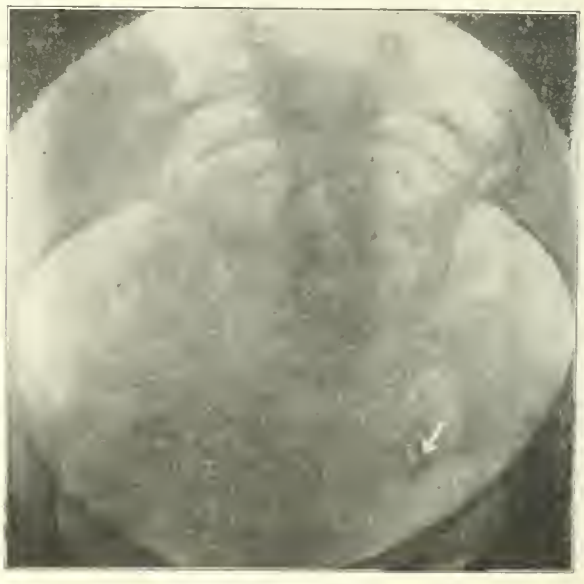

Fig. 11.—Case III. Stereo report: presence of stone in right ureter doubtful.

of ureter and pelvis; tamponade of wound, which is left wide open, not sutured. Quick improvement of all symptoms and gradual recovery, while kidney drains copiously through posterior wound. On November 21, or three weeks after the operation,

the ureter catheter again finds the obstruction 5 cm. above the right ureteral mouth; evidently a stone. Analysis of the urine collected from the left kidney now shows a pyelonephritis also on the left side, and the *x*-rays demonstrate again the two shadows in

Fig. 12.—Case III. Wax-tipped catheter proves no stone in ureter.

the region of the right ureter, one lower down and one further up, evidently calculi (Fig. 4), both kidneys being free of stones, Fig. 5. November 24, three and one-half weeks after the first operation, right ureterolithotomy. Both stones found and removed; ureter sutured in both places. Careful restoration of abdominal wall by layer sutures. Primary union. Two days later the posterior wound

Fig. 13.—Two stones in left ureter. (?)

is perfectly dry. The nephrotomy wound heals solidly within a short time. Patient in fine shape at time of discharge from hospital, December 16, 1913, three weeks after the second operation. Two and a half months later, on February 28, 1914, sudden acute abdominal pain with vomiting; repeated chills and fever up to 106°. On the following day tenderness localized in left lumbar region; urine turbid. Then seen by me. Immediate readmission to the hospital. *X*-rays show shadow in region of left

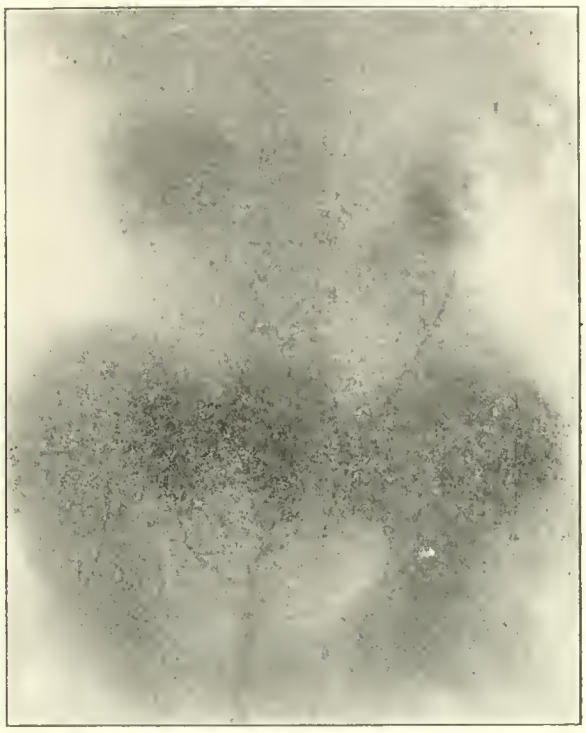

Fig. 14.—*X*-ray stilette in place.

ureter (Fig. 6) and two in left kidney (Fig. 7). Catheterization with wax-tipped stilette corroborates details of *x*-ray findings (Fig. 8): resistance 4½ inches (12 cm.) above bladder. Immediate ureterotomy on left side, following the principle I have laid down for myself, that it is best for the patient to first re-establish proper drainage of the kidney by the removal of an ureteral obstruction and then attack the kidney at a second sitting, about two or three weeks later. The stone is encountered somewhat below a line uniting the anterior superior spines. Ureter incised and stone lifted out. Careful sounding in both directions proves canal free. Suture of ureter; cigarette drain; careful layer suture. Prompt disappearance of all threatening symptoms. Primary healing of wound; rapid recuperation.

In order to corroborate the *x*-ray findings with reference to the left kidney, another picture is taken soon after and again on the day preceding the one set for nephrotomy. Both show the two shadows as in Fig. 7. Through a misunderstanding the latter covers the region of the left upper ureter, not that of the kidney (Fig. 9). Still, the twelfth rib is just visible at the upper corner of the picture, and over it are the two shadows interpreted as renal calculi. With the husband's consent I abstained from pyelography, but went ahead with the exploration on basis of the former findings. For I considered it imperative, after all the exciting experience we had had with this ever-cheerful and non-complaining patient, to guard against another complication, namely, passage of one of the suspected renal calculi into the ureter which had just been operated upon. The kidney is found large, but normal; a well-developed pelvis is not present. The overhanging parenchyma appears directly attached to the upper

portion of the ureter, which latter starts immediately from the organ. A transversely running artery of some size, which crosses the renal vessels, is doubly ligated and divided. While putting the kidney on the stretch in the attempt to unfold the upper end of the ureter as much as possible for more definite examination, the latter tears lengthwise, close to the kidney substance. This wound is lengthened and used for careful sounding. A small amount of gravel is evacuated, but no stone or calcareous deposit is found and no renal pelvis. The probe runs toward the upper pole of the kidney, always in the same direction, while its tip, bent to a curve, fails to proceed in various directions, as we are used to observe when probing the calices. Downward the ureter is patent and permeable for flexible bougies and a voluminous current of sterile water. Needling has a negative result. Further search for the suspected stones, as shown by the shadows in the *x*-ray picture, would have necessitated a section cut of the kidney, an addition which I did not urge, and the husband refused. Partial closure of the ureteral tear and layer suture of wound, with drainage. The wound healed kindly while the urine cleared up. The patient is discharged on April 14, three weeks after the fourth and last operation.

To-day, eighteen months later, the patient is in perfect health.

Comment.—What does this case teach? That the surgeon must not rely absolutely on the *x*-ray findings, even though the work have been done over again by the same roentgenologist and with the same machine. As stated above, the diagnosis in this case would have been perfectly clear and the clinical symptoms fully explained, had not the radiographist, in whose ability and knowledge of details I place implicit confidence, reported "ureteral stones evidently passed." Under such circumstances temporizing was indicated in order to await a more favorable time for ureteral catheterization. However, as symptoms grew worse, drainage of the respective kidney pelvis became imperative, and nephrotomy was done. Why the rays failed to show the stone at the second examination I do not know. The occurrence simply shows one of the uncertainties of *x*-ray work in ureteral disease. Perhaps a third exposure by the same colleague would have again shown the stones quite clearly.

Later on the *x*-rays in the hands of another radiographist, whose excellent work and good judgment I have learned to value most highly in the course of many years, again played us a trick when we tried to find the indication for an attack on the right kidney. The patient had wonderfully recuperated when this last operation was undertaken. Only the conviction I had that a stone *would be found* in the kidney, and the importance of avoiding the possibility of an entrance of these stones into the ureter prompted me to do operation No. 4. Why those shadows were not shown on the first photograph (Fig. 5) taken by this specialist, and why they were later on present on the plate (Figs. 7 and 9), and no cause found, I again do not know. The bits of gravel encountered certainly could not have been responsible for them. The section cut of the organ might have demonstrated it. No *x*-ray has been taken since the patient was last discharged from the hospital.

I would like to mention still the case of a third patient, because it proves so beautifully what we have learned in the course of time about localizing shadows that at first glance seem to be in the ureter.

Case III.—While still busy putting the finishing touches to this paper, the following case came under my observation: Female, 45 years old, married twenty-five years, mother of five children. Pain and dragging sensations in right side of abdomen and urinary bladder for quite some time. Consulted many physicians. Of late ureteral calculus was suspected. Radiograph taken, not stereoscopically. An expert's interpretation reads: "Stone in right ureter near vesical outlet" (Fig. 10). Five weeks later above interpretation confirmed by another radiograph taken by the same specialist; picture again not stereoscopic. Then seen by me: Right movable kidney (pronounced), tenderness over appendix region. Patient demands immediate operation for the ureteral calculus. Sent to hospital. Urinary analysis negative, no red blood corpuscles. *X*-ray taken, by chance again not sterescopic. Report: "Stone in lower end of right ureter; a small shadow on opposite side, most likely phlebolith."

Now, I had two concurring opinions on the result of *x*-ray examinations by two experts. However, inasmuch as I was called upon to operate, I felt the necessity of a corroboration of the radiographists' conclusions. It certainly must be exceedingly disappointing to the surgeon to expose and open the ureter and then find the canal patent from the kidney down to the bladder, an experience which, fortunately, I had not had to date, and which I wished to guard against. I therefore did ureteral catheterization with the wax-tipped stilette. Two different sizes could be pushed up 20 cm. and more without finding an obstruction, and without bringing out the typical scratch on the wax. An immediate further *x*-ray exposure could not be done, as it was late in the afternoon, and the laboratory was closed. In order to locate the shadow, perhaps now higher up, a stereoscopic picture was taken soon after, which made the first radiographic diagnosis doubtful (Fig. 11). Report: "The plane of the shadows seems rather far forward for the normal location of the ureter. It is possible, of course, that we may be dealing with a tortuous ureter on the right side, which occasions this position." Another stereo with the *x*-ray catheter in the ureter proves definitely the absolute patency of the canal, and the shadow in question about two inches in front of it, evidently a phlebolith or concretion in an appendix epiploica (Fig. 12).

Operation done by me a few days ago proved that the movable right kidney and concomitant chronic appendicitis have been causing the trouble and evidently have been in part responsible for the highly neurotic condition of the patient.

If the time at my disposal permitted, and the scope of this paper were more widely drawn, I would cite a number of other illustrative cases. I would mention the details of the history of a man of 50 years, in whom I, and later Dr. Torek, who succeeded me in service at the German Hospital, did pyelolithotomy, ureterolithotomy and splitting of the kidney on the same side for a suppurating stone kidney in the course of seven months. At last the patient's general health greatly improved, though colicky attacks persisted off and on. A radiograph still showed two distinct shadows, apparently ureteral calculi, on the same side, besides many shadows on the right (Fig. 13). However, the *x*-ray catheter, through which collargol was injected into the kidney pelvis (Dr. Rehling), brought out the fact that the two shadows had no reference to the ureter, at least not to the one through which the catheter had

slipped up (Fig. 14). Personally I have had no chance to make further inquiries as to what the shadows represented, as the man has left the hospital. It is possible that they are in the course of a second ureter. His right kidney, which seems to be the seat of a hydronephrosis and to contain many calculi, as shown by pyelography, was never operated upon.

I would also speak of the great value of the negative result of *x*-ray examination and of the use of the wax-tipped catheter in a very interesting case of ureteral stricture in one of my patients in whom pyelolithotomy on the same side of the stricture followed extirpation of the opposite kidney for an old pyonephrotic stone trouble. Here every clinical symptom plainly pointed to the presence of a stone, which however was not found, though searched for here as well as abroad. Finally autopsy corroborated the presence of a typical stricture, the presence of which had been demonstrated during life with the wax-tipped catheter which had no scratch. I could cite a number of other cases, but this would take too much time.

If I may sum up what I have tried to bring out to-night I would say:

1. The *x*-rays represent a wonderful assistance to the surgeon in diagnosing the presence of ureteral stones (and stones in the urinary tract in general).

2. In view of the fact that the *x*-rays show us the cause of the disease visibly on the plate I think they should have first place in the train of examinations, following the general clinical one.

3. The *x*-ray examination should be stereoscopic, whenever possible, and include both sides of the urinary tract.

4. In order to do full justice to the patient and to avoid disappointment to surgeon and patient alike, cystoscopy with ureteral catheterization should follow the *x*-ray examination.

5. A scratch on the wax-tipped ureteral stilette or catheter furnishes additional reliable proof of the presence of a stone.

6. If the question of expense has to be considered ureteral examination with the wax-tipped *x*-ray stilette may be combined with the first radiograph. The stilette may then be shown on the radiograph plate in direct contact with the stone, besides showing the scratch on the wax after withdrawal. However, in general, it seems better first to locate the stone with the *x*-rays and use the wax-tipped *x*-ray stilette at a second sitting.

7. A negative *x*-ray result plus missing scratch on the waxtipped ureter stilette may be accepted as proof of the absence of a ureteral stone in the given case.

8. Ureterography or pyelography is indicated before operation in every case of ureteral (or renal) stone, in which the place of the shadow and clinical data leave still room for doubt, although the additional, above-mentioned examinations have been carried out.

9. The radiographist should receive brief clinical details when the patient is referred to him. It is unwise to have him approach the case without knowing the principal clinical findings. Such knowledge will enable him to interpret the shadows more intelligently.

The above mentioned additions in examination and the constantly increasing skill on the part of roentgenologists in interpretation may be expected practically to exclude a mistaken diagnosis and subsequent uncalled-for operation.

700 Madison Avenue

SURGERY OF GASTRIC AND DUODENAL ULCER IN RELATION TO THE INSURANCE RISK.*

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As surgery encroaches more and more upon the domain of internal medicine, and new operative procedures take the place of medical treatment in so many of the commoner pathological lesions, the medical director finds himself constantly face to face with new problems in medical selection and with very little data upon which he can base accurate or satisfactory decisions.

In many instances this is because the operative procedures are so new that no accurate opinion as to their effect on longevity is possible. Even after the necessity of surgical intervention has become apparent, and has been generally accepted, it takes a long time and much experimentation to develop a safe and satisfactory technique.

The operative mortality must be reduced to a minimum so that the operative risk shall be eliminated as nearly as is possible. The mechanical result must be so nearly perfect that no disturbance of function, no disability not the necessary result of the original lesion, can be attributed to the surgical interference, and the relief from the distress and disability occasioned by the condition for which the operation was undertaken, must be greater and more lasting than can be secured by any other method of treatment.

Take for example the removal of the Gasserian ganglion for tic douloureux—having reduced the mortality to a minimum, having eliminated any unpleasant sequelæ due to the operation, and being assured by experience of a much longer immunity from pain than can be obtained in any other way, the surgeon feels that his interference has been fully justified.

And so it is; but here we see the difference between his point of view and that of the medical director. The latter must have a longer and a clearer vision. Not content with the degree of safety or the amount of relief secured, he must know in the case of a tic douloureux to what extent the insurance risk is impaired by its presence, and just how far that impairment is affected, if at all, by the relief from suffering which is so satisfactory to the patient and to the surgeon.

He must know what to infer from the presence of the original lesion. A brilliant and perfectly satisfactory surgical result will have little weight with him if the underlying cause of the lesion is a degenerative tendency which is unaffected by the removal simply of its manifest and most distressing symptoms. I think that failure to recognize this difference in viewpoint is the cause of much misunderstanding in the study of end results.

Another factor that is important for us to remember is that many of these procedures whose influence upon longevity we are called upon to determine, are really of too recent introduction to make accurate conclusions possible.

When one considers that almost all of the modern practice of abdominal surgery has had its origin and development within the professional lives of those present, one realizes how far we are from the

*Read at the twenty-sixth annual meeting of the Association of Life Insurance Medical Directors of America, Oct. 14, 1915.

end results which are necessary to statistical accuracy.

This is particularly true of the subject to which I venture to ask your attention for a few moments to-day, viz., the Surgery of Gastric and Duodenal Ulcer in Its Relation to the Insurance Risk.

In an address on Surgery in Relation to Life Insurance by Dr. W. J. Mayo, delivered before the American Life Convention at French Lick Springs last year, he said: "That an estimation as to the curability of any gastrointestinal disease, based on data that was accumulated previous to five years ago, is practically worthless."

Although this seems to be an exaggeration, I think a little further consideration will enable us to see the justice of an opinion which is founded upon the experience of the largest clinic in gastric surgery in the world.

We must remember that the surgeon didn't turn plumber until Doyen demonstrated the practicability of stomach drainage in 1895; that our knowledge of the relation, frequency, and importance of gastric and duodenal ulcers based on accurate statistical information instead of on traditional opinion has all been gained since 1900 and is a complete reversal of the formerly accepted opinion, and that our old views of the nature, progress, and possible results of these lesions have undergone an equally radical change—made possible by the disclosures of a study of the living pathology in all its various stages instead of being dependent upon a study of the terminal stages alone, as provided by the post-mortem examination.

So rapid has been the progress of our knowledge of these lesions that it is very difficult, if not quite impossible, to bring the earlier and the later reports within the same classification. Mayo's limitation of accepted reports to five, now six years, will be seen therefore to be by no means unreasonable.

When I undertook the study of this subject for this meeting I had hoped to be able to present the results of surgical interference in these cases somewhat in terms similar to the tables of our Medico-Actuarial Investigation, but after a very wide search in the literature of the subject and much correspondence, I have been disappointed to find that there are as yet no available statistics capable of such an interpretation.

My own personal experience has been far too small to be of value, but there is reason for much encouragement and hope in the establishment of follow-up systems in almost all of the great clinics of this country, by means of which a mass of material will soon be available for the construction of accurate percentage tables.

Meanwhile, however, you and I are having brought to our desks for inspection with rapidly increasing frequency applications for insurance from men who have had gastroenterostomy performed for the relief of ulcer, who have been completely relieved of all symptoms, have gained substantially in weight and general appearance, and who in their own opinion, in the opinion of their medical and surgical attendants, and most important of all, in the opinion of the general agent, are good insurance risks.

What shall we do with them? We must pass upon them even if we cannot yet obtain the statistical information necessary to express the insurance risk in its relation to the American table.

Fortunately we are not without much valuable information on the natural history of gastric and duodenal ulcers under expectant treatment and on the results of surgical interference. In the first place, we have established the fact that these ulcers are much more common than we formerly supposed—that they occur in men oftener than in women in proportion of three to one—which is contrary to our previously accepted opinion, and that they are essentially chronic, with a tendency to recurring exacerbations of activity at irregular intervals for many years.

How persistent this tendency to recurrence is was well illustrated recently in one of my own cases—a man fifty years old had always had what he described as a poor stomach, had been told ten years ago that he had gastric ulcer, and was treated medically in a hospital for some weeks with such marked relief that he called himself cured.

In the face of this history he obtained insurance five years ago in one of the companies here represented, and within two months received a policy from one of the large New York companies after a home-office examination.

Two weeks later, while on the train between Springfield and Worcester, he was seized with sudden abdominal pain with partial collapse, was taken at once to the City Hospital, a diagnosis of perforated ulcer made, and operation performed four hours later.

Gastric contents were found throughout the right side of the abdomen, and he died of general peritonitis on the third day. There was an opening on the lesser curvature of the stomach near the pylorus large enough to admit a lead pencil.

I cite this case not in derogation of the medical treatment he had ten years ago, for that had given him ten years of active business life without conscious disability, nor in criticism of the action of the medical department which approved his application two weeks before his death, because we have all been much in the habit of considering that ten years, or even five years, of complete immunity from symptoms, are enough to throw some doubt on the correctness of the previous diagnosis and to establish a reasonable probability that the trouble, whatever it was, had been permanently relieved.

My object in citing it is to emphasize what I have just said about the liability of these lesions to become active again, no matter how long the period of quiescence.

Joslin and Greenough followed ninety-nine cases of gastric ulcer for a period of five years after their discharge from the Massachusetts General Hospital. None had been operated upon. At the time of discharge over 80 per cent. were classified as cured. At the end of five years 40 per cent. only were well, 40 per cent. had already had recurrence, 8 per cent. had died of gastric complications and 4 per cent. of other causes, and they make this interesting comment: "It certainly is startling to realize that every other patient with gastric ulcer is either to have a recurrence of symptoms or is never to be well again."

I am convinced from my own study and experience that if the eighty-seven cases still living at the end of five years could be followed for five more the percentage of those living and well would show the same marked diminution as was found at the end of the first five, and that the natural history of untreated or medically treated gastric ulcer is such that its presence in the history of an applicant makes the insurance risk definitely and permanently substandard.

Although we have no similar statistics in regard to duodenal ulcer, we have good reason for believing that the results would be more favorable. But until statistical evidence is available the analogous pathology and clinical history of gastric and duodenal ulcer should make us extremely cautious in our discrimination between them.

Nor is this all. The study of living pathology made possible by gastric surgery has revealed gastric ulcer as the forerunner, if not the cause, of a very large proportion of gastric cancers.

In the Mayo Clinic 71 per cent. of the gastric cancers presented evidence of a previous ulcer, and in Moynihan's Clinic the percentage was 72. The transitional stages of these changes from ulcer to cancer have been frequently observed and studied. Excision of the ulcer has often revealed to microscopic examination a beginning malignant degeneration that was unrecognizable from a gross inspection of the specimen, so that W. J. Mayo assures us that it is often impossible at the operating table to tell a cancer from an ulcer.

All this makes for caution when we come to study the relations of a history of gastric ulcer to medical selection. The added liability of malignant degeneration does not apply to duodenal ulcer, except when the ulcerated area has spread to the stomach side of the pylorus. Why this is we do not know, but there can be no doubt of the fact that cancer very rarely follows ulcer of the duodenum, while it is a not uncommon result of ulcer of the stomach.

I have dwelt upon this subject of the natural history of these lesions perhaps longer than I should and at the risk of trespassing upon a field that belongs more strictly to the physician than to the surgeon, but I have done it because I felt that the natural tendency and results of these lesions should be thoroughly appreciated before one could fairly judge of the extent to which they are influenced by surgical interference.

Now what has been accomplished surgically toward removing the insurance hazard in these cases? Experience has demonstrated that relief is to be found by diverting the current of the gastric contents from the region of the ulcer by means of a new and more dependent drainage opening, and a posterior short loop or no loop gastroenterostomy is the operation of choice for accomplishing this purpose.

Whether or no the ulcer-bearing area should be excised at the same time is still *usb judice* with the more radical opinion at present steadily gaining favor. Our problem is the effect of a posterior gastroenterostomy with or without excision upon the applicant's future health and expectancy of life and from an insurance point of view its consideration falls naturally under three heads.

First, the effect of a major operation; second, the possible unfavorable results which may fairly be attributed to the performance of this particular operation; and, third, the effect of the operation on the lesion for the relief of which it was undertaken.

In considering the effects of major surgical operations on insurance one's mind reverts at once to the important paper read before this association in 1904 by Dr. John Homans on "The Effect of Mutilations on Longevity." Its general applicability is, however, considerably impaired by a failure to discriminate between the effects of the pathological condition for which the operations were performed and the effects of the operations themselves, and one is hardly justified in drawing any more definite conclusions than that operations often fail to interrupt the natural course of disease and sometimes create new sources of disability and impairment.

In the report of the medico-actuarial investigation, recently published, is a table on the effects of major surgical operations which shows a mortality of 132 per cent. of the insurance table. The group is not a homogeneous one, comprises a great variety of procedures, and is made up of but 238 cases.

On the other hand, the table in the same report devoted to the effect of appendectomy shows a very favorable result, and yet surely this ought to be regarded like every laparotomy, as a major surgical procedure, frequently accompanied by the gravest constitutional disturbances, by severer shock and greater liability to adhesions and adhesive bands than is the ordinary gastroenterostomy. I think we have no reason yet for assuming that an operation *per se* adds anything to the insurance risk, provided the immediate recovery is satisfactory and complete.

There are, however, certain anatomical or mechanical complications which may follow as the direct result of operative interference and which may have an important bearing on the insurability of an applicant.

In the case of gastroenterostomy the applicant is of course expected to furnish evidence that the result of the operation is entirely satisfactory at the time of filing the application. This eliminates the cases in which the contents of the stomach pass out through the natural or the artificial opening, only to find their way back into the stomach through the other one, the so-called vicious circle—a most serious complication, which usually presents itself, if at all, during convalescence and is not met with after the modern short loop operation.

Another cause of failure manifested by a return of symptoms after an interval of relief is the occurrence of a jejunal ulcer in the neighborhood of the anastomosis. It appears ordinarily within a few months or a year after the operation, and, in the opinion of C. H. Mayo, is due to the use of nonabsorbable sutures.

It was never a common complication, and may perhaps be eliminated by the use of catgut instead of silk, but its influence cannot be wholly ignored in a consideration of the insurability of these cases as standard risks during at least the first year after operation. But after these dangers have been eliminated there is no reason apparent why the new drainage should not work as well as the old.

In the congenital pyloric stenosis of infants, where the problem is free from any pathological complications, the results seem to be uniformly successful. Scudder, who has had very large experience in these cases, in a personal communication, says that all of his patients who have survived the operation show a normal uncomplicated development, and one of them is now ten years old.

It would seem reasonable to infer, therefore, that those cases which are well at the end of one or perhaps two years after operation would thereafter present no impairment that could be directly attributable to the effect of the operation itself.

Lastly, we have to consider the effect of the operation upon the lesion for the relief of which it has been undertaken. Here is where we ought to have our table showing the mortality after five, ten, fifteen, and twenty years—and until these are forthcoming we cannot accurately estimate the degree of impairment in these cases.

Meanwhile we must try to obtain from the clinical reports of end results all the data that we can bearing upon the insurability of these cases as standard risks.

In 1905 Mumford tabulated the end results in 147 cases of gastroenterostomy performed for the relief of pyloric obstruction due to ulcer by different operators. These were the cases in which the immediate results were good, but in 25 or 17 per cent. of them the end result is described as "bad."

These were of course early cases done before the indications for operation and its technique had been standardized; but they are certainly not encouraging from an insurance point of view.

In 1912 Moynihan reported his results in 186 cases of duodenal ulcer operated on between 1900 and 1911. The operative mortality was 2 per cent., 6 per cent. were not heard from, 80 per cent. were cured, 2 per cent. died of other causes, and 10 per cent were more or less improved. In other words, 12 per cent. were, from an insurance standpoint, unsatisfactory, and this is the more significant because these were all duodenal ulcers which are admittedly more favorable than ulcers of the stomach.

This is illustrated by the figures published by Graham from the Mayo Clinic in 1913. Of 438 cases of duodenal ulcer, 88 per cent. are reported as cured or as having made satisfactory improvement, and of 162 cases of gastric ulcer 80 per cent. only were regarded as cured.

These operations were all done from 1905 to 1911, and at least two years had elapsed at the time of the report. There were then 12 per cent. of duodenal and 20 per cent. of gastric ulcers in which the clinical results were unsatisfactory, and the insurance risk therefore still more or less impaired.

The most recent figures are from the Roosevelt Hospital clinic in New York, and were reported by Peck at the American Medical Association meeting last June. Of the cases of duodenal ulcer the results in 88 per cent. of those heard from were good and in 12 per cent. poor, while of the cases of gastric ulcer he says: "Our results in this series are much less favorable than in the duodenal group, and the series is too short and many of the cases too recent to make our deductions of much value."

The striking thing about these statistics is, it seems to me, their uniformity. When three widely separated clinics of the highest repute agree that in practically 12 to 20 per cent. of the cases the end results are unsatisfactory there would seem to be little doubt as to what should be the attitude of a medical director who is trying to eliminate substandard risks.

It will be remembered that in studying the natural history of these chronic ulcers we found that the two most prominent characteristics were a tendency to repeated recurrence of the symptoms of indigestion and in the gastric ulcers a tendency to the development of cancer, and these two characteristics appear with equal prominence in the unsatisfactory results after operative interference.

It is impossible from our present data to say just how great is the danger of a subsequent cancer, but that it cannot be disregarded, at least in the early years after operation, is evidenced by the fact that Mayo Robson in 1904 reported that out of 112 cases of gastroenterostomy for simple ulcer four had died later of cancer, one at the end of one year, two at the end of two and one-half years, and one after three and one-half years, and that all had enjoyed good health between the operation and the development of the cancer symptoms. One of my own cases made a perfect recovery and for a year seemed to be in perfect health. Three months later he died of cancer of the stomach.

Peck says that "the well-known trend of gastric ulcers to undergo malignant degeneration, with the fact that a greater percentage fail to heal after simple gastroenterostomy has made me feel the desirability of excising such ulcers when it can be safely done." But of his two cases treated by excision without gastroenterostomy, one returned three years later with cachexia and probably cancer, and of his thirteen simple gastroenterostomies one developed cancer a year after the operation.

Gerster refers to the very good operative results, but calls attention to the number of clinical failures due to the development of cancer, and Lilienthal speaks of three cases in which carcinoma developed at the pylorus years after the performance of gastroenterostomy.

Rodman, who presented an exhaustive study of the subject to the American Surgical Association in 1914, concluded that "after carefully reviewing the statistics furnished me, I am impressed with three things—first, the operative mortality (which doesn't interest us) following gastroenterostomy has not been less than 5 per cent.; second, the end results are frequently disappointing to the surgeon and disastrous to the patient, and third, a number of perfectly satisfactory gastrojejunostomies from an operative point of view, the patients remaining well for a year or longer after operation, were followed by malignant disease or death."

He believes that the ulcer-bearing area should be excised, and, as I have already said, this opinion seems to be steadily gaining favor, especially insofar as it relates to gastric ulcers. Of course, no statistics are yet available to prove its superiority over the simple drainage operation, but the mere fact of its increasing popularity is of importance to us because it indicates a growing dissatisfaction with the present results.

In this brief and very imperfect review of the operative results in cases of gastric and duodenal ulcer it must be remembered that I have referred only to the opinions and results of men of the largest exeperience, familiar with the gross appearances of these lesions and possessed of every facility for accurate pathological diagnosis.

But the cases which are reported to the medical directors have not in many instances had the benefit of such expert attention or such careful study. At the hands of surgeons whose experience with these cases is small, whose opportunities for becoming familiar with their different phases are but few and far between, and whose clinics do not have the facilities for accurate pathological investigation, the results will certainly be inferior to those which we have been studying, and our decisions as to the general insurability of these cases must be based on average results, not upon the results of selected operators.

No one can appreciate more than I how unsatisfactory from an insurance point of view is such a study of this problem as I have presented. It would have been so much more convincing to have been able to say that of 500 cases operated on in 1905 and discharged well, the mortality in the first year was 140—gradually diminishing each year until at the end of the fifth it was only 100, and that after five years it was less than 100 per cent. of the tables—but unfortunately such statistics are not available.

In the meantime we cannot avoid the responsibility of a decision, and it must be made on the basis of such clinical studies as are now accessible, of which those which I have recited seem to me the most reliable and most illuminating.

From these it is, I think, a fair deduction that the surgical treatment of gastric and duodenal ulcer by gastroenterostomy, though a distinct improvement over the older methods, in spite of the unquestioned brilliancy of its results, has not entirely removed the tendency to recurrence of symptoms and dangers in both lesions, and in case the gastric ulcer has failed to eliminate the danger of subsequent cancer.

I hope that fuller end results tables may in the future enable us to minimize if not entirely to overlook all of these dangers, but on the basis of our present knowledge my own conclusions are that a history of gastric or duodenal ulcer in an applicant for insurance constitutes a permanent impairment of the risk, an impairment that is less but not lost after the performance of a gastroenterostomy, and that such applicants are not to be rated as average risks, insurable at standard rates.

SEVERELY IMPAIRED AUDITION IN CHILDHOOD.*

By LESTER MEAD HUBBY, M.D.,

NEW YORK.

SEVERE deafness occurring during the first four years of life, invariably results in mutism unless special educational methods are undertaken. Severe deafness occurring from the fourth to the eighth year of life, often results in loss of speech notwithstanding considerable didactic efforts. Severe deafness occurring after the seventh year seldom leads to mutism. However the child that can not hear conversational speech at a distance of two meters, requires special educational attention. Inability to hear and speak constitutes deafmutism.

With our present knowledge of the methods of teaching the deaf child, mutism should occur only in the mentally defective, *i.e.* the feeble minded, the imbecile, and the idiot. Most deaf children are mentally sound.

Severe deafness in childhood may be congenital or acquired. The majority of the cases are acquired. Heredity and the intermarriage of blood relations are the most frequent causes in the congenital form. Consanguineous marriages play an important part in the production of congenital deafness, but the tendency to deafness must be present in the family before it can be accentuated by intermarriage.

The acquired form of severe deafness in childhood in the majority of cases comes from involvement of the perceptive mechanism of the auditory apparatus. Love has found that one-third of the cases followed meningitis, one-third scarlatina and morbilli and the remaining one-third, typhoid, diphtheria, mumps, pertussis, syphilis, etc.

Pathology.—The anatomical causes of congenital deafness may be summed up to consist of malformations or lack of development of the various parts of the auditory apparatus and of that part of the brain concerned in audition,—and intra uterine diseases of the above parts, such as inflammation of the tympanum and labyrinth, fetal meningitis, hydrocephalus, etc.

*Read at a meeting of the Riverside Practitioners' Society, Oct. 26, 1915.

In the acquired, the pathological changes may be any capable of producing severe deafness or total loss of hearing of both ears. In the majority of the cases the damage takes place in the cochlear nerve system somewhere from Corti's organ to the bulbar centers.

Diagnosis.—In the history, heredity and consanguineous marriage of those whose families have a tendency to deafness should be noted. In the acquired the occurrence of any of the diseases that might produce deafness must be sought. Syphilitic affections occur in infancy and at the age of seven to eight years mainly.

The auditory apparatus including the Eustachian tube must be inspected and tested for the presence of defects. Each ear must be tested singly for the perception of sounds, tones, vowels, and speech,—using an effectual noise apparatus for negativing the other ear when necessary.

The limits of perception for tones of different pitch should be determined in the older child, as the ability to hear speech (according to Bezold) necessitates the audition of at least the range from b′ to g″ (480-768 d.v. per second).

If the visible part of the auditory apparatus is found normal and all diseases, traumata, and toxins that might affect the cochlear nerve system to the bulb have been excluded, and severe deafness of the type occurring in faulty function of the perspective mechanism of audition is present, then a further anatomical search must be made up to the cortical centers of hearing in the temporosphenoidal lobe of the brain. Thus Starr reports that pontine disease involving both lemniscus tracts has produced deafness in one-sixth of his cases.

Cortical lesions at the auditory centers on both sides of the brain may cause total deafness but this is extremely rare. Lesion in the auditory center on the left side in right-handed individuals, and on the right side in the left-handed, may produce the various types of psychical deafness, such as mind deafness, amusia, sensory aphasia, etc. Then the question of the presence of a more general defect of the entire brain must be sought preferably by a neurologist.

The feeble minded are those that are slow to learn to walk, lack the ability to concentrate long, are wanting in reasoning power, judgment, and self-control. Imbeciles can acquire simple ideas. Idiots are lacking in the power of acquiring ideas or concepts and cannot even be trained to keep clean.

Impaired development of speech may be caused by feeble mindedness associated with some deafness. In imbecility speech is developed but vocabulary is limited to the simplest phrases. In severe idiocy speech is lacking or limited to a stammering of articulated sounds. In this form there are marked changes in the speech centers.

The amount of deafness in deafmutes varies from complete up to the perception of words spoken near the ear. Over a fifth are totally deaf according to Schmaltz. Deafness is seldom complete on both sides. Tone perception islands are often found. Upper tone loss is less frequent than that of lower tones in the congenitally deaf, while the reverse is true in the acquired form. Some audition is more commonly present in the congenital than in the acquired type.

Kreidle has found the vestibular nerve affected in 56 per cent of deaf mutes. This explains the duck walk, which consists in a swaying gait with

the feet far apart, and also the inability to maintain the erect position without swaying (Romberg) or to stand on one foot, with the eyes closed, which is so frequently the case with the deaf-mute.

Prognosis.—This is more favorable in the congenital than in the acquired forms, as in the majority of the latter there is a total destruction of the cochlear nerve or its terminations in Corti's organ. A few spontaneous recoveries, more or less complete, of the congenitally deaf have been reported in the literature, but these have probably been either mistaken diagnoses or cases of psychical deafness. The latter of course are often curable with training.

Recovery is impossible where the cochlear nerve system has been destroyed as in meningitis, suppurative otitis interna, hydrocephalic pressure, etc.

Prophylaxis and Treatment.—Intermarriage of the congenitally deaf should be avoided. Physical defects of the nose and throat should be attended to at as early an age as possible, to avoid the dangers of middle and internal ear inflammations.

Discoverable defects in the auditory apparatus must be treated and overcome as much as possible, and the audition thus made as efficient as the crippled condition will permit. Among the poor and ignorant, children with severe deafness may be sent to institutions for the deaf without any effort having been made to improve the audition.

The majority of the severely deaf children are well endowed mentally. Mental defectives must be treated in a class by themselves, and further separated according to the amounts of intelligence present. Before attempting the amelioration of deafness an accurate determination of the amount of hearing in each ear must be made by an otologist.

Hearing exercises for developing latent audition have been tried with some success in selected cases. They should also give the idea of inflection and thus help to overcome the tendency to speak in a monotone.

The treatment of the ears with sonorous vibrations by means of an instrument such as the Zünd-Burguet electrophone will accomplish this more quickly than the unassisted voice.

C. Fernet advocates exercising the ear by listening to a clock gradually made more distant until inaudible. By listening at that point for awhile, gradually the sound will be heard again. By repeating this exercise he thinks the hearing can be improved. This would be applicable only in the most favorable cases.

There are three methods of educating the deaf-mute or the extremely deaf child—the manual method, the oral, and the combined manual and oral method. The manual method consists in instruction and in teaching the child to converse, wholly by means of signs with the hands and fingers. In the oral method speech and lip reading are taught. The combined method consists in the use of both methods.

The manual method unfortunately was first introduced into this country. It requires fewer teachers and less time than the oral method, but it places the pupils in a class apart and they are unable to work with those that have hearing. On the other hand, those taught by the oral method can converse and work with their fellows who have hearing. In 1908 more than half of the severely deaf children in the United States were taught by the oral method and it is hoped that in another generation the manual method will have disappeared in this country. The combined method has not proved a success. To learn to speak and read lips requires all the concentration and patience available and the short cuts of manual signs must be interdicted.

The mother of a deaf child, when there is some residual hearing, should develop the latter, by talking and singing into the child's ears, and begin the teaching of lip reading.

At the age of four years, a child that is strong and well developed should be sent to an institution for the deaf. The time of most rapid brain development is from 2 to 7 years, and that most favorable for language acquisition is from 2 to 12 years, therefore it is most important that the child be not neglected at this time. The deaf child of five starts behind the hearing child of two, according to John D. Wright. By the age of 15 or 16 in a special school, he has very nearly caught up to those who hear. Those losing audition up to 8 years of age, quickly lose articulate speech and should be placed under instruction as soon as they are in fair physical condition. It is very much better to send the child to a school than to have a single instructor at home.

The following methods are used to develop articulate speech. When there is some hearing, the sounds can be imitated after listening to them through acoustic tubes, etc. The movements of the lips, tongue, and larynx are studied visually, and with the finger tips feeling the muscular movements and the vibrations. The shapes of the moisture films, produced on a mirror or cold blackboard in saying the different vowels and consonants are studied and imitated, also the effect of the latter on a flame. Dr. Scripture has devised a revolving disc with alternate black and white squares, with a gas light attached to a speaking tube reflecting the vibrations of the flame produced by the sonorous waves upon this disc. By means of this apparatus the varying pitches of one's voice can be watched and altered in conversation or in singing. The inflections can also be improved by singing lessons. The position of the tongue when wrong is corrected by the instructor with the assistance of a spatula.

The majority of the schools for the deaf in this country are now using the oral method exclusively. There are 77 using the oral, 4 the manual, and 67 the combined method. New York City has five oral schools and one combined, and three of these are run by the city.

Deaf children, on account of their isolated condition, are liable to be of low physical development. Their carriage and gait are poor, and they are apt to shuffle their feet. Hence a varied physical culture under competent supervision is more essential than with the hearing child. Thus the various gymnasium exercises with and without apparatus, athletic games, dancing, drilling by word of command by means of lip reading, etc., should be prescribed according to the physical condition of the pupil. Swimming should be advocated with caution, as the deaf are prone to attacks of vertigo.

Deaf children are also successfully taught manual training and industrial work.

27 West Sixty-eighth Street.

Fasting and Acidosis.—E. P. Joslin states that if a diabetic patient is fasted, acidosis disappears, and that this is in marked contrast to the behavior of normal persons for they present acidosis upon fasting.—*American Journal of Medical Sciences.*

THE CORRELATION BETWEEN OLFACTORY AND GENITAL FUNCTIONS IN THE HUMAN FEMALE.

By J. A. HAGEMANN, M.D.,

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THE existence of a correlation between certain intranasal tissues and the generative organs has long been a matter of universal medical knowledge. Perhaps the qualifying term "medical" is too limiting, for to many of the laity as well it is known that such an alliance exists. Althaus (Beitraege zur Physiolog. und Pathol. des Olfactorius) speaks of the mutual attraction of animals of opposite sexes for each other by olfactory perception of distinct odors at the period of rutting.

The symptomatology so far as it pertains to the male sex will intentionally be disregarded in this paper. In April, 1884, Dr. J. N. Mackenzie, in the *American Journal of the Medical Sciences*, published some physiological and clinical observations which he had made, and stated that "in certain women with normal olfactory organs regularly with menstruation a swelling of the erectile tissue of the nose occurs, that menstruation is at times replaced by epistaxis, and stimulation of the genital tracts is occasioned by affections of the nasal organs."

It remained, however, for Fliess, of Germany, to amend the imperfect knowledge which then prevailed regarding the dependency between certain functions of the nose and those of the female procreative organs. In 1887 he published a paper on "The Relation of the Nose and Female Genitalia," in which he affirmed that certain "genital spots" could be determined in the nasal mucous membrane, and that the anesthetization of these spots by the local application of cocaine would in many cases result in relief from the agonizing pain of dysmenorrhea, provided the same was not due to an obstruction of the cervix. The spots designated are the tubercle of the septum and the anterior part of the inferior turbinate. Later, Fliess had recourse to employment of the galvanocautery or trichloracetic acid in an attempt to lend permanence to the transitory palliation which cocaine bestowed. His postulate excited animated discussion throughout Europe. Kuttner criticised Fliess' theories unsparingly, pertinently asserting that it was unreasonable to admit that a controlling spot, located in the nose, should surpass and supercede any cerebral or spinal center. Many other European authorities also entered the lists for and against Fliess' assumptions.

His latest brochure consists essentially of a reiteration of his tenets, an arraignment of his detractors, and an augmentation of his theoretical intranasal genital centers by the addition of another center dominating the abdominal pains experienced by self-polluting girls. After stating that the primary changes in the nasal genital spots are frequently of an infectious nature, and admitting that these changes are not the sole solution of the distal manifestations (dysmenorrhea), he adds that "the anatomy of this neuralgic conversion is as unsolved as the nature of the structural change, for example, in neuralgia of the trigeminus or ischiatic nerve." In essaying to substantiate his postulate by producing evidence of anatomical relationship, Fliess says: "In the nose the erectile bodies are under control of the sphenopalatine ganglion, which receives sympathetic fibers from the carotid plexus through the petrosus profundus nerve. There would thus be an anatomical path to the sympathetic, which controls the sexual functions as well."

In the absence of an affiliation with a gynecological clinic, the writer has not had adequate opportunity afforded to verify or confute, to his own convincement, the conclusions of Fliess; but nasal phenomena analogous to, yet differing from those described by him, have been encountered by me a number of times. The specification of these phenomena and their interpretation is the *raison d'être* of this paper.

It may not be amiss to interpose here, by way of premise, a compend of some of the more relevant præcognita.

The olfactory sense indubitably exercised a paramount influence in the survival and development of the primeval zoological forms which were wafted to and fro by the waters of the "vasty deep" in the earliest faunal geneses. The low forms of animal life which had progressed beyond the amebic stage, and in which there had been evolved an incipient tactile sense, would in the prevailing course of events gradually develop a discriminating faculty which would, at an early period, subserve the selecting of nourishing, and later savory food. Coeval with this development there would be revealed the earliest traces of sexual evolvement, for sustentation and propagation in binary, rudimentary form, constituted exclusively the functions possessed by these primitive embodiments of animal life. One can readily idealize that in this elementary stage of evolution through which the primal forms of life were passing, there could be no great development of a selective faculty.

It is, however, conjectural that a more specific sense, if any, developing gradatim from the rudimental tactile perceptivity, would be in the nature of an olfactory faculty. In other words, as the incalculable successive generations of animalcules became more highly organized, a capacity to choose palatable food and perceive a conjugal mate must imperceptibly, but unintermittently have become established; so that, by slow degrees, the nascent organisms became both sensory and sensuous. If we pass over a diuturnity and study animals high in the scale of evolution we encounter the culminating degree of this development. To review, even cursorily, the interminable intermediate transitional forms would be a stupendous task. Let it suffice to say that this binate faculty, so common in primary forms, is retained by many that have progressed sufficiently to no longer require either or both capabilities in the struggle for existence. The males of a considerable number of mammals possess odoriferous secreting glands which in various species, are situated in different parts of the body. In certain ones the odor becomes more evident during the breeding season. It is confirmed that the females of these several species, during the rutting season, lustily exercise their olfactory endowment while experiencing a disposition to associate with the males. The consequent hyperemia of the olfactory area conformably produces tumescence and hypersecretion in this section of the nose. It seems idle to seek an anatomically linked bond, via the nervous system, between the olfactory and conjugal functions, for these developed contemporaneously, in multiform alliances among low as well as higher forms of life, according to the several requirements of the respective organisms.

If we contemplate that the perception of savory odors "makes the mouth water," that hearing a patriotic air may produce profuse lacrymation, that the witnessing of a touching scene may cause a "lump in the throat," all involuntary and presumably irrelevant sequences, we realize the futility of speculating upon an anatomical vinculum. It is more to the purpose for us to keep in mind that some brain centers apparently perform dual offices, or that two centers controlling different faculties act in unison in response to a stimulus from either of the distal areas whose functions they control. In the example under discussion, a sexual incitement may give rise to swelling of erectile bodies in the olfactory region; or, conversely, certain odors perceived by the olfactory nerves may set up hyperemia in the genital organs. Moreover, in some forms a concordant execution of both functions is probably habitual.

When pondering the foregoing data it does not seem extravagant to propound the paradoxical theory that the olfactory excitation which occurs in some young women may be regarded as one expression of atavism. These residual nerve-functions, remainders of once active and essential faculties possessed by our ancestors, are now latent and dormant, and have long, long ago ceased to be proficuous. However, eradication of a dispensable function is consummated only after interminable periods of time, and irregularly there occurs a vestigial resurgence of one or another feature of atavism.

If one keeps in mind the foregoing postulate while scanning the following summary, an apparent corroboration of the theory above advanced is marked. Where an unequivocal correlation between nasal and genital functions exists, the pain and tumescence are found chiefly near the anterior portion of the *middle* turbinate and the section of the septum diametrically opposite and above this point. The turgescence observed in the lower part of the nose is probably due to continuity of the connective tissue, by reason of which transcolation of the fluids takes place from above.

Reduction, by cocaine and adrenalin, of the turgescence over the inferior turbinates in two salient nasogenital cases did not notably alleviate the distressing pain and sensation of pressure which was complained of at the portion of the nose between the eyes, whereas application of the same solution to the olfactory field afforded prompt, but only transitory, relief.

Bilateral edema of upper and lower eyelids that had manifest genital dependency twice subsided within a few hours after application of cocaine and adrenalin solution to the olfactory field. In this instance there evidently was a dehiscence in the laminæ papyraceæ, permitting a "damming out" of the fluids which the limited space within the nose could not contain.

Surgical treatment by means of inferior turbinotomy or turbinectomy, will, in a disconcerting number of cases, fail to benefit the class under discussion, whereas removal of the anterior half of the middle turbinate, supplemented, if necessary, by a submucous resection of the septum, secures permanent deliverance from the recurrent attacks.

His clinical observations, differing in several respects from some published by other writers, and his deductions, arrived at from disparate premises, are the writer's plea in justification of this paper.

Highland Building.

TORSION INJURIES OF THE MUSCLES OF THE ABDOMINAL WALL.

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IT is surprising, in looking over the literature of injuries to the abdominal wall how little material is at hand. Contusions, perforating, and penetrating wounds are discussed, but, as a rule, the ultimate subject discussed is not the injury to the abdominal wall per se, but the possible injuries to the viscera associated therewith. It is because of this fact, and because of certain injuries of this type, that I have seen, that I present this paper.

By torsion injuries to these muscles is meant any injuries to them or their muscular attachments, caused by the sudden rotation of the body on its vertebral axis laterally, or the sudden extension of the abdominal muscles by a movement in the vertical plane.

The cases (four in number) that I have seen were brought about by the sudden throwing of the weight with the twisting of the body laterally.

Case I.—L. S., a laborer in a tea-house attempted to lift and throw a tea-chest weighing some fifty pounds onto two other superimposed chests. He accomplished the act, but at its culmination he felt a snap in his left side, with a sudden pain, and then collapsed. On attempting to rise, he found that this was impossible because of a localized painful area in his left side. He was sent home and for some period of time was unable to resume his work.

Case II.—J. P., a laborer, after a blast picked up a heavy piece of rock and tried to throw it some distance. Instead of succeeding, the rock only flew a short distance, and he sank down with a sharp pain in his left side and was unable to resume his work.

Case III.—A ball player was throwing a ball from the out-field and used a force out of proportion to the muscular energy necessary to do so. He felt a sudden sharp pain in his right side and had to quit the game because the pain was so severe on every occasion when he again tried to throw the ball.

Case IV.—K. J., a professional acrobat, in practice, attempting to straighten his body from a knee-hold, suddenly felt something give way in his left side with a sharp pain and could not complete his act. The attempt at elevation, with its strain on the abdominal muscles, had been sufficient to cause an injury to them.

It will be noted that in all these instances the traumatism was occasioned by the sudden contraction of the muscles of the abdominal wall against a resistance. There was a sense of something giving way with a sharp pain, and these were found to be an inability to repeat the attempt. In some instances breathing, where of the abdominal type, was painful and markedly limited.

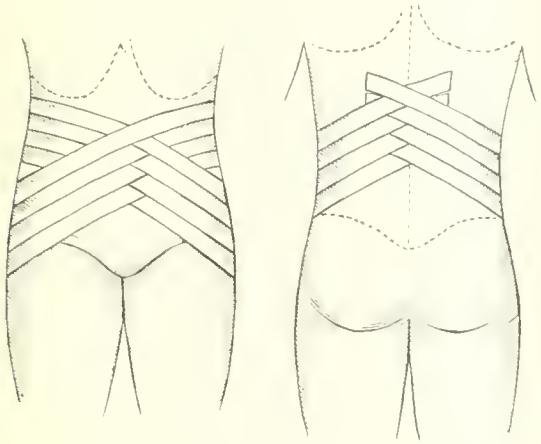
On examination a point of tenderness was made out, either in the rectus injured or in the oblique muscles (three cases). Sometimes a slight separation, as evidenced by a dimple-like depression on attempting to use the muscle, could be made out. Movements using these muscles were very much limited by pain at the site of the injury.

The pathology of the process is simple. Apparently with the intense muscular strain certain fibres in the recti or olique muscles are ruptured and the tear creates a painful area within the muscle bodies.

The treatment at first was something of a bugbear. Tight bandages were employed but gave only transitory relief, as did abdominal belts. Local applications in the form of counterirritants or lotions gave little or no relief.

Finally an adhesive plaster dressing was employed

which has proven eminently satisfactory. An adhesive band, 2 inches in width, was started just external to the anterior superior spine of the uninvolved side and carried in the general line of the external oblique on the involved side, around the body to the opposite side of the vertebral column. This was applied during complete expiration. From the opposite anterior superior spine a similar band was carried in the direction of the uninvolved external oblique, crossing the first band at the median line and ending on the opposite in the back. As



many bands were carried up the body as was necessary to immobilize the abdominal wall and to relieve the pain.

The relief was instantaneous, the patient was able to resume work of a general variety, although torsion movements were interdicted. As a rule, recovery ensued in about two weeks.

These torsion injuries occur more frequently than is generally supposed and their treatment, as outlined above, will be found materially simplified.

220 Audubon Avenue.

MENTAL DEFECTIVES; THEIR IMPORTANCE.

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Why of late years have those of the medical profession interested in mental disease been devoting a great deal of their attention to the mental defective of the higher grade? Why has the defective individual been attracting so much notice? Is he a type that fits with the large group of insane, on the one hand, or with the group of idiot on the other? Is he a new type—some outgrowth of conditions under which we live at present; some product of modern civilization? If he is neither idiot nor insane, why should so much interest be centered upon him? Why should so much time and money be spent devising methods to detect and control him? Why, if a foreigner, should he be denied admission to the country? In other words, what does the term "mental defective" convey? What is he? Wherein does he differ from other mental types? Why is he difficult to detect? Of what social or economic importance can he be that he should be the object of so much attention, country-wide in its extent?

The reason for centering of so much attention on these members of society is that it is now recognized that they are a menace to the race by breeding defective descendants who are most likely illegitimate as well, and that they are one source of great expense for this country, on the whole amounting, some say, to one hundred million dollars a year. These people, while dangerous, either actually or potentially when at large, may be made, under proper supervision, partially if not wholly, self-supporting, and can be thereby shielded from bad influences, which, in the nature of their trouble, they cannot resist, and from environments to which they would find it impossible to adapt themselves.

The mental defective is no new type, Cain, of biblical fame, being perhaps of the same stratum. He is, to repeat, no new type except in the sense that pellagra is a new disease in this country. He has always been with us, but the diagnosis has been made only in comparatively recent times, his lack of responsibility has only lately been appreciated. The separation and the realization of the importance of this type—this is new; not the type itself. The moron is ubiquitous and has been so, but his ability to harm has only recently been emphasized.

And now we come to the question of what is he?—this defective or moron as he is called? What are his characteristics? How can he be identified? Is simple inspection sufficient? Must more refined tests be applied? Does age enter into the question? In other words, what is he and how do we detect him?

Roughly speaking, it is extremely difficult, if not impossible, to make a diagnosis by inspection alone. The individual in question to the superficial view may make a fairly good impression and it is only by close attention to details of physical make-up that the suspicion may be aroused that the subject may be abnormal. These alterations in physical development are the so-called stigmata of degeneration to the importance of which attention has frequently been called especially by Lombroso. They consist essentially in abnormalities in the shape, size, or position of the head, ears, nose, and other features, or in a certain infantile cast of countenance. The suspicion having been aroused must be confirmed or refuted by a mental examination by a competent alienist.

In a given case this usually discloses an individual who is mentally years below his actual age, but not below the seventh year. A person with a mental age below seven is probably an imbecile and so defective that little or no difficulty is offered in his detection, and as he is not as likely to be allowed to run at large, he consequently does not present the menace the more highly developed defective does. The moron is deficient in some socially important trait which depends on some congenital difficulty or mental defect which shows itself in one of three main fields: in the domain of the will, or in the intellect, or in the development of the moral sense. He is particularly defective in the exercise of the powers of judgment and usually shows a marked inability to grasp the meaning or shades of difference of abstract nouns.

Another well developed characteristic of the higher grade defective is his ability to do a fair amount of work and get along well while under supervision or discipline, with utter failure when this is removed. This trait is particularly in evidence among the class of sailors or rather among

a certain percentage of the class of sailors. While under the discipline of the ship they perform their duties quite well, but when relieved from surveillance they are totally unable to care for themselves or their money. Although they may have worked hard for months and suffered more or less hardship yet as soon as disembarked they spend their savings with a lavishness and recklessness that has made the expression "like a drunken sailor" in reference to foolish extravagance, a by-word.

Therefore the reason for and the importance of the detection of this class of mentally abnormal individuals is quite self-evident. Left to themselves, they are an expense and a danger through either their moral lapses or their criminal delinquencies or both. If detected and segregated, they may be able to make their own living or they may not, but at least they are prevented from propagating a feeble-minded race.

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Medicolegal Notes.

Hypothetical Questions Based on Statements and Examination of Injured Party.—In an action for personal injuries where the plaintiff was seriously injured, but there were no broken bones, scars, abrasions, or other objective symptoms, it was held that the opinions of physicians as to the extent of the injuries, based on exclamations and other indications of pain, and the plaintiff's inability to handle himself, were properly admitted in evidence, under the general rule that a medical expert may base his opinions on the clinical history of a case, and, to make his testimony intelligible, may testify to observations made by him, and also as to what the patient said to him in describing his bodily condition, although an opinion based on mere self-serving declarations is inadmissible; the witness, in testifying to what he has heard, being confined to exclamations, shriekings, and other instinctive expressions. Hypothetical questions to medical witnesses, based, to some extent, upon matters within their knowledge through examination of the plaintiff, as well as upon matters entirely hypothetical, which the testimony of the plaintiff tended to establish, were held to be proper, no undisputed material facts being omitted, and all maters submitted therein being supported, to some extent, by testimony.—Biddle v. Riley, Arkansas Supreme Court, 176 S. W. 134.

Malpractice—Patient's Negligence.—In an action for malpractice in treating a broken leg it was held that if the condition of the plaintiff was the result of his own negligence in failing to take proper care of himself by attempting to treat the injury himself, the defendant physician was not liable.—Dunman vs. Raney, Arkansas Supreme Court, 176 S. W. 339.

Authentication of Physician's Books of Account.—In an action by a physician for services it is held that when books of account are offered in evidence to establish items of account, it is necessary to show by other evidence the correctness of the books. This may be done by testimony of those who have dealt and settled with the party from his books of account that he keeps fair and honest books of account, or, according to the later decisions, the correctness of the entries may be shown by the testimony of any one who is able of his own knowledge to testify to their correctness.—Colburn v. Parrett (Cal.), 150 Pac. 786.

In an action against executors for a physician's services to their testator, the right of the plaintiff was based exclusively upon the physician's book of visits. It was held that testimony of witnesses that they had settled their accounts with the plaintiff, not by his books, but by bills rendered to them, was not evidence of the accuracy of the books such as was necessary for their admission in evidence under the account book rule. And the plaintiff's own testimony that he kept correct books of account was insufficient to show their accuracy necessary for such admission.—Bellows v. Bender, N. Y. Appellate Division, 149 N. Y. Supp. 548.

Surgical Operation—Degree of Cure Required—Removal of Sponges.—Action was brought against a surgeon for negligently leaving gauze sponges in the body of a patient on whom he had operated, which resulted in her death. The defense was that the defendant was employed to remove the patient's ovaries; that he had the assistance of a trained nurse, who was not employed by him, but by the husband of the deceased, or some one on his behalf; that the operation was a difficult one; that it was necessary that he should keep his mind concentrated upon the surgical part of it; that he repeatedly admonished the nurse to keep accurate account of the sponges inserted into the cavity; that this was her duty, and that he impressed upon her the importance of seeing that they were all removed, and after the operation and before the cavity was closed, he asked the nurse if she had counted the sponges, and if they were all taken out, and she assured him she had counted them, and they had all been taken out; that he relied upon her statement, believed it to be true, and that all the sponges had been removed before the cavity was closed.

It was held that the defendant was entitled to an instruction on his theory of defense, and it was not error for the court to instruct the jury that, though they believed the defendant did leave the sponges in the body of the patient, and her death was the natural and proximate result thereof, yet if they also believed that, in the performance of the operation, he exercised ordinary care in keeping track of the sponges and seeing to it that they were all removed, before the incision was closed, he could not be held liable for negligence. The gist of such an action is not based upon the result of the operation, but upon negligence in its performance, and the rights of the parties must be tested by whether or not the defendant exercised that degree of care in performing the operation that is imposed upon him by law. Judgment for the defendant was affirmed.—Cassingham v. Berry, Oklahoma Supreme Court, 150 Pac. 139.

Proximate Cause of Death—Post-Operative Intestinal Cohesions.—Action was brought to recover damages on account of the wrongful, negligent, and careless leaving of a sponge in the abdomen of a patient, and on account of the defendant's negligence in permitting said sponge to remain in, creating an intestinal obstruction, resulting in a partial closing of a portion of the intestinal canal, and causing a partial paralysis and obstructions thereof, and by reason of such wrongful and negligent acts, and for no other reason, and as a direct result thereof, the patient died. It was held that it was incumbent on the plaintiff to prove said allegations by a preponderance of the evidence, and show that the presence of the sponge in the abdomen of the patient was the direct and proximate cause of the patient's death. It was also held that the evidence was sufficient to show that the adhesive condition of the patient's intestines caused her death, and that such adhesive condition was not caused by the presence of a sponge, and that the evidence was sufficient to support the verdict of the jury for the defendant.—Ruble v. Busby, Idaho Supreme Court, 149 Pac. 722.

Emergency Pauper Case—Liability of Relative.—In actions by a physician and a hospital for reasonable value of medical and hospital care, treatment and services rendered to a dependent relative in an emergency case, there was an urgent requirement for both physician's services and hospital care, imperative and admitting of no delay. It was held by the Minnesota Supreme Court that the plaintiffs could recover from a relative, upon whom rested the statutory duty to support such dependent relative, compensation for the reasonable value of such services, even though such services were rendered without the knowledge of the relative sought to be charged.—Tyron vs. Town of Moyer, Minnesota Supreme Court, 153 N. W. 307.

Expert Evidence as to "Probable" Effect of Injury.—In an action for personal injury causing a fracture of the skull and necessitating an operation which removed a part of the skull bone and some of the brain tissue, the doctors who attended the plaintiff testified in effect that there could never be a complete recovery from the condition described. They testified over the defendant's objection that the probable effect would be that the man would continue in a state of nervous and physical debility, more than likely to become epileptic and possibly insane or demented, that twenty out of 100 who sustain such injuries become subject to epilepsy, insanity, or some form of dementia. It was held that although the jury could allow compensation only for such future disability as was reasonably certain, the physicians' testimony was admissible, as they were not required to go any further in their statements than their candid opinions would warrant.—Manton vs. H. L. Stevens & Co., Iowa Supreme Court, 153 N. W. 87.

MEDICAL RECORD.

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REPORT OF THE AMERICAN SURGICAL ASSOCIATION'S COMMITTEE ON FRACTURES.

THREE years ago the American Surgical Association appointed a Committee "to prepare a statement of the relative value of the operative and non-operative treatment of fractures of the long bones," etc., and a statement covering some phase of this subject has been presented at each of the three subsequent annual meetings. At the meeting this year, W. L. Estes, as Chairman of this Committee, presented a report (*Annals of Surgery*, September, 1915) based on the analysis of 1745 cases, of which 387 were operative. The Committee was greatly handicapped in these investigations by the fact that in general poor records were kept of fracture cases, so that the averages obtainable from the statistics collected (as to length of disability and other necessary data) could not be held to be conclusive. To remedy this for future investigations the Committee suggested that the record form which they had used be approved by the Association and that the American Medical Association be petitioned to put its seal of approval on it also; that all members of the Association keep records according to this form and see that they are so kept in the hospitals to which they are attached; that a copy be sent to all Accident Insurance Companies, to be embodied and incorporated in the papers given to the assured; to all Hospital Boards, with the request that these records be made a part of the routine records of fracture patients; and to various other bodies having to deal with fracture cases.

Among the findings of the Committee were: That the results are best in the age period under 15 years and that conservative treatment is generally effectual during this period; that good anatomical restitution of a fractured long bone always results in the best functional result and has the shortest period of disability; that while few open operations are reported under the 15-year age period, it seems to make little difference in the result, except in senile cases, what the age period is when the operation is done; that the end-results of operative and non-operative treatment of compound fractures show very little difference in the anatomical result, but the functional results are better after operative treatment except in compound fractures of the shafts of both bones of the leg, and here the reverse seems to be true; that there is no method or splint universally applicable, nor has any given splint or apparatus proved its superiority; that it is evident that traction methods are most frequently unskilfully employed and that as a rule too little weight is used; and that plaster casts and moulded splints are especially indicated and useful after a fracture has been satisfactorily reduced.

Among the recommendations made by the Committee are: (1) That as a general principle fractures should be treated by a skilled surgeon. (2) The *x*-ray should be employed by a competent radiographer, or a fluoroscope should be used for diagnostic purposes before the permanent dressing is applied. At least two skiagrams should be taken, and they should be taken from opposite perpendicular directions. Skiagrams should also be taken after permanent dressings are applied to prove proper reduction, and at the end of the treatment to show the result of the union and for the purpose of a graphic record. (3) Fractures should be reduced immediately after the injury, if it is possible to obtain and apply proper retaining apparatus or splints. The statistics show markedly better results when the treatment is begun at once. It is, however, not only useless but cruel to subject the patient to the pain of manipulation for reduction unless the surgeon has proper fixation apparatus at hand and the patient is where he may have a permanent dressing applied. (4) General anesthesia should be employed as a rule to facilitate reduction and prevent pain, unless the condition of the patient contraindicates it. (5) Neither the non-operative nor the operative method is to be recommended exclusively. Each has its indications and should be employed when required. Generally speaking, the age period under 15 years is that in which non-operative methods are especially effectual. In the other age periods up to 60 years operative methods may with confidence be employed when non-operative treatment has proved ineffectual in reducing or controlling the fragments in proper position. The operation should not be delayed longer than one week after the injury. (6) The open method when adopted should be employed early. It may be used at any age period, except in senile cases, whenever a skiagram shows a deformity or a position of the fragments which obviously cannot be reduced, or when proper efforts at reduction and retention have proved unavailing. (7) Some form of rigid plate applied directly to the bone or an Albee "inlay" seems to be the best fixation method in operative cases. (8) Open operations for simple fractures should be undertaken only by experienced surgeons who are thoroughly equipped by training and who have proper instruments and apparatus to meet all the possible indications of the operation.

DISINFECTION WITH DRY HOT AIR IN RAPID MOTION.

THE advantages and disadvantages of dry heat as a disinfectant agent are quite familiar. It does not injure clothing, leather, and similar materials, and colors are not appreciably affected. On the other

hand, dry heat has but slight powers of penetration and for that reason is not suitable for the sterilization of packages composed of several layers of materials or of folded garments. Although Schumburg several years ago demonstrated that penetration was increased when the heated air was kept in motion, no practical use seems to have been made of his observation. Rather recently an apparatus has been devised, primarily for the purpose of killing vermin in the clothes of soldiers, and it has proved so successful that Rautmann (*Centralbl. f. Bakt.*, 1915, lxxvii, 50) was led to test its disinfecting powers on a number of materials and under various conditions.

The apparatus consists of an electrically driven blower, which drives air through an electrically heated coil and thence into the disinfecting chamber. From here the air is returned again to the blower so that the same air is used over and over. The speed of the air current is given as 2.8 meters per second. An automatic regulator prevents the temperature in the chamber from rising too high. In its exit from the disinfecting chamber the air apparently encounters baffle plates, which offer more or less obstruction to its passage. The results of the tests were very encouraging. In every instance the organisms tested were killed, whether they were animal parasites or such resistant bodies as anthrax spores, even when they were protected by wrapping them in many layers of linen or wool. By the use of maximum thermometers Rautmann was able to demonstrate a temperature of over 150° C. in the center of a large roll of material after two hours and eleven minutes, in spite of which the material was not altered or injured in any way. Temperatures of 160° C. were often reached within an hour, and in no case did any of the material tested show any injurious effects. Rautmann apparently did not estimate the pressure under which the air existed in the disinfecting chamber, and it is possible that an increased pressure had something to do with this quite remarkable efficiency of dry heat. He did, however, measure the moisture content of the air and found that it became less during the progress of the sterilization.

These experiments greatly broaden the field of the application of dry heat for disinfection purposes. The absence of injury to material is an important factor and, although the details of construction of the apparatus are not given, the author says that it is not expensive. In the absence of electricity the blower may be driven by a gas motor and the heat supplied by a coal or wood fire. Such an apparatus might find many useful applications beside those in military life.

THE DANGERS OF BLOOD TRANSFUSION.

THERE is no possibility of denying that blood transfusion is an important method of treatment in suitable cases, and its use has probably often been instrumental in saving life. There is all the more reason, therefore, to regret the present tendency to use it on any or all occasions without regard for the proper indications. If persisted in, this practice will inevitably result in discredit to a method which has many features which should make it indispensable at times. This present tendency is no doubt due, in part, to the recent development in the technique of the operation, which has resulted in making it a relatively easy and simple procedure. It is also due, however, to a failure on the part of the medical profession to recognize the dangers which may follow transfusion in the presence of unfavorable conditions. It is true that these dangers are, in a measure, avoided by the testing of the bloods for incompatibility, but the protection thus afforded is not absolute.

Ottenberg and Thalhimer have recently published (*Jour. Med. Research*, 1915, xxxiii, 213) further results of their studies in experimental transfusion and show some interesting observations. They found no evidence of harmful effects resulting from the transfusion of iso-agglutinative blood and consider this as relatively innocuous. On the other hand, transfusion of blood which was hemolyzed by the recipient (they were working with cats) produced hemoglobinuria, intravascular phagocytosis of red cells, and often a glycosuria. The glycosuria seemed to be due to or to be connected with the formation of antibodies directed against some serum constituent. A very important observation was that when an animal was transfused several times it tended to develop hemolysins in its blood, even though the donor remained the same, and that if the transfusions were persisted in, not only were the injected red cells destroyed, but a gradual destruction of the animal's own cells began and continued for days and weeks, resulting in a pronounced anemia. Nucleated red cells appeared in the circulating blood. There was a tendency to spontaneous recovery.

One of the favorite methods of the present day, especially in cases of pernicious anemia, is the repeated transfusion of small quantities of blood from the same donor. It probably has not been the custom to perform the compatibility tests more than once under such circumstances, so that there is no information regarding the possibility of the development of hemolysins. There have been cases where such treatment seemed to have the effect of hastening the process of blood destruction in the patient, and it may very well be that in these instances the recipient developed antibodies against the blood of the donor and that one result was the increased destruction of his own cells. The possibility is certainly there, and it is essential that in the future transfusions be resorted to less frequently and with more mature consideration than in the past.

ALCOHOLIC PSYCHOPATHIES.

ALCOHOLIC insanities manifest themselves in varying forms. Such manifestations possibly to a great extent depend on the strength and kind of alcoholic beverage taken, on the susceptibility of the individual, and on the length of time over which the indulgence extends. The concentration of the beverage, too, in some degree, is a factor which governs the damage done to the nervous system. And lastly, the higher alcohols and aldehyde contained in many brandies and whiskies are thought to be more harm-

ful than ethyl alcohol. There seems, however, little reason to doubt that a defective heredity, an inherited predisposition, or a structural defect of nervous tissue provides the subject with a constitution on which alcohol acts with the most disastrous consequences. By some it is argued, and with a good deal of reason, that insanity cannot be induced by alcohol unless the subject has a taint; that is, is peculiarly predisposed.

In a paper which appeared in the *Medical Press and Circular* for October 13, Dr. Clarence G. Godfrey pointed out that while he was not prepared to go so far as this, it was significant that the subjects of alcoholic insanities usually show an unimpaired condition of those viscera which are expected to undergo cirrhotic changes in the sane alcoholic. This leads to the supposition that only those who have stable nervous organisms can drink long enough to acquire cirrhotic livers and kidneys, and that if the brain is vulnerable, it will succumb first; and on the other hand, the chronic drunkard who has usually retained his reason to the end, will generally, or at least often, show no structural change in his brain, although his other organs may be diseased.

However, as the writer truly states in defining certain psychopathies as alcoholic, the mistake must be avoided of including those disorders in which alcoholism is a symptom and not a cause of the insanity. The term alcoholic insanity must therefore be confined to those forms of mental disease in which alcohol has not only been the cause, but has so influenced the symptoms that they are in some way special or peculiar, so that the mental and bodily results are specific. Godfrey reviews all the forms of alcoholic insanities, and finally asks the question, why the same toxic agent, acting on the same organ under apparently similar conditions, produces in the one case Korsakoff's disease, in another pseudoparesis, in a third hallucinosis, and so on. Is it the varying quality of the neurones in different individuals, or of the alcohol itself, or of sociological conditions that bring about such varying results?

THE THRIFTY SMOKER.

THE clinical picture following the sudden withdrawal of alcohol in a patient accustomed to its excessive use is more or less familiar to all of us, but we are less conversant with the effects of the abrupt cessation of the tobacco habit. There are probably several reasons for this. One is that neither the public nor the medical profession has yet learned to regard the use of tobacco, even in excess, as often capable of doing serious harm to the smoker. Certainly the habit is not generally looked upon as comparable to alcoholism in this respect. Another reason is that it is rare for a devotee of this weed to forswear it entirely, even though he knows that it is doing him harm. It is true that he may cut down his customary allowance to one-half or one-third, but those are exceptions where the habit is suddenly stopped.

Such cases do occur, however, and the most distressing feature is the mental depression of the patient. This may be so great as to interfere seriously with the daily routine of his life, and he may come to the conclusion that it is better for him to risk the dangers which lurk in nicotine rather than be a nuisance to his friends and relatives. A little investigation may prevent such a state of affairs and allow the patient to resume his habit to some extent without harm. The physician should find out not only how much his patient smokes in a day, but also how he smokes. It will be soon evident that many smoke a cigar or cigarette to the bitter end. The more fastidious ones use holders, while the less particular impale the butt on a toothpick or the point of a penknife and stay with it to the last gasp.

Whether such a custom is the product of thriftiness or merely represents an all-consuming affection for My Lady Nicotine is not always easy to tell, but the effect is the same in any case. The closer the burning tobacco is to the mouth the more are its toxic effects enhanced. Nicotine (if that is what causes the trouble) is of course present only in an infinitesimal quantity in tobacco smoke, but it seems to have a greater toxicity under such circumstances; and then little or none of it is lost when the distance traversed is so small. The long pipes which we are wont to associate with phlegmatic Dutchmen are undoubtedly more innocuous than the comparatively short pipe favored by the Anglo-Saxons. Some of this latter variety, however, are made with a well or some other patent attachment, and it would seem that we should recommend these to patients who suffer from smoking. In the case of cigars and cigarettes we should advise that they be discarded when about three-quarters smoked, no matter how much agony such a course entails to the thrifty or to the tobacco-loving soul.

HYPERTONIC SALINE SOLUTION IN GYNECOLOGY.

HYPERTONIC saline solutions, Wright's solution, and others have been employed with a very considerable degree of success in the treatment of septic shell wounds, and Clifford White draws attention in the *Lancet* of October 30 to the value of such solutions in the treatment of surgical affections of the female pelvis. Since he returned to England some months ago he has used a solution made up of 4 drams of sodium chloride and ½ dram of sodium citrate to each pint of water as a vaginal douche in all inflammatory and septic cases in which a douche was required, and has found that the effect was better than that of the antiseptic douches previously employed. In puerperal cases with sloughing of the perineum and vagina the effect is said to have been extraordinary. According to White, in puerperal sepsis, especially abortion cases, after cleaning out the uterus and douching it with saline solution it is useful to leave a few tablets of salt inside the uterine cavity to ensure that any organisms left there are flooded with the serum that is drawn in to dissolve the salt. It is likewise pointed out in this paper that in or about 1905 the late Mr. Barnard advocated the use of brine enemata for abdominal cases, and White has frequently ordered them and has been satisfied with the result. Finally, attention is drawn to the fact that for the obstinate constipation of eclamp-

sia such enemata are very useful, as soap enemata may be retained and turpentine is absolutely contraindicated because of the renal condition.

Recklinghausen's Disease.

This so-called congenital neurofibromatosis attributed to disturbances of the embryonal period now falls in line as another manifestation or concomitant of disease or disorder of the hypophysis and chromaffin system. Along with the peculiar formations which appear at times over the entire integument may be seen pigmentation agreeing in every way with that of Addison's disease. There are also seen in certain cases anomalies of osseous growth, and optic nerve symptoms which point to involvement of the hypophysis. At a meeting of the Hamburg Medical Society last summer (*Deutsche medizinische Wochenschrift*, September, 23) Delbanco reported a case of neurofibromatosis in a woman of 50. One rapidly growing and painful neoplasm in the knee hollow was removed and proved to be malignant. The skin was completely covered with the growths and also deeply pigmented. Nervous cell elements displaced during the embryonal period were able in later years to give rise to ganglion cells, glia cells, and nerve fiber cells. The relation of this anomaly to the endocrine glands was, however, not made clear.

News of the Week.

Red Cross Seals.—Announcement is made by the American Red Cross that the proceeds of the sale of the Red Cross Christmas seals will be devoted this year, as in previous years, to the carrying on of the tuberculosis work in this country, and not to the war relief work of the society.

Death Rate in New York.—During the week ending December 11 the death rate in New York City was 13.66, representing a total of 1,520 deaths, or 182 deaths more than during the same week of last year, when the rate was 12.15 per thousand. Of these deaths 54 may be accounted for as due to the increase in population. The mortality from diseases of the heart and kidney was particularly heavy, 399 deaths, or 106 more than last year, being due to these causes, and the Department of Health has again called attention to the necessity for a yearly medical examination as a safeguard against these diseases.

Tooth Paste Tax.—The American Druggists' Syndicate is preparing petitions to be signed as a protest against the placing by Congress of an emergency tax on tooth paste. The petition says: "We submit that instead of taxing tooth paste and toilet preparations which contribute to human cleanliness, human comfort, and human health, the tax ought properly to be paid by those who are making profits out of the war."

Medical Supplies Freed.—The British Government has announced its decision to permit medical supplies consigned to the American Red Cross to enter Germany, the permission being contingent upon the guarantee of the United States that such supplies will be used only by the American Red Cross. The United States had previously protested against the holding up of supplies of rubber gloves needed by the Red Cross workers in Germany.

Stealing American Property.—It is reported that a troop of Bulgarians recently confiscated two carloads of flour belonging to the American Red Cross at Monastir, and when Dr. Forbes, the physician in charge, protested he was imprisoned.

Warsaw University.—The Russians have transferred the University of Warsaw to Rostow-upon-Don, while the German Government has reestablished the University at Warsaw, and has added a faculty of medicine. Professor Paszkowski, who is in charge of the academic information bureau at Berlin, has gone to Warsaw to advise on the reorganization of the university.

Liner for Hospital Ship.—The British Admiralty has taken over the White Star liner *Britannic*, of 48,000 tons gross, and has converted it into a hospital ship.

Bromide Shortage.—A tremendous recent advance in the price of bromides is the occasion of some concern, the increase being over 1,000 per cent. Bromides that before the war sold for 35 cents a pound, are now priced at $5.50, and the manufacturers report that at any price it is often impossible to obtain large quantities.

Harvard Questionnaire.—The director of the appointments bureau of the Harvard Medical School recently issued a questionnaire to 900 physicians who had graduated from the school since 1900, for the purpose of obtaining suggestions for answers to questions asked by recent graduates and medical students, and also as a part of a general movement to improve conditions for physicians and the communities they serve. The questions covered these points: What the young doctors have done; general practice or specialization; how much hospital work after graduation; how much income they have made; what was lacking in the medical school course; whether the practice of medicine has proved satisfactory. From the 600 answers received it has been deduced that one difficulty in the medical profession is that the doctors are not scientifically distributed, there being a strong tendency to remain in the large cities, and that, also, the hospitals in the city are not properly situated, so that districts often overlap. The average annual earnings of men who had been out of the medical school for thirteen years is given as $4,680; while men in their fourth year averaged only $1,835, and those in the first year only $1,237. Of the 600 only 36 reported that they had confined themselves strictly to general practice; 134 maintain general practice with a specialty; and 142 are specialists only, this number, including those who have stuck to laboratory work. Of the specialists, 90 are surgeons, 9 gynecologists, and 9 orthopedists.

Health Books for Schools.—Dr. Charles F. Bolduan, head of the Bureau of Public Health Education of the City Health Department, has prepared a list of books on health instruction, and with the aid of the public libraries these books will be placed at the disposal of the public, for circulation particularly among high school pupils. In all seventy-two books are recommended. Twenty of these come under the heading of health; four are on good food; four on food and cooking for the sick; seven on first aid to the injured; six on disease; eight on the home nurse, and twenty-three on the care of babies.

Public Health Service.—The annual report of Surgeon General Blue of the United States Public Health Service records the largest amount of work performed in the history of that service, the functions of which were largely increased by the pas-

sage of the public health law of 1912. The report lays stress on the economic importance of disease prevention. Scientific investigations of malarial infection were carried on; and studies of occupational diseases and industrial hygiene were instituted at several places during the year. A survey of industries at Cincinnati was made to determine the cause of the prevalence of tuberculosis among industrial workers; and investigations relating to the migration of persons suffering from tuberculosis were completed. Rural sanitation work was conducted in six States, resulting in the reduction of typhoid and other communicable diseases; and investigations of the pollution of streams and examinations of shellfish were also made.

Typhus in Mexico.—An epidemic of typhus fever of alarming extent is said to be raging in Mexico City, and the Carranza Government has undertaken a campaign to combat its further spread. The cases in the foreign settlements of the city are few, thirteen having been reported in the English and American colonies up to the middle of December. Among the preventive measures to be inaugurated is the establishment of a corps of sanitary police, working under the Federal Board of Health, which will oversee the cleaning of every public and private building in Mexico City and neighboring towns. Public baths and barber shops will be established; the sale of alcoholic liquors will be absolutely prohibited, and places of public amusement will be disinfected daily and forced to close each night at 11.

Journals Consolidate.—The *Physicians' Drug News and Office Practitioner* has been acquired by the Critic and Guide Company, New York, and will be consolidated with the *Critic and Guide*, beginning with the issue of January, 1916. The consolidated journals will remain under the editorship of Dr. William J. Robinson.

Americans Honored in Japan.—Dr. William H. Welch of Johns Hopkins University and Dr. Simon Flexner of the Rockefeller Institute for Medical Research have been decorated by the Emperor of Japan in recognition of their help and guidance to Japanese medical students in the United States and of their contributions to medical work in Japan. Dr. Welch received the decoration of the Third Order of the Rising Sun and Dr. Flexner that of the Third Order of the Sacred Treasure.

Aid Hospital in Japan.—President Wilson was one of many prominent persons who attended on December 13 a meeting in Washington in the interest of St. Luke's International Hospital at Tokio, Japan. Dr. Rudolf B. Teusler, superintendent of the hospital, was among the speakers.

Centenarians Dead.—Mrs. Emily M. Osborne of the Bronx, New York, who celebrated her one hundredth birthday last April, died suddenly last week.

Mrs. Rachael Josephvitch, the oldest inmate of the Harlem Home of the Daughters of Israel, died at the home on December 16, aged 106 years.

Medical Examination Day.—The Department of Health announces that the experiment of a Medical Examination Day in New York was very successful and met with a hearty response from the public. Although December 8 was the day set apart many persons called at the various clinics and offices of the department both before and after that date, and there seemed everywhere a deep appreciation of the preventive work which the department is attempting to organize.

Goats' Milk for Infants.—Through the cooperation of the Research Laboratory of the Department of Health and the Sea View Hospital, New York, the value of goat's milk in infant feeding is to be studied. As previously announced, the hospital has recently received a flock of twenty-six goats bred by the Department of Agriculture, which will permit of the feeding of 125 children at the institution. The clinical observation of these patients will be supplemented by tests and examinations made at the laboratory. An attempt will be made to determine whether the immunity of goats to tuberculosis can be transmitted through the milk to the children.

Hospital Gets Funds.—Subscriptions amounting to $250,000 were pledged on December 12 at the ninth annual celebration of the founding of the Hospital for Deformities and Joint Diseases, New York. The pledges will form the nucleus of a building fund, the cost of the new buildings desired being estimated at about a million dollars.

Fire Causes Panic.—A slight fire in the Jersey City Isolation Hospital, Jersey City, N. J., on December 15, caused a panic among the twenty-three patients, mostly children, who were with difficulty quieted by the doctors and nurses. The fire started in the cellar of the building, and because of the smoke it was necessary to carry all of the patients to a large porch at the extreme end of the building. No serious damage resulted.

Bequests to Charities.—By the will of the late Catherine J. Pryor of New York, who died on November 3, the Manhattan Eye, Ear, and Throat Hospital and the Society of the New York Hospital received $1,488.25 each, and the New York Institute for the Instruction of the Deaf and Dumb and the New York Institution for the Blind receive $1,988.22 each.

The sum of $25,000 is left to St. Christopher's Hospital for Babies, Brooklyn, by the will of the late Harrison P. Wallis of that city.

Will Not Test Autolysin.—The Board of Health of New York at a recent meeting decided not to make an official test of autolysin, which has been widely advertised as an effective treatment for cancer. The Board had been requested to make a series of tests extending over three years under the direction of a corps of specialists, but since cancer is not a communicable disease, it was felt that the expense to the Department of Health of such a long experimentation would not be justified.

Civil Service Examinations.—On January 18, 1916, the United States Civil Service Commission will hold examinations for the purpose of filling vacancies in the Philippine service, as follows:

Bacteriologist and pathologist (male), $2,000-$2,500. The degree of M.D. or Ph.D. from a college or university of recognized standing, including at least one year's training in bacteriological laboratory work, is a prerequisite. The duties of the position will be the carrying on of research work in the laboratories of the Bureau of Science, combined with routine bacteriological and pathological work, and applicants should have experience in immunity and serum therapy.

Assistant surgeon (male), $1,800. From the register of eligibles resulting from this examination certification will be made to fill a vacancy in this position in the Bureau of Science, Manila. Applicants must be graduates in medicine from a school of recognized standing, and have had in addition special training in bacteriology, either during their medical course or in postgraduate

work, and must be between the ages of twenty-one and forty.

Persons desiring to take the above examinations should apply for Form B. I. A. 2 and 2118, stating the title of the examination, to the United States Civil Service Commission, Washington, or to the secretaries of the boards in various cities.

The A. M. A. Elections Declared Illegal.—The Illinois Supreme Court on Monday of this week affirmed the decision of the Appellate Court, handed down some time ago in the suit brought by Dr. G. Frank Lydston, that the election of the American Medical Association held outside the State of Illinois is illegal. The court has, therefore, ordered the issuance of a writ of mandamus directing the State's Attorney of Cook County to bring quo warranto proceedings against the Association for the removal of the present officers.

Personals.—Dr. HENRY W. FRAUENTHAL of New York has removed his office to 160 West 59th Street.

Dr. WILLIAM OPHÜLS, professor of pathology in the department of medicine of the Leland Stanford University, California, has been appointed acting dean of the department to succeed Dean Wilbur, whose term as president of the university will begin on January 1, 1916.

Dr. HARRY FINKELSTEIN has been appointed adjunct attending surgeon to the Hospital for Deformities and Joint Diseases, New York.

The Late Dr. A. Alexander Smith.—The following minute was adopted at a meeting of the New York Clinical Society on December 17: "It is with profound sorrow that the members of the New York Clinical Society record the death of their late associate, Dr. A. Alexander Smith. Dr. Smith was one of the founders of the Society and has always been active in promoting its interests and adding to its dignity. The value of his wide experience, keen observation, and sound judgment deeply impressed all those whose privilege it was to associate with him, and his character, kindliness, and geniality exerted an influence which will be of lasting endurance among the wide circle of his colleagues. The Society directs that this minute be transmitted to the medical press and a copy be sent to the family of Dr. Smith."

Obituary Notes.—Dr. CLINTON BEECHAM KNAPP of New York, a graduate of the College of Physicians and Surgeons, New York, in 1902, a member of the New York State and County Medical Soocieties and the New York Obstetrical Society, formerly attending surgeon at the Lying-In Hospital, and assistant gynecologist at the General Memorial Hospital, died at his home in Caldwell, N. J., after a long illness, on December 15, aged 41 years.

Dr. FREEMAN HARDING HORNIBROOK of Cherokee, Ia., a graduate of the University of Illinois, College of Medicine, Chicago, in 1902, and a member of the Iowa State Medical Society and the Cherokee County Medical Society, died very suddenly at his home, on December 1, aged 37 years.

Dr. ABRAHAM T. FULTON of Mount Vernon, Ohio, a graduate of the New York University Medical College, New York, in 1882, died at his home from Bright's disease, on November 29, aged 60 years.

Dr. FRANCIS A. MITCHELL of New Albany, Ind., a graduate of the University of Louisville, Ky., Medical Department, in 1883, died suddenly at his home on November 25, aged 82 years.

Obituary.

RUDOLPH AUGUST WITTHAUS, M.D.,

NEW YORK.

DR. R. A. WITTHAUS, who died on Monday of this week, was born in this city August 30, 1846. After graduation from Columbia University in 1867 and completion of a post-graduate course for the degree of A.M., he studied at the Sorbonne and Collège de France in Paris. Upon returning to this country he took up the study of medicine, receiving his M.D. degree from the University Medical College in 1875. He was associate professor of chemistry and physiology at the University Medical College in 1876-78, and full professor from 1882 to 1898; from 1898 to 1911 he was professor of chemistry and physics at the Cornell Medical College; he had also filled the chairs of chemistry and toxicology for several years at the University of Vermont and the University of Buffalo.

Dr. Witthaus was a member of the American Association for the Advancement of Science and of various societies of chemistry in this country and in Europe. He was the author of "Essentials of Chemistry," "Manual of Chemistry," which reached its sixth edition in 1908, and the "Laboratory Guide to Toxicology." He was also the editor of "Witthaus's and Becker's Medical Jurisprudence," and contributed many articles on toxicology, chemistry, and medical jurisprudence to the Reference Handbook of the Medical Sciences and various chemical and medical periodicals. He was a toxicologist of great repute and had testified in some of the most notable murder cases in the United States.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

BRADSHAW LECTURE—NERVOUS AFFECTIONS OF SIXTH AND SEVENTH DECADES OF LIFE—RESEARCH INSTITUTE—BIRTH RATES—CANCER—ROYAL COLLEGE OF SURGEONS—NOBEL PRIZE—AMBULANCE AND FIRST AID.

LONDON, Dec. 3, 1915.

THE Bradshaw Lecture of the Royal College of Physicians was this year entrusted to Prof. Michell Clarke, who used it for the consideration of the "Nervous Affections of the Sixth and Seventh Decades of Life"; these may be classed as affecting the general nervous system or as the cerebral portion, the latter tending to increase during the period in question. That of the greatest activity of the originative and creative faculties has passed, as a rule, by the age of 50, but in the later years experience has been ripening unless disease has intruded to prevent or restrain the normal growth. The lecturer passed by meninigitis with the merest note on the tuberculous variety, and that on account of the peculiar symptoms in adult cases. When it is due to pus-producing organisms it is not frequently seen after 50, as a primary infection lumbar puncture will determine the diagnosis. As a complication of pneumonia it may be a feature of that disease or due to the one infection. In adults it is usually the termination of chronic pulmonary tuberculosis. Of 126 cases between 16 and 60 years of age fifteen occurred between 40 and 50, and only four after 50, illustrating its infrequency after that age.

Diseases of the cerebral vessels are of most importance on account of their effects on nerve tissue, giving rise to what we term nervous diseases in regard to the symptoms we are asked to relieve. But the causes belong rather to the vascular system as do the methods of prevention. Cerebral hemorrhage and thrombosis are the most common between 50 and 70; at this age the symptoms began in 7.2 per cent. of 500 cases. The nature of the growth was verified by post-mortem or by operation in 238 and the onset in them was between 50 and 70 in 9.6 per cent. The gliomata were 49.2 per cent. of the total. Carcinomata were fewer in number, but the percentage nearly 40. In another series of 485 cases from various sources the percentage at same age reached 13. In 18 cases of intracranial tumors—12 verified by post-mortem or operation—the tumor was cerebellar in 1, it was in the cerebello-pontine angle in 2, in the others variously situated. Three of the patients were over 60; in 4 vertigo was the first symptom. Diagnosis is generally difficult at first—the prominent symptoms being common in persons over 50 and of various origin. Vascular disease is suggested by mono- or hemiplegia, but a gradual onset of hemiplegia is always suggestive of tumor. Passing to cerebrospinal syphilis Professor Clark said of 261 cases 9 per cent. were over 50 and only three cases over 60; in these 60 personal cases are included in which eight were over 50. The interval between infection and the onset of nervous symptoms for the majority may be reckoned as within 10 years—many much earlier. The common statement that the older the patient the shorter is the interval is not correct. In three of the lecturer's cases the age of infection is given as 35, 44, and 46 respectively, the cerebral disease coming on from 12 to 15 years afterwards. In others late onset seems due to a long interval after infection. The symptoms do not differ much from those in younger patients. Fits indistinguishable from ideopathic epilepsy may occur, usually beginning before 50, though it appeared in a man of 60 who had had attacks resembling petit mal; another at 54 who had had many severe epileptic seizures. Syphilitic affections of the spinal cord are more uncommon than cerebral cases after 50. The symptoms come on rather early especially in meningomyelitis. Passing to the neuroses, it is commonly said that migraine tends to be mitigated in later life and though there seems ground for this opinion a prognosis to this effect in any given case cannot be safely given.

Epilepsy, too, diminishes as life advances, but it may begin at any age and great care is required to make sure that an epileptic-form fit in later life is not symptomatic of some underlying disease. Between 50 and 60 we meet with (1) cases in which it persists throughout life; (2) in which it occurred in early life, was suspended for some years and reappeared late; (3) in which the onset was after 50. These last may be connected with arteriosclerosis and high blood pressure, and so are not to be considered as idiopathic epilepsy; they may be severe or only mild (petit mal). Some are undoubtedly due to contracted granular kidney, but others not. Vertigo is sometimes a symptom and complicates the diagnosis, especially when aural vertigo attacks an epileptic, especially as it is so often due to other causes. Though the nervous affections of this period form an interesting group they are comparatively less numerous and urgent than is sometimes supposed. Paralysis agitans is characteristic and next in frequency some combined scleroses and muscular atrophies of central origin.

The first annual report of the Medical Research Committee (for the year closing on October 1) shows that the war arrested plans for research which had been drawn up and were about to be started. But others which had been initiated have been carried on, dealing with tuberculosis, relation of milk to hygiene, rheumatic infections, nervous diseases, inhalation of dust and pulmonary disease, diabetes, cardiac affections, general pathology. No subject had seemed more urgent than the pathology of infected wounds with a view to treatment. The recent battles have furnished experience of septic wounds and unsuspected difficulties met with in their management. The committee expresses gratification that their organization, though only in its infancy, has been found directly applicable and adapted to the needs of the present time. The Medical Research Fund has shown the feasibility of bringing auxiliary agencies rapidly to the service of government departments—especially to the army medical department.

Dr. Louis Parkes read a paper on the 23rd inst. at the Royal Sanitary Institute, in which he said that the birth rate of nearly all the European nations had been decreasing during the past thirty years, and it seemed certain that it would continue to decrease for many years after the war, the effect of which at present can only be a matter of speculation. Statistics give an approximate idea of the number of males of military age who after two years of war will have died of disease or wounds, or will have become permanently incapacitated. Germany from its population of 66,000,000 would have lost 2.2 millions; Austria-Hungary (50,000,000), 1.7; European Russia (123,000,000), 3.3; France (40,000,000), 1.3; United Kingdom (46,000,000), 0.5. Adding the figures of other nations (estimated) he hazarded the total destruction of life in the two years of war to have been 20,000,000. Dealing with the causes of rise and fall in birth rate, he insisted on the woman's demand for emancipation and the many occupations opened to her. The saving was in the lowest classes, and it was scarcely satisfactory for the nation to be reinforced from the least intelligent and most dependent units.

Cures for cancer are so numerous that if half the good results reported proved permanent the disease ought to be exterminated. Many cases, however, seem to survive and furnish material for more remedies. The internal administration of copper sulphate is stated by Dr. Manara in *Il Policlinico* to have cured a case of uterine cancer, of which he gives a full account, with illustrations of the microscopical appearances of portions of the cervix removed at different times. He employed daily intramuscular injections of a 1 per cent ammoniated solution of the drug, which he thinks is reduced and precipitated in the body as a sub-oxide by the glycogen of the neoplastic cells. These are killed by the caustic effect of the suboxide, and the growth of the neoplasm thereby arrested.

The annual meeting of the Royal College of Surgeons was held Nov. 18, Sir F. Eve, vice-president, in the chair. Mention was made of the efforts of the council to remedy the scarcity of subjects for dissection. Special regulations had been made to facilitate the obtaining of their qualifications by those who had completed their training and other matters connected with the war, an extra examina-

tion having been held from which an increase of membership had resulted.

The claim of members to representation on the council was again discussed, with the usual result. The president in reply to an appeal for his opinion said the objects of the college were direction of the education and examination of candidates for admission and the advancement of surgery. Some seemed to desire to make it somewhat like a trades union.

The Nobel Prize for medicine for the year closing with October has been awarded to Dr. Barany of Vienna University for his work on the vestibule of the ear.

The Governor of Hongkong reports the receipt of the sum of £450 from the Hon. Mr. Lau Chu-pak, on behalf of himself and his son, for the purchase of a motor ambulance to be presented to the St. John Ambulance Corps, together with a subscription of £163 19s 4d from some of his Chinese friends, for the equipment of the same.

All troops trained in Canada are to have instruction on first aid for the wounded, given by the Canadian branch of the St. John Ambulance Association.

Progress of Medical Science.

Boston Medical and Surgical Journal.

December 9, 1915.

1. Medical and Social Aspects of Syphilis of the Nervous System. Abner Post.
2. Examination and Prophylaxis for Syphilitic Patients and Their Families. Helen M. Wright.
3. Bladder Tumors in the Young. R. F. O'Neil.
4. A Study of Kroenig's Isthmus in Pulmonary Tuberculosis Walter C. Klotz.
5. Intussusception. William E. Ladd.
6. Some Uncommon Types of Skin Disease. A. J. Nute.
7. Progressive Biochemistry. A. Everett Austin.

1. **Medical and Social Aspects of Syphilis of the Nervous System.**—Abner Post calls attention to the financial aspect of syphilis. It is the only communicable disease where the community demands that the suffering individuals shall bear the expense of protecting the community. The social conditions of syphilis are extremely interesting. The social worker has a delicate task in attempting to improve the social condition of syphilitics, and it is a matter that presents wonderful opportunities for mischief. When the social worker goes into the family of a syphilitic she must dismiss from her mind all presupposed guilt. Syphilis is perhaps the only crime in which it is taken for granted that the individual is guilty. There are a large number of innocents. Without any regard to numbers some such statement as this may be made: The innocents are too many to be ignored. The immoral are not all lost souls; some of them are to be numbered with those repentant sinners that cause more joy in heaven than those who never went astray. It is the function of social service to seek and to save rather than to judge. One must also keep in mind that the danger is confined practically to the individual whose syphilis is comparatively fresh and who has external moist lesions, so that the mere presence of a syphilitic is not by any means a source of danger.

2. **Examination and Prophylaxis for Syphilitic Patients and Their Families.**—Helen M. Wright describes the methods of investigation used by the social service department of the Psychopathic Hospital, Boston, Mass. Investigations have been projected in four directions, namely, examination, history, treatment, and education. The work suggests the following recommendations for broader methods of investigation. 1. A system by which every syphilitic house patient at the Psychopathic Hospital shall have a social history obtained from outside sources. 2. The use of the Wassermann test in suitable cases and a standardized method of recording physical stigmata for all children in the public schools. 3. A public (Board of Health) registration of all persons having a history of syphilis, either by name or by number. 4. A state appropriation provided whereby salvarsan treatment may be used for therapeutic and research purposes. 5. Methods of providing public presentations of scientific data in form which the lay public can interpret for itself. 6. A Health Center, including evening clinics, men and women's clubs, conferences, and exhibits where information under medical supervision, may be given regarding syphilis, and allied diseases, as well as other mental and social hygiene questions.

3. **Bladder Tumors in the Young.**—R. F. O'Neil considers two groups of cases, those occurring in children from one to ten years and from ten to twenty years, and a second group including those from twenty to thirty years. He finds that vesical tumors in children are of very great rarity. The majority appear before the fifth year. They are of the connective tissue type and are clinically and pathologically malignant except in rare instances. Difficulties of micturition are generally the first symptom in the absence of stricture and this should excite suspicion. Straining is common. Early diagnosis and operation offer the only hope of recovery. In the second group of cases, occurring in the decade from 20 to 30 years of age, both epithelial and connective tissue types are met. Statistics from a number of hospitals show that cancer of the bladder under 30 is a very rare condition. On the whole tumor of the bladder occurring in the young are most unsatisfactory both from the standpoint of diagnosis and treatment.

4. **A Study of Kroenig's Isthmus in Pulmonary Tuberculosis.**—Walter C. Klotz has made observations on 129 cases of clinical tuberculosis admitted to the Barlow Sanitarium since May, 1913, and of 21 controls. His findings lead to the conclusion that unless the disparity of the apical percussion field as expressed in terms of Kroenig's isthmus is very marked, it does not necessarily point to tuberculosis of the corresponding side; that such disparity is of much less significance on the right side than on the left; and that in most instances the disparity of the apical percussion fields is simply due to anatomical changes unrelated to tuberculosis.

5. **Intussusception.**—William E. Ladd cites statistics with reference to intussusception at the Children's Hospital and the Massachusetts General Hospital which show that prior to 1908 there were remarkably few cases of intussusception referred for surgical aid and the mortality was very high; since 1908 the situation has changed slightly in that there has been a larger number of cases operated upon with a mortality just under 49 per cent. This is a considerable improvement but there is room for more. In any community where the cases are brought to the surgeon late he is bound to have a high mortality. The chief problem is to educate the general practitioner to be on the lookout for this disease which is not so rare as has been supposed; to appreciate the signs and symptoms of the disease in its early stages; and to send the case without delay to a surgeon of experience in the surgical diseases of children. When this is accomplished the high mortality will be eliminated.

New York Medical Journal.

December 11, 1915.

1. The History of Pellagra. C. H. Lavinder.
2. The Epidemiology of Typhus Fever. John F. Anderson
3. Typhus in Serbia. J. Rudis-Jicinsky

4. Prostatisme sans Prostate. Alexander Randall.
5. Dislocation of the Semilunar Bone. Edwin L. Bebee
6. Artificially Fed Infants. I. H. Goldberg.
7. A Nontoxic Antiseptic. Douglas H. Stewart.
8. Diabetes. Louis Henry Levy.
9. Chauffeur's Knee. Gustav F. Boehme.

1. **History of Pellagra.**—C. H. Lavinder reviews the writings of Casal on the subject of pellagra which show a depth of comprehension, a wealth of assimilated experience, an accuracy of observation, an orderliness of arrangement, and a breadth of scientific spirit which is worthy of emulation by the modern medical man. Casal began to record his observations on this disease as early as 1735. His description of the erythema is quite accurate and full, and gives in some detail the characteristics of the lesion, its sites of predilection, seasonal recurrence, evolution, and termination. It is obvious that Casal had a very definite and complete comprehension of the symptomatology of pellagra. However, he pays very little attention to the gastrointestinal symptoms which in our day form so prominent a part of the disease picture. Not once does he mention diarrhea. This is remarkable since no other early author has omitted this symptom. Casal thought the cause of pellagra was to be found in the atmospheric conditions of the Asturias, the humidity, fogs, high winds, etc., and in the diet of the people. He says that the principal diet of almost all who suffer from this disease is maize and millet. He hesitates to attribute the disease entirely to this diet since he finds almost all the laborers in the province subsisted on the same diet and all did not have pellagra. His remarks on treatment are brief and to the point and his therapy does not differ much from that of our day. The restricted geographical distribution of pellagra is very sharply brought out by Casal. A review of the history of pellagra shows that argumentation and experiment have in a sense traveled in a great circle; first, poor and insufficient food, then a lack of certain definite principles in the food, then poisoned food (spoiled corn), and, through a host of speculations, back to food again, with the newer ideas of an incomplete diet and the absence of certain necessary vitamines, which on the part of the zeists, reverts again to maize.

2. **Typhus Fever.**—John F. Anderson. (MEDICAL RECORD, Vol. 88, No. 22, November 27, 1915, page 941.)

4. **Prostatisme sans Prostate.**—Alexander Randall presents a study of median bar formation as a cause of urinary obstruction and expresses the belief that although the actual obstruction is at the vesical orifice, and though the changes at this point may be as classified by Young, yet the true underlying diseased condition and its pathological transformation are in the prostate. Accordingly it must be granted that these prostatic changes constitute the ultimate pathological condition, and by reason of their close apposition to the bladder orifice cause like alterations to take place in the tissues at the orifice from which the obstruction occurs. This presents a working basis for further elaboration, while the idea that the changes, as found by urethroscopic excision of the small obstructing portion, constitute the disease in its entirety, presents no explanation of why alterations take place at this point alone. The writer firmly believes that a careful analysis of the cases of true bar formation will show in every instance underlying changes in the prostate of a similar character and of etiological significance, and he especially draws attention to the close similarity of symptoms of this type of bar formation to that of the well known condition of prostatic hypertrophy. In neither condition are there any clinical symptoms until obstruction to urination occurs. After discussing the various methods of treatment the author expresses the opinion that the method of choice in the future will be one that can hardly be classed as excision or incision of the bar, but rather a destruction of the obstructing portion by means of the high frequency fulgurating current. This was performed by the repeated application of the spark through the ordinary catheterizing cystoscope and gives promise of doing away with a more dangerous and a more radical operation.

5. **Dislocation of the Semilunar Bone.**—Edwin L. Bebee finds that the ratio of this dislocation to all others and to Colles' fracture is nearly one to twenty. It is usually caused by violence of rather a severe degree and is most common in males in the active period of life. The symptoms, after a history of a blow on the back of the wrist or a fall or blow in the extended hand, are pain and inability to use the hand. Pain is referred to the wrist but may radiate to the fingers in the distribution of the median nerve. The disability is marked. The attitude is peculiar, the wrist being held rigid with the fingers partly flexed. There is apt to be some silver fork deformity as in Colles' fracture. There is a depression in the back of the wrist due to the absence of the semilunar bone from its normal position. The *x*-ray is necessary for diagnosis. The writer finds the results, in recent uncomplicated cases, of reduction by manipulation, followed by fixation, good. If this is not successful open reduction should be attempted. In all cases of four weeks' standing or longer the treatment indicated is excision. The writer reports a case treated successfully by open operation.

7. **A Nontoxic Antiseptic.**—Douglas H. Stewart says that from letters of inquiry that have reached him there is a demand for something in the way of wound treatment which will be cleansing, non-toxic, non-irritant, antiseptic, and yet not affect healing adversely. Two powders are suggested for the purpose of making two solutions, one for wound cleansing and one for dressing purposes, though one may get good results from the two powders mixed in a single solution. The first contains table salt and sodium citrate (10-1), and the second is a mixture of equal parts of sodium perborate and of sodium bicarbonate. If the latter solution is employed to cleanse wounds and the former is used to soak bandages, results seem almost uniformly good whether infection is present or not.

9. **Chauffeurs' Knee.**—Gustav F. Boehme calls attention to this ailment which occurs in those who drive automobiles to excess or those who are not accustomed to this form of sport. Examination shows that the knee, usually the right one, is painful and that there is limitation of flexion and extension. On each side of the patella a fluctuating swelling, of more or less extent, can be noted. The picture is one of bursitis of the subtendinous bursa lying between the tendinous expansion of the quadriceps and the periosteum of the patella. The process differs from that of housemaid's knee in that the superficial bursa is uninvolved and no swelling is felt in front of the quadriceps tendon in movement. What has been rather surprising is that in none of these cases has there been any sign of inflammation in the ankle joint or in the tendons crossing it. The treatment consists in cessation from driving, rest for a short time, and local applications of aluminum subacetate or lead and opium solution. Passive movements with baking and massage should be begun early.

Journal of the American Medical Association.

December 11, 1915.

1. The Economic Waste of Sickness and Premature Death. Norman Bridge.
2. Physical Examination and Regeneration of Employees. Sidney M. McCurdy.
3. Occupations and the Venereal Diseases. William F. Snow.

4. Sickness Insurance: A Preventive of Charity Practice. B. S. Warren.
5. The Roentgenographic Appearances in Rickets, with a Comment on Differential Diagnosis. Robert W. Lovett.
6. Prolonged and Accurately Timed Intravenous Injections of Sugar: A Preliminary Report. R. T. Woodyatt, W. D. Sansum, and Russell M. Wilder.
7. Significance and Prevention of Amebic Infections in the Mouths of Children. Anna Wessels Williams, Anna I. von Sholly, Caroline Rosenberg, and Alice G. Mann.
8. Complement Fixation in Diagnosis with Bacterial Extracts Prepared with Digestive Ferments. J. O. Hirschfelder.
9. An Ameba in Suppurative and Hyperplastic Osteoperitonitis of Inferior Maxilla. Kenneth M. Lynch.
10. The Sugar Content of the Blood in Certain Diseases of the Skin. A Preliminary Report. I. R. Pels.
11. The Intraspinal Arsenic Treatment of Syphilis. G. B Hassin.
12. Vaccine Treatment of Gonorrhea. Carl C. Warden.
13. Perforation of the Biliary Tract. Report of Two Cases Howard L. Beye.

1. **The Economic Waste of Sickness and Premature Death.**—Norman Bridge says that with increased longevity, life is easier, and easier because of it. The annual cost of illness and death in the United States is conservatively placed at $460,000,000, to which may be added $500,000,000 for loss of earnings by the victims. Economic reasons, though less frequently referred to than others, are the most vital reasons of all for keeping well. Measures which have brought down the death rate and increased the average longevity are improvement of the milk supplies of cities and towns, the use of diphtheria antitoxin, improvement of water supply for urban and rural populations, the destruction of mosquitos, tenement house inspection, regular inspection of schools by experts, scientific midwifery among the poor, visiting nurses for ordinary sickness, vaccination against smallpox and typhoid fever, pure food and drug laws, partial suppression of the use of alcohol, fresh air and outdoor sleeping, athletics among young students, the care of tuberculous patients, and the cure of hookworm. Some of the things that are to be hoped for which will still further minimize sickness and increase longevity are: (1) More educated health officers and more education for them in universities; (2) improvement in the hygiene of rural life and the rural schools; (3) the early and late teaching of the value of keeping the body up to normal vigor all the time; (4) more vigorous campaign against flies, mosquitos and vermin; (5) a larger effort to lessen the spread and havoc of venereal diseases. Finally, the promise of a further reduction of the death rate lies in the more efficient use of the knowledge which research has given us and in the new knowledge which further research is bound to bring us.

2. **Physical Examination and Regeneration of Employees.**—Sidney M. McCurdy states that there is an advantage to be gained by industries in this country entering the field of medicine by means of the physical examination of employees and depends on the attitude assumed by medical advisers and by the captains of large industrial organizations. He describes the method of making the physical examinations of employees and supervising sickness at the Youngstown Sheet and Tube Company, where about 8000 men are employed. In the conduct of the examining department they use medical graduates who devote their whole time to the company's work. To properly understand his duty in this work the physician must have a fairly clear vision of its relation to the individual, to the industry and to society. In the regenerative work they try to eliminate all appearances of paternalism and a possible result, pauperism, by making the patient bear part of the expense of making him a useful member of society. Finally, the author discusses the question as to what is to become of the rejected and the unfit. He believes it is better for society if it can see the cost of the burden of the unfit than if the debt is concealed as we now have it. This bill to the community should be borne by all, and there is no better way than state insurance, which makes a man while well contribute toward the cost of care for society's infirm. If it is fair for the State to insure against incapacity due to accident, it is right that it should insure us against sickness and incapacity due to old age.

3. **Occupations and the Venereal Diseases.**—William F. Snow points out that there is increasing evidence in support of recognizing social and moral hazards of industry as well as health hazards. Venereal diseases illustrate a group of diseases not directly related to industrial health hazards, but closely related to the moral and social hazards of occupation. Certain industries are so conducted that young men and women are required to associate under conditions calculated to deaden ambition and self-respect, to arouse sex impulses, break down moral protection, preclude marriage, and eliminate home influences, thereby placing a premium on promiscuous sex relations and the contractions of venereal infections. In such ways industry plays a large part in the problem of venereal disease dissemination. The lines of warfare on venereal diseases as a menace to industry and to society at large present four important lines of attack, the medical, the educational, the environmental, and the moral. In all of this the physicians, and the industrial leaders among both employers and employees, have a part to play.

4. **Sickness Insurance.**—B. S. Warren believes that to meet the requirements for the relief and prevention of sickness in the United States, a sickness insurance law could be enacted by Congress to apply to all industries in the United States, or by State legislation to apply within the States. He presents a plan for such insurance based on an examination of the most successful European governmental systems of sickness insurance, and of the principles and methods practised by mutual benefit societies, trade unions, and industrial establishments in this country. A governmental system of sickness insurance similar to those in successful operation in Europe will enable the physician to receive pay for his practice and hospital work among low-paid wage-earners and will allow the patient to receive prompt and proper treatment without forcing him to become a ward of charity. It will strengthen the economic independence of the worker and at the same time greatly increase and stabilize the income of the physician, as well as enable the medical profession to carry on more effective preventive work.

5. **Roentgenographic Appearances in Rickets.**—Robert W. Lovett reports the results of a study of between 500 and 600 roentgenograms of children having rickets and found between 6000 and 7000 roentgenograms from the records of the Children's Hospital in Boston. The radiographs were studied from two points of view, (1) to establish and classify the Roentgen appearances of the acute, subacute, and convalescent phases of the affection, and to define the finer bone changes associated with the disease, and (2) to determine definitely those points in differential diagnosis by which rickets might be distinguished from such diseases as osteomalacia, scurvy, congenital syphilis, and similar affections. From this study the writer finds that in rickets constant changes are to be found while the disease is active, and are located most markedly in the epiphyseal end of the shaft. The most important of these changes are: (1) delayed ossification and indistinctness of the epiphysis, (2) fraying out of the end of the shaft next to the epiphyseal line, (3) broadening of the end of the shaft next to the epiphyses, (4) cortical thickening on the concave side of curved bones, and (5) areas of diminished density in the bone shadow of the shaft.

Periosteal thickening and multiple fractures often occur in the acute stage of the disease.

7. **Mouth Infections.**—Anna Wessels Williams, Anna I. von Sholly, Caroline Rosenberg, and Alice G. Mann present a study undertaken for the purpose of finding out how many children are infected with ameba and at what age these organisms appear in their mouths, the conditions of the mouths showing amebas, the types of amebas and their relation to the diseased condition of the children's mouths and the necessity and worth of preventive measures. Thus far 1,678 children between the ages of five and fifteen years have had a preliminary examination. They found very few children with healthy gums and sound teeth; about one-half of the number showed unhealthy gums. The study has brought out the following points: Amebas are demonstrated irregularly in all mouths once showing them, most constantly and in largest numbers in mouths showing gingivitis, least so in healthy mouths. With ordinary teeth cleansing methods, the number of mouths showing amebas is reduced one-half. With emetin in the tooth wash, the number showing amebas is greatly reduced, only about 10 per cent. showing them. The second set of controls—those doing their cleaning *at home* by ordinary methods—continue to show amebas in about 75 per cent. of the cases. The question as to the amount of emetin to be used has not yet been settled. We began with a 1:200 solution, then reduced it to a 1:400 strength. Probably a much smaller amount would be sufficient to keep down the development of the amebas. The writers hope by combining these practical investigations with laboratory studies that they may be able to demonstrate the relationship of these amebas in mouth infections.

12. **Vaccine Treatment of Gonorrhea.**—Carl C. Warden presents the results of the treatment of gonorrhea with gonococcus fats which he says are to be regarded as tentative. The cases treated thus far comprise acute, chronic, simple and complicated in men and infant girls. In all the subcutaneous inoculation of the fats has been followed by marked improvement and in some by undoubted cure. The chronic cases with posterior involvement and with slight but constant discharge containing gonococci in smear and culture have shown disappearance of the cocci in the discharge and symptoms in from one to three inoculations. The acute cases taken within the first forty-eight hours of the discharge showed complete disappearance of the cocci in smears and cultures and entire absence of the discharge within a week following one inoculation. Between these extremes are those cases showing well established infection, copious discharge, and considerable edema, which have required more frequent inoculations with increasing doses and which constitute an improved but unfinished series. There has been a slight reaction in the subcutaneous tissues, which quickly subsides. In some instances the constitutional reaction characterized by chilly sensations, anorexia, and some fever appeared in some six to eight hours. This reaction has not been constant, but is followed by marked clinical improvement. The coincidence of the disappearance of the cocci and the constitutional reaction together with his experience with anaphylaxis in animals following the administration of fresh gonococcus autolysates, or following lysis of whole cocci *in vivo*, has led the author to infer that the relation in question may be due to the sudden lysis of the cocci in the body of the patient.

The Lancet.

November 27, 1915.

1. Observations on the Common Intestinal Protozoa of Man: Their Diagnosis and Pathogenicity. C. M. Wenyon.
2. The Recognition and Isolation of the Meningococcus in the Nasopharynx of Cerebrospinal Fever Contacts. James McIntosh and W. E. Bullock.
3. Double Episiotomy During Labor. John Phillips.
4. The Nitrogen Balance in Diabetes Mellitus and Its Importance in Treatment. P. J. Cammidge.
5. Ophthalmic Notes in a General Hospital in Egypt. C. Wynn Wirgman.

1. **The Common Intestinal Protozoa of Man.**—C. M. Wenyon says that at a time like the present, while there is a great influx of individuals into England who have been residing for a longer or shorter period in tropical or subtropical countries, certain types of infection which only come to the notice of those interested in tropical medicine are likely to be encountered and that hence a description of these protozoa and of the methods of their identification is important. He describes the *Entamœba histolytica*, *Entameba coli*, and *Amœba limax*, and the flagellates, *Trichomonas intestinalis*, *Tetramitus mesnili*, and *Lamblia intestinalis*. He has seen a good many instances of protozoal infections of the gut in cases returning from Gallipoli in hospitals, both in London and the provinces. *E. coli* is very common in these men and also the three flagellates above mentioned. No case of Balantidium infection has come under his notice, but the vegetable organism, blastocystis, occurs in large numbers of these cases, while occasionally a small ameba of the limax type is seen. The writer describes in detail his method of making examinations and finds that the intestinal protozoa are best examined fresh and living and so soon after leaving the body as possible. The encysted forms, which are the carriers of infection, do not change and can be satisfactorily studied days after they have been passed, but the unencysted motile forms quickly change and degenerate so that after some hours it may be a matter of great difficulty to identify them. On the whole treatment with emetine has given satisfaction.

2. **Meningococcus Carriers.**—James McIntosh and W. E. Bullock present a study made during the recent outbreak of cerebrospinal meningitis. Altogether over 2,000 throats were examined for meningococcus, and of actual contacts 5.5 per cent. were found to have meningococcus in their throats. In the various series examined the percentage of positive results varied from 0 to 25; the highest figures were only found when the epidemic was at its height and where there was considerable overcrowding and therefore a close association between patient and contacts. From this study the writers are convinced that meningococcus carriers are less frequent than is generally believed. After an extensive trial of a number of different media the most satisfactory one was found to be the following: Nutrient 3 per cent. agar, 3 parts; horse serum, unheated, 1 part. The nutrient agar should be neutral to phenolphthalien and made from beef broth. On this medium the meningococcus will grow with great rapidity, and after having undergone one or two subcultivations will live several weeks without further subculturing. However, this procedure is not quite all that could be desired. The greatest difficulty lies in distinguishing the meningococcus from certain strains of micrococcus flavus. The differential diagnosis in a certain number of cases rests on a slight difference in color. In the experience of the writers none of the strains of meningococcus isolated by them from the cerebrospinal fluid of actual cases produced the slightest trace of a yellow color; in all the color was a distinct pearl gray. The whole subject of meningococcus carriers seems to require a thorough investigation.

3. **Double Episiotomy during Labor.**—John Phillips expresses the opinion that the value of this measure of preventing perineal lacerations is not sufficiently rec-

ognized. He describes the technique of the operation, emphasizing that the proper incision is one at right angles to the vulva, since this affords more expansion and no danger, and is situated where the anterior and posterior vaginal walls fall together. During the past fifteen years the writer has performed this operation 156 times. In 118 cases the patient was in labor for the first time and in the other 38 she had either an unreduced occipitoposterior presention, a much scarred and undilatable perineum, the child head was unusually large, or the after-coming head required rapid delivery to prevent still birth. In none of these patients did any untoward symptoms arise. The indications for the operation are: 1. An exceptionally large head. 2. A long and rigid perineum. 3. Atresia, congenital or acquired, of the vagina. 4. A threatened central rupture of the perineum. 5. An unreduced occipitoposterior presentation, where restitution is impossible. 6. In breech cases in which the after-coming head has to be rapidly delivered owing to threatened stillbirth of the child. 7. A narrow pelvic arch, as is present in the "male" type of pelvis.

4. **Nitrogen Balance in Diabetes Mellitus.** — P. J. Cammidge shows how it is possible by systematic and complete analysis of the urine, when a patient is taking food of a known composition, to work out a diet exactly suited to the metabolic defects of the case instead of attempting to make the patient fit some stereotyped diabetic diet. He points out that defective utilization of the carbohydrates is not always the most important feature of glycosuria or of diabetes, and that faults in the metabolism of proteins and fats may be the cause of more serious symptoms. He, therefore, advised that greater attention should be paid to such defects and describes in detail how the "nitrogen balance" for determining the way in which proteins are being utilized can be worked out. According to his observations it is impossible for a case of diabetes to improve until nitrogenous equilibrium has been established.

British Medical Journal.

November 27, 1915.

1. The Goulstonian Lectures In Spinal Injuries of Warfare. Gordon Holmes.
2. Malignant Tumor of the Kidney. An Analysis of Some Symptoms and Signs of a Series of Cases. R. J. Willan.
3. An Easy Way of Detecting *S. Pallida* and Other Spirochetes. Alfred C. Coles.
4. A Simple Method for the Cultivation of Anaerobic Organisms. Lyn Dimond.
5. Ophthalmic Notes in a General Hospital in Egypt. C. Charles A. Morton.

1. **Spinal Injuries of Warfare.**—Gordon Holmes classifies injuries of the spinal cord roughly into direct injury, contusion, and concussion, and makes observations with reference to the symptoms produced by these different types of spinal injuries when different portions of the cord are affected and to the medullary lesions to which they are due. In a number of cases the histological changes have been studied. It is obvious that these irregular and diffuse changes which are found in the various types of spinal injury must be taken into account in interpreting and estimating the significance of the clinical symptoms. The structural lesions in the spinal injuries of warfare are rarely sharply limited or circumscribed, and cannot be compared to those produced experimentally in the laboratory. The level of the lesion as indicated by the clinical symptoms, for instance, often does not correspond with the level of maximal damage. The lesions are so irregular in distribution and severity when the spinal injury is not complete that much care is necessary in drawing conclusions from the clinical symptoms alone on the functions of parts which it may be assumed have been involved. Secondary changes may occur later in the cord which can alter or modify the clinical symptoms. The most striking secondary change which the author noted was the development of cylindrical cavities which are described.

2. **Malignant Tumor of the Kidney.**—R. J. Willan analyzes a series of cases with reference to (1) age, sex, side, onset of symptoms, (2) association of pain, hematuria, and a palpable renal tumor to each other during illness. He also discusses some complications and cites illustrative cases. Excluding children he finds that 63.2 per cent. of the cases occurred between the ages of 45 and 65. Of the series 63.8 per cent. occurred in males. The separate symptoms of painless hematuria, symptomless flank swelling, acute renal colic, and chronic renal pain, account for the onset symptoms in 82 per cent. of the cases. The commonest onset symptom was painless hematuria. In 32 out of 52 cases hematuria and a palpable renal tumor were associated at some stage during the illness. In three (3) cases a varicocele was a complication, that is the condition was inoperable when first seen. Two of the patients suffered from clot retention of urine and in several cases these were marked evidences of a chronic nephritis.

3. **An Easy Method of Detecting Spirochetes.**—Alfred C. Coles describes a method of detecting spirochetes as easy as that of detecting tubercle bacilli in the sputum. It depends on the following principles: 1. That structures that are colored with a fluorescent dye, when examined on a dark ground stand out very prominently while blue stained structures are very inconspicuous. 2. That if the medium in which the red stained organisms be of very low refractive index, they are exceedingly conspicuous by dark ground illumination and can be detected with a comparatively low power, but if mounted in balsam, cedar oil, parolin, or water, they are only seen with the greatest difficulty. The method briefly consists in examining a film containing spirochetes, stained in the usual way with Giesma or Leishman's stain, dry, not mounted in any medium with dark ground illumination, and using a dry lens of medium power. The author considers a number of details which very considerably simplify this problem.

5. **Treatment of Wound Infections by Antiseptics.**—Charles A. Morton takes issue with a number of statements made by Sir Almroth Wright with reference to the value of antiseptics in wound infections. He thinks that Sir Almroth Wright is not in the least justified in stating that the antiseptic treatment of wounds has completely broken down, that antiseptics are not necessary because the resistance of the tissues is sufficient to deal with infection if the wound is kept by the surgeon in a favorable condition, and that although antiseptics have the power to kill microorganisms in the laboratory they cannot act efficiently in contact with the tissues of the body. The writer pleads for further attempts on the lines practised and advocated by Carrel and urges that we should not rest content to depend on the resistance of the tissues, nor on saline irrigation to rid a recently infected wound of organisms, but should freely apply, for a considerable period, either hypochlorous acid in 0.5 per cent. or hypochlorite of soda solution. These antiseptics in a strength potent enough to kill microorganisms will do no harm to the tissues. The writer also thinks that Sir Almroth Wright's suggestion that physicians should now take charge of the treatment of wounds will be read with some astonishment, and he questions whether it is correct to assume, as some do, that the surgeon's only business is with the knife.

Münchener medizinische Wochenschrift.

October 26, 1915.

Treatment of Unilateral Weak Sight.—Heine states that the sight of one eye may become enfeebled by disease or accident, in addition to which there is a congenital weak sight, which in most cases might be found to be acquired; for there may have been a voluntary suppression of the optical compressions. In such cases there is hope for improvement by exercising the defective eye. A case is cited of a ten-year old boy who found that the vision of one eye was becoming weak in reading tests. By the use of glasses and exercises the functions of this eye had been greatly improved. The subject is now fifty-seven years, his right eye being normal, allowing for presbyopia. The left eye has vision less than 1/10, with correction for presbyopia. Since his experience with this case the author has made a study of many cases of so-called congenital weak sight and found that almost without exception there was some response to treatment over and above mere correction by glasses. The best of the latter are often inferior to the use of the stenopäic aperture or fissure, which can sometimes double the acuteness of vision—as 6/36 increased to 6/18. In a bilateral case with vision R 6/36, L 6/18 the use of a double vertical fissure raised the acuteness to R 6/8, L 6/12. Congenital weakness is often accompanied by hyperopia due to short axis of the globus. It is better to regard an eye which lacks 8 D. of emmetropia as a —8 corrected by 8 plus glasses; just as when a normal eye is made hyperopic by —8 glasses.

Neosalvarsan in Tertian Malaria.—Vandenhoff, incited by the results published two years ago by Baetger has been treating malaria in Russian prisoners and German troops with intravenous injections of neosalvarsan. There is no doubt that plasmodium carriers were introduced into the Russian prisoner camps, for some of the men confessed to having had malaria. When mosquitoes were due these carriers were isolated with screening material. But few cases of malaria developed, and most of these were tertian in type. No diagnosis was made unless the plasmodium was found in the blood. Fifteen of the patients were treated with neosalvarsan. The results were all that could have been asked, but perhaps not superior to those from quinine. The chief indications, then, are quinine intolerance and in cases which are refractory to quinine.

Infection of the Fingers and Hands of Physicians.—Heidenhain states that during thirty-one years in which he has practised surgery he has been injured innumerable times and in all customary ways, in the course of operation on subjects with sepsis and had never once become infected. He began after a while to regard himself as immune. However, with a rich experience he had never seen a surgical infection in any colleague or assistant in his own sphere of influence. Nevertheless he has seen numerous infections in surgeons from other clinics. The author's only prophylactic after an injury was to keep the hand and arm in complete rest for twenty-four to forty-eight hours. Once a colleague came to him for a dressing for an autopsy wound, and he ordered immobilization. Returning from an absence of several days he found the man dead. He had removed the dressing and very soon after experienced a chill. The author believes firmly that immobilization for forty-eight hours after these traumatisms would result in a great reduction of morbidity and mortality among surgeons. At the last moment the author had a most corroboratory test of his theories in his own person. After one day's immobilization, following an injury he felt it his duty to do a certain amount of typewriting. He soon developed a chill and local infection which laid him up for a month and caused him much misery. He was fortunate in escaping a general infection.

Münchener medizinische Wochenschrift.

November 2, 1915.

Explanation of Sudden Death in Angina Pectoris.—Hering recalls the fact that Heberden—who devised the name for the affection in question—declared in 1768 that its most common termination is sudden death. This holds good today, yet we are unable to state the rationale. The very rapidity of death makes it impossible to give the sequence of the lethal factors. It is necessary to know the exact time required for death to occur, for, in general, secondary death by the heart may occupy hours as well as minutes. When an embolus is formed in a coronary artery death is readily understood, but the author has conducted eight autopsies after sudden death in which no lesion whatever was found. Such cases could be explained by ventricular flutter, and as far as is known at present by no other means. In 1889 McWilliam advanced the belief that in many cases of sudden death a myocardial fibrillation could be invoked as the efficient cause; but only recently have animal experiments given some corroboration to this view. Such a theory does not connote the presence of angina pectoris in man, but only that in the latter condition the factors for producing myocardial fibrillation may be present. The most common anatomical find in angina pectoris is sclerosis of the coronary arteries. In this condition the heart may do ordinary work for long periods but is unequal to special demands upon it. At a later period it cannot perform ordinary work because it has become permanently anemic. It has been asserted, however, that anemia alone, whether of gradual or sudden origin, does not cause sudden death unless some other—at present unknown—factor is present. This might well be fibrillation, but experiment has not shown that coronary obstruction and fibrillation combined can necessarily cause sudden death. Fibrillation may be conditioned by various factors, and stands in direct relationship with heterotropic irritation of the heart. Coronary occlusion also gives uncertain results, showing that further predisposition is to be reckoned with. There is more or less confusion concerning what factors are predisposing and which are eliciting—as in the case of ischemia, for example, which can be interpreted now one way, now the other. Let us for a moment suppose that coronary sclerosis is the predisposing factor, what are the eliciting factors? These may differ much among themselves. Small emboli are commonly seen in autopsies in the substance of the heart but are not deemed sufficient as an exciting cause of death. They are known to produce small infarcts. It is, however, possible that in some predisposed cases these emboli can excite fibrillation. In experiment a disposition to the latter may be caused by hemorrhage, suffocation, narcosis, etc.; a very slight mechanical irritation may now elicit the fibrillation; or instead of a mechanical irritant, it may be a rise of bloodpressure, an extrasystole, an excitation of the extracardial cardiac nerves, etc. The ischemia of the heart which is reckoned as a constant, may also be due to various causes. The chief cause seems to be a vasoconstriction. Here tobacco may be a factor, and we know how vasodilators can overcome the condition. Many outside factors can contribute as muscular exertion, psychic factors, large meals. Our knowledge may be summed up thus far as follows: the inevitable cause of death involves an ischemia of the heart, and a myocardial fibrillation. "Fluttering heart" in common speech does not refer to

the latter but to a tachysystole. In true fluttering the heart is first arrested before it undergoes fibrillation. But a high grade of tachysystole often occurs in angina pectoris. Not until the mode of cardiac death can be registered by electrocardiography can we expect to understand its true mechanism.

Deutsche medizinische Wochenschrift.

October 14, 1915.

A Fertilizing Coitus: When Does It Take Place?—Siegel calls attention to the unusual opportunities offered by the present war to investigate this subject. A soldier is allowed a brief visit to his home, during which he is supposed to have sexual relations a certain number of times. Failure to conceive must depend to a certain extent on the part of the menstrual cycle in which his wife claimed to be—premenstrual, postmenstrual, or interval. The duration of the furlough is from two to eight days. With records of many cohabitations traceable to leave of absence it is possible to plot striking curves, which show that by far the greater number of conceptions occur during the first eight days after the menses. From the eighth to eighteenth day after menstruation is over the curve drops steadily to 0. Finally, from the eighteenth to the twenty-fourth day after the menses no fecundating coitus occurred. This agrees with findings in peace and appears to show that in the eight days preceding menstruation a woman is relatively sterile. The great frequency of conception after menstruation must of course depend on something which occurs during that condition. Failure to conceive just before the menses may be explained by the swelling of the mucosa of the uterus and tubes which prevents the ascent of the spermatozoids. A further study of the curves with reference to the date of rupture of the Graafian follicle, as estimated, goes to show that this phenomenon must play a rôle in a fecundating coitus, the latter being most likely to occur two days before the rupture.

Chemical Diagnosis of Acute Benzol Poisoning.—Schmitz recalls the recent efforts by Heffter to demonstrate traces of benzol in cadavers. Soon afterwards Joachimoglu reported progress in this direction and the author has been able to corroborate his finds on human subjects in which benzol had been swallowed. A patient was taken to the hospital from his residence on the afternoon of July 13 of this year. He was nearly out of his head and made violent movements with wide excursions. His clothing was covered with feces and vomitus. The right side of his body appeared to have been burned in many places. The surface was pallid and cold. He breathed with loud rattling sounds and showed slight cyanosis. Pulse hardly palpable. Marked bilateral myosis. No distinct reaction to light. Breath smelled strongly of benzine, rubber, and gas. Death took place in the evening. The patient admitted drinking bedbug poison. The immediate autopsy finds were more or less confusing; for example oil drops were noted in the enteric contents. The latter were isolated and distilled and a light water white oil passed over. After repeated manipulations benzol was finally isolated in the pure state. The brain was now sent to a special laboratory, where eventually dinitrobenzol was distilled from it. It thus appears that when benzine is drank it reaches the brain within a few hours. After an examination of the intestinal contents, therefore, the brain should be analyzed, in making out a case of acute benzine poisoning, *per os*.

Deutsche medizinische Wochenschrift.

October 21, 1915.

Etiology of Weil's Disease.—Huebener and Reiter explain our lack of knowledge of this disease by its great infrequency. Only here and there is there a cumulative incidence. In 1911 Hecker and Otto opposed the view of an ordinary bacterial transmission; the virus was ultravisible and probably depended on an insert host for transmission. The present authors believe that they have "rent the veil" in causing in guinea pigs, by inoculation, a condition quite analogous to Weil's disease in man. As is well known, few diseases so parallel each other as yellow fever and Weil's disease; the latter, in fact, being known as the "yellow fever of the temperate zone." Since yellow fever is now known to be a mosquito borne disease, it seems plausible that Weil's disease should have a like origin. The authors for the present withhold the publication of their data on this phase of the problem. For the present we know that it is an infectious disease, the living cause of which for a time circulates in the peripheral blood, and is then inoculable into the peritoneal cavity of the guinea pig. The latter develop in typical fashion fever, emaciation, albuminuria, bile pigment in the urine, nose-bleed, petechiæ, conjunctival hemorrhages, pronounced icterus of the scleræ, skin, and mucosæ. Autopsy shows that the icterus is almost universal in the deeper structures as well. The disharmony of the finds in transmission of the disease to different animals gives rise to the belief that the living cause can be active in various developmental forms.

Old and New Problems of Nursling Tetany.—Klose calls attention especially to functional spasms known as nursling tetany, spasmophilia, etc. This generic conception included both general spasms and laryngospasm, carpopedal spasm, etc.; thus leading up to a belief in the spasmophilic diathesis. Thus Finkelstein has described a constitutional anomaly which consists in a persistent mechanical and electrical overexcitability of the entire nervous system. The author devotes much argument to demonstrating that anodic excitability is a subordinate phase of general galvanic overexcitability. In other words anodic excitability stands in some definite relationship to latent tetany; while cathodic overexcitability is encountered in seemingly normal children, in the winter and spring months, who do not develop convulsions. But anodic overexcitability at these seasons is even more manifest. In fact the relationship of overexcitability to latent tetany and actual convulsions is very complicated. In regard to mechanical overexcitability the facialis phenomenon is often negative in the subject of nurslings' tetany, and certainly bears no relation to electrical excitability. Nevertheless a positive facialis phenomenon is *prima facie* evidence of latent tetany. The socalled peroneus phenomenon is still more common, and occurs in both latent and manifest tetany—in fact it is positive in 97 to 98 per cent. of all cases. Both of these induced symptoms decrease in significance with oncoming years until within a short time, they cease to possess any diagnostic value. The author places his chief reliance on the electrical reactions, using the mechanical tests for confirmation. The bridge between tetany and rickets is believed to comprise the possibility of tetany of the nonstriated muscles. For example, the bronchial spasm which occurs in tetany and rickets may be regarded as a bronchotetany. This subject is relatively new and further study of it is necessary.

The Predestined Bald Head.—W. Knowsley Sibley says that if a seborrheic patient is going to be bald in middle life or even old age, the symptoms of alopecia will show themselves between the ages of fifteen and twenty-five years. Although the hair may gradually become thinner as years advance, it is very unusual for a severe form of baldness to begin after this period of life. —*The Practitioner.*

Book Reviews.

A Synopsis of Medical Treatment. By George Cheever Shattuck, M.D., Assistant Physician to the Massachusetts General Hospital. Second edition, revised and enlarged. Boston: W. M. Leonard, 1915.

As the title implies the "Synopsis of Medical Treatment" is a brief description of the most approved methods of treating disease medically. Dr. Shattuck has provided a sufficiently satisfactory résumé of various modes of medical treatment expressed in concise language as well as a synopsis of important and valuable drugs and non-medicinal preparations. The work supplies a ready handbook of medical treatment and should be useful in a high degree.

The Medical Clinics of Chicago. Vol. I, No. 2 (September, 1915). Published bi-monthly. Price, $8.00 per year. Philadelphia and London: W. B. Saunders Company.

The second number of the Medical Clinics presents about the same amount of material in the same space as the first number, that is twenty cases in less than 200 pages. There is in addition an excellent contribution from Pusey on the treatment of superficial epithelioma by the *x*-ray. The discussion of stomach conditions by Mix and of cardiac irregularities by Hamburger are well worth while. The number is marred by several errors that should have been corrected by more careful proofreading, for example, Kernig's sign is not elicited by flexure of the leg upon the thigh (p. 211), nor is a decinormal permanganate solution "of the same strength" as a normal oxalic acid solution (p. 230). On page 325, in discussing the use of neosalvarsan, one author is made to say "give 1.10 mm. at a dose." This is a direction which it is difficult to interpret. Many of the cases receive but scant consideration, but in the instances above mentioned the discussion is very satisfactory. This number is an improvement over the first one.

Ophthalmoscopic Diagnosis for General Practitioners and Students. By George W. Jean, A.B., M.D., Instructor in Ophthalmology and External Diseases of the Eye in the School of Ophthalmology of the New York Eye and Ear Infirmary, Assistant Surgeon to the New York Eye and Ear Infirmary, Instructor of Ophthalmology in the University and Bellevue Hospital Medical College, and Attending Ophthalmologist to the College Clinic, Ophthalmic Surgeon Williamsburg Hospital, etc. Sixty-eight Illustrations. London, New York, Paris: E. B. Meyrowitz, Inc.

This small volume of 123 pages gives an outline sketch of the subject, in terse, colloquial language, and is very fully illustrated in black and white. The first chapter describes the technique of ophthalmoscopy; subsequent chapters are devoted to descriptions of the normal and pathological conditions of the fundus and interior of the eye concerned in ophthalmoscopy. The book is quite well designed to fill the purpose for which it was written, provided the purchaser wishes an elementary knowledge of the subject only.

Handbook of Medical Entomology. By Wm. A. Riley, Ph.D., Professor of Insect Morphology and Parasitology, Cornell University, and O. A. Johannsen, Ph.D., Professor of Biology, Cornell University. Price, $2.00. Ithaca, N. Y.: The Comstock Publishing Company, 1915.

The Handbook of Medical Entomology is based on a course of lectures along the lines of insect transmission and dissemination of human diseases given in the department of entomology of Cornell University during the past six years. The authors aim to give a general survey of the relation of insects to disease and to put the student of medicine and entomology in touch with the discoveries and theories which underlie some of the most important modern work in preventive medicine. The text is well illustrated and a lengthy bibliography is appended. The book is of value not only to sanitarians and teachers, but to physicians as well. The latter will appreciate it as a reference book, more particularly because of the chapters which treat of insects that are directly poisonous or injurious to man. The authors note what is considered the best treatment of the different insect bites, stings or poisoning by nettling larvæ, but do not tell of anything of especial interest in this connection. The illustrations borrowed from medical works are in some instances poorly chosen because they are of too extreme and unusual cases. This applies particularly to those of pediculosis. In telling of the measures for getting rid of bedbugs the authors omitted one of the best and most easily practicable, namely, the use of a mixture of bichloride of mercury, alcohol, and turpentine. This solution is painted about the infested places; the bichloride remains finely emulsified in a thin layer of turpentine after the alcohol evaporates; when the bug comes out and crosses this painted zone she gets some of the sticky turpentine on her legs and in licking it off becomes poisoned with the bichloride. The book contains synoptic tables of the hominoxious arthropods and this is of value for reference in looking up the correct zoological nomenclature. The authors could have enhanced the value of the book as a reference work by giving the synonymy. The reader is called upon to make as many as thirty important corrections from a slip pasted in the front of the book. Altogether, in spite of certain imperfections in the work, the authors are to be commended for having compiled a valuable reference book.

Medical Applied Anatomy for Students and Practitioners. By T. B. Johnston, M.B., Ch.B., Lecturer on Anatomy, University College, London; lately Lecturer on Anatomy, Edinburgh University, and Lecturer on Medical Applied Anatomy Edinburgh Post-Graduate Courses in Medicine and Surgery. Containing three full-page plates in color and 146 other illustrations in the text. London: A. and C. Black, Limited; 1915.

This book marks a new departure in text books on Anatomy. It is intended to present to the physician the main anatomical facts which will help him in the study or practice of Clinical Medicine, and the volume is thus analogous to several well known useful works on Applied Surgical Anatomy. In the present work the subject has been treated according to Systems and not according to Regions. The reader will not be surprised to find that the nervous system occupies about one-half the volume; the other chapters deal with the organs of special sense, the digestive system, the vascular system, the respiratory system, the genito-urinary system, and the ductless glands. The volume is well written and cannot fail to be of service to the physician who finds his knowledge of Anatomy becoming a little dull.

Blood Pressure in General Practice. By Percival Nicholson, M.D. With eight Illustrations. Third Edition. Philadelphia and London: J. B. Lippincott Company, 1915.

This book was written with the view of affording to the general practitioner and surgeon all needful information regarding blood pressure entirely from the standpoint of its practical significance and value. As Dr. Nicholson points out in the introduction, while the whole subject of blood pressure is recent the literature published thereon, mainly in journals and magazine articles, is so extensive that the busy practitioner has no time to wade through the mass and to winnow the wheat from the chaff. It was with the object, therefore, of presenting the matter of blood pressure from a practical standpoint in a concise and easily intelligible form that the book under review was written. The author has succeeded in his aim admirably and his treatise should prove highly useful to the readers for whom it is intended.

A Textbook of Histology. By Rudolf Krause, A. O. Professor of Anatomy at the University of Berlin. Translated from an original manuscript and printed only in the English language. With thirty-six illustrations in the text, three of which are colored. The references to illustrations given in the text relate to the colored illustrations contained and published in Dr. Rudolf Krause's "A Course in Normal Histology." Price, $2.50. New York: Rebman Company, 1915.

This small volume of 274 pages is apparently intended as a student textbook of histology to be used in laboratory instruction and to be supplemented either by wall charts or by the use of the author's well known "Course in Normal Histology," which is illustrated by a large series of admirable colored plates. It can not, therefore, be considered as a general reference work for histology, but as a student text merely it fulfills its purpose very well. The arrangement, printing, and illustrations are very satisfactory, and the textual presentation of the rudiments of histology is clear and adequate.

Society Reports.

AMERICAN ASSOCIATION FOR THE STUDY AND PREVENTION OF INFANT MORTALITY.

Sixth Annual Meeting, Held at Philadelphia, Nov. 10-12, 1915.

DR. CHARLES A. FIFE OF PHILADELPHIA, IN THE CHAIR.

The Statistical Study of Respiratory Diseases as a Factor in the Causation of Infant Mortality.—Dr. WILLIAM C. WOODWARD of Washington, D. C., from this study believed that the importance of diseases of the respiratory system as a causative factor in deaths in the first year of life was not appreciated. The degree of prevention of such deaths by the present known methods he said was yet to be determined. Since much prophylactic work had been done in diseases of nutrition, including diseases of the digestive tract, through "infant consultations," for the prevention of still births and deaths due to complications of labor and diseases incident thereto through the same agency and through prenatal nursing, the next step toward lowering of infant mortality he felt should be in the direction of establishing machinery and the adopting of at least tentative methods for the prevention of respiratory diseases. He called attention to the fact that in the registration area of the United States in the calendar year 1913 that 15.85 per cent. of the total mortality in the first year of life was due to diseases of the respiratory system. This was approximately one-quarter of the total mortality from these diseases at all age periods taken together. Therefore, one-quarter of the total mortality from diseases of the respiratory system came within the purview of the conservation of infant welfare. Bronchitis and pneumonia were said to cause 95 per cent. of all deaths in the first year of life from diseases of the respiratory system. The prevention of infant mortality from diseases of the respiratory system obviously claimed the work of the prenatal nurse, the obstetrician, the midwife, the pediatrician and the infant welfare station.

The Prevention of Respiratory Diseases.—Dr. ROYAL STORRS HAYNES of New York City recognized two important factors in the prevention of respiratory diseases: (1) Destruction or exclusion of the infecting organism; (2) Preservation of the resistance. Transference by contact which was said to be the method of infection in most instances he said could be avoided by real cleanliness. In the preservation of the resistance the maintenance of a perfectly functioning vasomotor system was said to be of the greatest importance. In the prevention of respiratory diseases the author suggested the appointment of a committee whose duties might be (*a*) Supervision of the conduct of an intensive investigation of respiratory affections in a selected area in a selected city. By such an investigation it should be possible to determine the relative etiological importance of various factors and the value of prophylactic measures. The investigation should embrace the work of social workers, physicians, physiologists, sanitary engineers and bacteriologists. (*b*) To arrange for publication through the medical and lay press of articles acquainting the laity with the economic loss and that of health and life caused by these diseases. (*c*) To investigate the various State laws upon health and improve legislation where desirable. (*d*) To carry on an education campaign by lectures for those not reached by the printed page. (*e*) To stimulate the care of the child before the school age by placing greater emphasis upon his medical supervision between the nurses and social workers regarding this question.

The Treatment of Respiratory Diseases, with Special Reference to the Value of Fresh Air.—Dr. JOHN LOVETT MORSE of Boston said that great confusion prevailed in connection with the use of the term, "fresh air," Such air might be defined as air which was in motion, dry, and cool. It was not necessarily outdoor air. Fresh air and cold air were not identical. In certain diseases of the respiratory tract cold air, it was said, was an irritant to the respiratory mucous membrane. Because of its stimulating effect upon the vasomotor system it had been thought to be of advantage in the treatment of pneumonia. Recent investigations had shown that blood pressure was not lowered in pneumonia, nor the vasomotor system impaired. Fresh air was claimed to be of advantage in all diseases of the respiratory tract. Cold air did harm in acute stages of nasopharyngitis, laryngitis and in bronchitis; while it might, or might not be of advantage in the later stages of these conditions and in bronchopneumonia. Dr. Morse believed it questionable whether or not cold air lowered mortality in pneumonia. Discrimination in the use of cold air in the treatment of diseases of the respiratory system was to be observed since all such diseases were not amenable to the same methods.

Dr. L. EMMETT HOLT of New York City strongly emphasized the importance of quarantining the infant, especially the premature infant, when other members of the family had colds, and pointed out that efforts against the contagiousness of pneumonia should be directed to raising the resistance of the infant. He believed that almost as many deaths had been caused by cold air as there had been cures effected and agreed with Dr. Morse that great discrimination should be observed in its application. Especially in young infants he had seen much harm done in the treatment of acute respiratory diseases by exposure to cold air.

Dr. S. MCC. HAMILL of Philadelphia recognized the value of the foundation for the fight against infant mortality given in the papers. He ventured a word of caution in the use of vaccines in the prevention of colds, feeling that the whole question of vaccine therapy was at the present time so unsettled and its dangers so manifest that the subject should never be presented without a word of caution against its promiscuous use. The use of the nasal douche in the prevention of the common cold he thought also called for a word of caution because in the final analysis this method was apt to do more harm than good. He was in entire sympathy with Dr. Morse in his belief that fresh or cold air had been incautiously employed. In pointing out that in the treatment of all conditions the individual and not a group of cases should be treated, he felt that Dr. Morse had covered the subject. He believed that the proper way to obtain "cool, dry, and moving" air, defined by Dr. Morse as fresh air, was through the open windows, and not by a ventilating system.

Dr. J. P. CROZER GRIFFITH of Philadelphia said it had never been proven to his mind that the universal employment of cold, fresh or open air, for the treatment of pneumonia or other respiratory diseases was the correct measure. When a number of years ago he had ventured to make this statement he had stood without any support, and he was glad to note the present changed sentiment. In explanation of such change of sentiment he said that a human failing was that of the following of fads; the excessive use of cold air for the treatment of respiratory diseases had been a fad and as such had gone beyond the medical profession into the hands of nurses, hospital managers and the laity in general. If among medical men there was doubt concerning cases in which this treatment was indicated, obviously the measure was not safe in other hands. Dr. Griffith advocated fresh air in the treatment of many diseases of the respiratory system but emphasized the need of great judgment in its use. He agreed with Dr. Holt that many cases were made worse by its indiscriminate use, while others improved only by this treatment.

Dr. CRESSY L. WILBUR said that the foundation of the work of the prevention of infant mortality was the registration of births and deaths. He thought it a shame to the country that such registration was not made. The only exception to this lack was in the State of Pennsylvania, the people of which commonwealth he thought should be congratulated upon having compelled such legislation.

Dr. GODFREY ROGER PISEK of New York City felt that fresh air and exposure to cold air should be differentiated that there might be no confusion in the minds of nurses and social workers regarding this question.

Dr. EMERSON of New York said that respiratory diseases incident to the epidemic of measles that had swept over that city during the present year would give a higher infant mortality than there had been at any previous time. That the death rate in hospitals had been larger than in homes in which the babies had been cared for by the visiting nurse and physicians was due to the fact of the great number of children necessarily sent to the hospitals because of mothers working away from the home. The rule had been established that children of this age were not to be referred to the hospitals unless this was made necessary by the home conditions. The influence of prenatal care upon the resistance of the young child was a matter to be emphasized.

Dr. HOOVER of New York thought it possible to classify by observation the two groups of cases spoken of in the discussion, comprising those who did well under outdoor treatment and those who did not. A child whose hands and feet were cold and who was uncomfortable when out of doors, regardless of the amount of clothing it wore, would obviously do better in the ward. Likewise a child, perfectly comfortable and breathing well in the ward, which became dyspneic when taken into the cold air, should be returned to the ward.

Dr. ABRAHAM JACOBI of New York City said that much he had heard in the discussion convinced him that some sixty years ago he had not been so stupid as twenty-five or thirty years later he had taken himself to be. At the former time he had been of the opinion that to speak of the treatment of "pneumonia" was a misnomer; the several peumonias being not the one and the same thing. In speaking upon this subject it was his custom to tell his students that they had in this disease a patient to deal with rather than a pneumonia. Unless every case were studied individually the best results could not be obtained. The aim of teachers should be to make good doctors of their students. The principal thing in diagnosis—and in the head of the doctor—was brains. So long as the doctor was not able to impress his nurses with the fact that he was their superior in knowledge, that he knew what he was about in a given case, the nurses would be his superiors in the management of the case, and he would be in the peculiar position of being run by the nurses and the hospital managers.

Dr. WOODWARD confessed to disappointment in its trend which had been that of curing pneumonia rather than of its prevention and the prevention of diseases of the respiratory system. Such prevention he felt to be summed up in the matters of clothing, housing, exercise, and personal cleanliness. When the Association could present these four factors to those responsible for the care of babies and children a reduction in diseases of the respiratory system might be hoped for.

Dr. HAYNES recalled the case of a nursing infant who had not taken whooping cough from the mother who had the disease; in another case care and cleanliness had prevented infection of the baby when every other member of the family had whooping cough. Both cases emphasized Dr. Holt's remarks upon precaution against infection of the nursing child. In deciding which ill children should be subjected to treatment by cold air their passivity should be carefully considered. The dryness of air mentioned by Dr. Morse it was thought should be qualified, and he was in accord with Dr. Hamill regarding treatment by the vaccines and postnasal douching. He had not in his paper recommended these methods of treatment, but had simply stated that they were employed.

Dr. MORSE admitted the difficulty of the differentiation of cold air and cool air. It might be said, however, that air of a temperature of fifty was cold air; above that cool. He wondered whether the gentlemen who had spoken upon quarantining the baby had realized what a hole they were getting the doctors into; with the isolation of the infant from the children coming from school, the dismissal of the nurse with a cold, logically, the doctor when he had a cold would have to give up his practice, and his income. In connection with what had been said by dressing the children in the morning by the thermometer rather than by the calendar it had been forgotten that in Boston it was not possible to know in the morning what kind of clothing would be needed in the evening. In the question of fresh, pure and cold air, he believed that a child should have fresh pure air. There remained, therefore, only the question of temperature, and this, obviously should be regulated according to the disease and the individual patient.

The Education, Licensing, and Supervison of the Midwife.—Dr. J. CLIFTON EDGAR of New York City said that the midwife, for traditional, social and economic reasons, attended about 40 per cent. of confinements in this country and was at the present time a necessary evil. The solution of the question in the rural districts was the inclusion of midwifery service should a physician not be available. In illustration of this the proposed course of midwifery in the Washington University Hospital in St. Louis was mentioned. The only legitimate functions of the midwife, Dr. Edgar said, were those of a nurse plus the attendance upon a normal delivery, when necessary, and she should never be regarded as a practitioner. Unlicensed women should not be permitted to practice, and even as a temporary measure only properly qualified women should be granted a license. He advocated the supervision of licensed midwives by the local department of health, as held in Buffalo, Pittsburgh and Providence, which system followed closely that operative in England and New Zealand, in which countries infant mortality was conspicuously low. A recent study of the midwife question in England, made by Miss Carolyn V. VanBlarcom, secretary of the New York Committee for the Prevention of Blindness, it was said had been used as a basis for midwife control in this country.

Is the Midwife a Necessity? — Dr. J. M. BALDY of Philadelphia under this caption said that this country contained several groups of foreigners who had been accustomed to the midwife, and that until immigration ceased and these people became evolved into Americans the midwife would be demanded. The question revolved itself into the proper education and control of the midwife. Results were to be obtained by meeting, and improving existing conditions. There was no State, city or town in the United States, he declared, in which by the passage of laws it had been possible to eliminate the midwife. Any measureable degree of success attained had come only through education and control.

Progress Toward Ideal Obstetrics.—Dr. JOSEPH B. DELEE of Chicago asserted his opposition to every movement to perpetuate the midwife, declaring her to be a relic of barbarism and that her continuance demanded a compromise between right and wrong. He regarded her as a drag upon the progress of the science and art of obstetrics, her existence stunting the one and degrading the other. He believed that the foreigner was becoming enlightened upon the value of medical attendance and demanding it. The visiting nurse, he said, did an amount of maternity and prenatal work not fully recognized. He believed there were thousands of young physicians who would take cases now cared for by midwives, were it not considered undignified work, and also undignified to accept such small fees for the service as were received by these women. In educating the midwife he felt that the profession assumed the responsibility for her, lowered the standards and compromised with wrong, and personally he refused to be *particeps criminis*.

Dr. WILLIAM R. NICHOLSON of Philadelphia believed that without inspection of every case of labor the midwife could not be controlled. He said that in Philadelphia five inspectors, graduates in medicine, inspected every case after delivery. He believed that the Ascosiation could do a larger amount of good if all its members worked upon a common ground. There appeared to be a division of opinion—for and against the midwife. To Dr. Nicholson the question at issue was the benefit of the women now attended by the midwife. He did not believe that the midwife could be eliminated at the present time; all they were doing in Philadelphia was carrying out a *police* supervision—there was no other word for it; the women being brought to account for any infraction of requirements, and this work was regarded only as a temporary expedient. Dr. Nicholson favored the training of a certain number of English speaking, intelligent young women to care as nurses for women in labor, believing that in this way the places of a number of midwives could be taken. Nine women were at the present time in such training. Dr. Baldy had given permission for the experiment and it was believed that the results would be satisfactory.

Dr. J. WHITRIDGE WILLIAMS of Baltimore believed that in the big cities, unless the man at the head of the inspection of midwives were a man like Dr. Baldy in forcefulness, failure would result. The development of prenatal work he believed one of the greatest advantages in modern obstetrics. Further development was in the oversight of the woman after confinement. The pre and postnatal work he said involved the work of the obstetrician, the pediatrist and the social worker. The crux of the matter lay in the education of doctors to be competent obstetricians. It was just commencing to be understood in this country what the obstetrician was. It was much more than a "man midwife." The inventor of the obstetrical forceps, Hugh Chamberlen, called himself, "Hugh Chamberlen, man midwife." "Man midwife" and "accoucheur" Dr. Williams declared were two terms that raised his ire. The "man midwife" had disappeared, and the "accoucheur" was disappearing. That which was wanted was the scientific obstetrician. Such a person could be obtained only by the development of medical education. There was needed a large, thoroughly equipped woman's hospital, where

everything pertaining to woman and child-bearing was studied from the viewpoint of teaching that which was now known, and for the acquisition of new knowledge for the future. Such a hospital lately endowed in Pittsburgh should set the pace for other cities.

Dr. S. Josephine Baker of New York City thought the discussion which had been held for the last five years was just as near solution as it had ever been, and this was because of failure to get together upon fundamental principles of the whole proposition. Dr. Baker's interest in the midwife was solely to make her as nearly fit as possible to give to mothers and babies their essential care. She believed it an absolute impossibility to abolish her in the city at the present time. The situation in New York City had been misinterpreted, and she assumed that Dr. DeLee, in speaking of the high mortality and morbidity following the work of the midwife was expressing his personal opinion. The statistics of New York City did not bear out this opinion. In proportion this mortality and morbidity was less than among the women attended by physicians. In the interim of securing the better education of the medical student Dr. Baker said the effort was being made to do that which seemed to be the most efficacious in protecting the mother and babe, and asked if those who would eliminate the midwife had anything better to offer. That which was needed was a practical, working program, better than the one in operation at the present time. The midwife was being eliminated and the complete elimination she believed would come by making the standard so high that the ignorant and untrained women could not attain it. Since at the present time the women would practice, licensed or unlicensed, she thought it infinitely better to see that the care given by them to mothers and babies was at least proper. Her experience was that in prenatal work the midwives gave efficient cooperation in referring mothers for instruction. Contrary to what had been said, the women did engage the midwife as early as women engage the doctor. Altogether the midwives in New York were beginning to look upon the health department, not as a body to be feared, but as something which was a very definite help to them. By such cooperation Dr. Baker believed more effective reforms would be secured than by radical measures.

Dr. Arthur B. Emmons of Boston said that in Massachusetts nothing was being done specifically to eliminate the midwife; their law required the registration of physicians, and if a midwife wanted to qualify before the Board of Licensure she must pass the examination. The daughter of one midwife had already taken a course in medicine and qualified as a physician. This plan operative in Boston he believed solved the question of the elimination of the midwife. He referred also to a plan of prenatal clinics and conference which had been worked out in that city. From the graduates of the lying-in hospital a number of young physicians attended the women, receiving from five to ten dollars, depending upon the section of the city in which the patients lived. The follow-up work was done by the visiting nurses and the results had been quite satisfactory. He felt that Pennsylvania led in the requirements for medical licensure.

Dr. Abraham Jacobi of New York City said he was interested only in the poor woman of the people. In the last report of the Lying-in Asylum of New York it was stated that 6,000 women had been cared for by the Asylum in their homes and in the institution. From other sources he had read that 52,997 women had been confined in their homes by midwives. That, he felt, told the whole story—53,000 in New York, and more than a million in the United States, who must have midwives. If the midwife were to be eliminated, then the women whom they had attended must be provided with just such service as they wanted and could afford to pay for. Dr. Jacobi said he knew well what he was talking about, for he had been a "midwife" himself fifty or sixty years ago—and at a five or ten dollar fee. He questioned whether his audience knew what a midwife was at that time; he attended the woman through her confinement and washed the baby. He washed the baby the next day and for eight or nine days—nine days was the usual time. He did not know whether his hearers had heard of those antedeluvian times.

Dr. George W. Kosmak of New York City differed with Dr. Baker in her belief that the problem of the midwife was no nearer solution than when the discussion was new. Advance had been made in that those who had favored the midwife now admitted that she must be eliminated. For this elimination he thought there was no stronger argument than that she should be under supervision.

Dr. Williams said that in the rural districts there was no demand for obstetric hospital and dispensaries, but that there was a demand for good midwives. If the midwife were not available the farmer's wife could get only the neighboring farmer's wife to look after her in confinement. He expected to see for some time the midwife in the State of New York, and it was his intention that there should be established some such supervision as that developed by Dr. Baldy in Pennsylvania.

Election of Officers.—*President*, Dr. S. McC. Hamill, Philadelphia; *President-elect* (1917), Dr. W. C. Woodward, Washington; *First Vice-President*, Dr. Joseph S. Neff, Philadelphia; *Second Vice-President*, Dr. Thomas McCleave, Berkeley; *Secretary*, Dr. Philip VanIngen, New York; *Treasurer*, Mr. Austin McLanahan, Baltimore; *Executive Secretary*, Miss Gertrude B. Knipp, Baltimore. Place of next meeting, Milwaukee.

(To be continued)

Books Received.

The Medical Record *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

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The Medical Clinics of Chicago, November, 1915. Vol. I, No. 3. Octavo of 200 pages; 23 illustrations. Published by W. B. Saunders Company, London and Philadelphia. Price per year, paper, $8.00; cloth, $12.

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American Sewerage Practice. By Leonard Metcalf and Harrison P. Eddy. Published by McGraw-Hill Book Company, Inc., 239 West Thirty-ninth Street, New York. Vol. III, 851 pages. Price, $6.00 net.

Colon Hygiene. By J. H. Kellogg. Published by Good Health Publishing Company, Battle Creek, Mich.; 393 pages.

Medical and Surgical Report of the Roosevelt Hospital, New York; 254 pages. Edited by Frederick T. Van Beuren, Jr., M.D.

Report of Births, Marriages and Deaths in the Province of Ontario, for the year ending December 31, 1914, being the Forty-fifth Annual Report. Printed and published by L. K. Cameron, printer to the King's Most Excellent Majesty; 285 pages.

The Rockefeller Foundation. Annual Report, 1913-1914. Second Edition. The Rockefeller Foundation; 226 pages.

Selbstmordverdacht und Selbstmordverhütung. Von Dr. Paczek, Nervenarzt in Berlin. Published by Georg Thieme. Leipzig, 1915; 272 pages. Price, 6 marks.

Bandaging. By A. D. Whiting, M.D. Published by W. B. Saunders Company, Philadelphia and London. 12mo, of 151 pages, with 117 original illustrations. Price, cloth, $1.25 net.

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